

COMMITTEE WORKSHOP
BEFORE THE
CALIFORNIA ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:)
2008 Rulemaking on Appliance)
Efficiency Regulations) Docket No.
Implementation of California Code) 07-AAER-3
of Regulations, Title 20, Section)
1601 through Section 1608)
_____)

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

TUESDAY, JANUARY 15, 2008

10:06 A.M.

ORIGINAL

Reported by:
Peter Petty
Contract No. 150-07-001

DOCKET	
DATE	JAN 15 2008
RECD.	JAN 30 2008

COMMITTEE MEMBERS

Jackalyne Pfannenstiel, Presiding Member

Arthur Rosenfeld, Associate Member

ADVISORS PRESENT

Tim Tutt

John Wilson

STAFF PRESENT

Melinda Merritt

Harinder Singh

Bill Pennington

Peter Strait

Gary Flamm

ALSO PRESENT

Gary Fernstrom
Pacific Gas and Electric Company

Alex Chase
Energy Solutions

Randall Higa
Southern California Edison Company

Ramin Faramarzi
Southern California Edison Company

Jerine Ahmed
San Diego Gas and Electric Company
Southern California Gas Company
Sempra

Jon McHugh
Heschong Mahone Group

ALSO PRESENT

Noah Horowitz
Natural Resources Defense Council

Tracey Peacock
3M Optical Systems Division

Ted Pope
Chris Calwell (via teleconference)
Energy Solutions

Luis Fernandez
California Lighting Technology Center

Robert Erhardt
Philips Lighting

Ric Erdheim, Senior Counsel
Philips Electronics North America Corporation

Larry Albert
Black and Decker
Power Tool Institute

Paul Bendt (via teleconference)
Ecos Consulting

Wayne Morris (via teleconference)
Association of Home Appliance Manufacturers

I N D E X

	<u>Page</u>
Proceedings	1
Introductions	1
Opening Remarks	1
Presiding Member Pfannenstiel	1
CEC Staff Overview	1, 8
Utility Codes and Standards Enhancement (CASE)	
Initiatives/Presentations by Interested Parties	14
PG&E/Energy Solutions	14, 20
SCE	42
Afternoon Session	72
Utility Codes and Standards Enhancement (CASE)	
continued	
Presentations - continued	
SDG&E/SoCalGas, Sempra	72
Natural Resources Defense Council	78
3M Company	112
Lighting Efficiency; AB-1109 Implementation	118
PG&E/ECOS Consulting	120
SCE	155
Philips	174
California Lighting Technology Center	181
Interested Parties	186

I N D E X

	<u>Page</u>
Presentations - continued	
Battery Chargers	199
Power Tools Institute	199
PG&E/ECOS Consulting	205
Closing Remarks	242
Presiding Member Pfannenstiel	242
Schedule	243
Adjournment	244
Reporter's Certificate	245

P R O C E E D I N G S

10:06 a.m.

PRESIDING MEMBER PFANNENSTIEL: This is an Energy Commission Efficiency Committee workshop, a scoping workshop on the next round of appliance efficiency standards.

I'm Jackie Pfannenstiel; I'm the Chair of the Energy Commission and the Presiding Commissioner on the Efficiency Committee. To my left is Commissioner Art Rosenfeld who is the Associate Member on the Efficiency Committee. To Art's left is his Advisor, John Wilson. And to my right is my Advisor, Tim Tutt.

I have no other comments to begin. Art, do you have any?

ASSOCIATE MEMBER ROSENFELD: No. Welcome.

PRESIDING MEMBER PFANNENSTIEL: Welcome. Melinda.

MS. MERRITT: Good morning, everyone. I'm Melinda Merritt with the appliance efficiency program in the buildings and appliances office. I have a little script to read here to get us started.

PRESIDING MEMBER PFANNENSTIEL: Melinda,

1 can you get the lights over your slides so we can
2 see them a little better.

3 MS. MERRITT: Okay, is that sufficient?

4 PRESIDING MEMBER PFANNENSTIEL: Yes,
5 that's fine, thank you.

6 MS. MERRITT: Just a few housekeeping
7 items before we begin. For those of you not
8 familiar with this building, the closest restrooms
9 are located just out the door. I think everyone's
10 rather familiar with where those are. There's a
11 snack bar on the second floor under the white
12 awning.

13 Lastly, in the event of an emergency and
14 the building is evacuated, please follow our
15 employees to the appropriate exits. In that event
16 we would reconvene at Roosevelt Park, which is
17 located diagonally across the street from this
18 building. Please proceed calmly and quickly,
19 again following the employees with whom you are
20 meeting, to safely exit the building. We're not
21 expecting anything along those lines to happen,
22 but important information.

23 We'd ask that if you have a cellphone
24 that you either turn it off or put it in vibrating
25 mode for the duration of the workshop.

1 Also you should be advised that there is
2 a webcast and your ancillary conversations could
3 be picked up on the microphones, so please
4 consider the environment within which you're
5 speaking.

6 So, we are going to be considering today
7 the Efficiency Committee's rulemaking activities
8 to amend the appliance efficiency regulations.
9 This is a proceeding where the order instituting
10 the rulemaking was adopted in December of last
11 year. We have copies available for you in the
12 entry of the adoption order, itself, of the
13 Committee workshop notice. We also have some
14 other background materials for you that we will be
15 presenting in context later.

16 The appliance efficiency regulations are
17 contained under the California Resources Code,
18 Title 20. These govern all appliances sold or
19 offered for sale in California. The regulations,
20 themselves, contain not only the efficiency
21 standards, which are either minimum operating
22 efficiencies, or design criteria for both energy
23 or water use. But the regulations also specify
24 test methods that must be used in establishing the
25 efficiency of the appliance.

1 The regulations also contain marking and
2 labeling requirements for the appliances that we
3 regulate. And the regulations also prescribe
4 manufacture compliance certification data that
5 must be submitted. And we also have approval
6 requirements for any testing laboratory that's
7 used to establish the efficiency.

8 The Energy Commission regulates a wide
9 variety of appliances. This is just some
10 informational background of the variety and
11 complexity of the appliances that we do consider.

12 The Energy Commission has a, I guess a
13 growing appliance efficiency program. We've added
14 some additional staff this year and we have some
15 new faces to carry on the work of the program.

16 The work of the program is not only
17 standards development and adoption, which is the
18 focus of our meeting today and the rulemaking
19 activity. We have a very important and labor-
20 intensive compliance certification and database
21 activity.

22 We have ongoing outreach and education
23 activities targeting manufacturers and
24 distributors, as well as trying to answer all the
25 questions the public may have regarding the

1 program.

2 And finally, we do have compliance
3 survey work, testing and enforcement activities.

4 As stated in the order instituting the
5 rulemaking, the scope of this rulemaking is to
6 focus initially on general purpose lighting to
7 help meet the requirements of Assembly Bill 1109.
8 And these would apply to indoor residential,
9 indoor commercial and outdoor lighting products.

10 Also, this initial rulemaking we expect
11 to focus on battery chargers. We consider that
12 there may be some necessary updates and
13 clarifications to the existing standards that
14 require rulemaking. And then finally there may be
15 other priority matters that the Committee may want
16 to add to the agenda.

17 The order provides that the rulemaking
18 may be divided into phases. And that the scope of
19 each phase will be established and modified as
20 needed by the Committee.

21 This slide presents a schedule assuming
22 that there's an initial phase to this rulemaking
23 that focuses on general purpose lighting. And
24 this is intended as much to give you just a brief
25 idea of the process that we're involved in in the

1 rulemaking.

2 We expect that following this workshop
3 the Committee will establish the scope of the
4 initial phase. And that will hopefully be done
5 within the next couple of weeks.

6 We will have about two, two and a half
7 months in total to receive and evaluate proposals,
8 specific proposals for amendments to the
9 regulations. At which point staff will assemble
10 and publish the draft standards or proposed
11 amendments.

12 Typically we follow that release with a
13 staff workshop. There may or may not be a need
14 for revisions or discussions. There may be a
15 Committee workshop in the early summer, if needed.
16 But finally we expect to release the proposed
17 standards, also known as 45-day language, along
18 with the staff's CEQA analysis, in early
19 September.

20 The schedule is driven by the need for
21 Commission adoption of lighting standards in
22 response to Assembly Bill 1109. And we're
23 targeting the December 3rd business meeting,
24 December 3, 2008.

25 Assembly Bill 1109 is, again we've

1 provided copies in the entry for anyone who wants
2 to read the bill in total. It requires that on or
3 before December 31, 2008, the Energy Commission
4 will adopt minimum energy efficiency standards for
5 all general purpose lights on a schedule specified
6 in the regulations.

7 And that these regulations, in
8 combination with other programs and activities,
9 will reduce average indoor residential lighting
10 energy by not less than 50 percent relative to
11 2007 levels; and reduce average indoor commercial
12 lighting and outdoor lighting energy use by not
13 less than 25 percent relative to 2007 levels.

14 These very ambitious energy reduction
15 goals are expected to be in place by 2018. Or
16 have been achieved by 2018.

17 So, in order for the Energy Commission
18 to implement Assembly Bill 1109, again we need to
19 adopt regulations for general purpose lighting
20 this year by December 31, 2008.

21 And in order to achieve the lighting and
22 energy reduction requirements we need to do
23 several things. This will require us to evaluate
24 statewide residential, commercial lighting
25 electrical usage data and establish a 2007

1 baseline lighting electrical energy use.

2 We will need to evaluate the expected
3 growth in electrical lighting demand. We will
4 also need to identify, evaluate and prioritize
5 other programs and activities outside of the
6 rulemaking process that may include amendments to
7 the building energy efficiency standards, more
8 aggressive outreach and education activities
9 targeted at manufacturers, distributors and
10 consumers, and possibly rebate and incentive
11 programs.

12 At this point I'm going to turn the
13 presentation over to Harinder Singh. Harinder
14 is -- he joined our staff last year as our program
15 engineer and will be picking up, in particular,
16 the lighting and battery charger information.

17 MR. SINGH: Good morning. My name is
18 Harinder Singh. I am technical staff for
19 appliance efficiency program.

20 My first slide presents the current
21 state regulated lighting. These are the lights we
22 currently regulate. And this provides us -- it
23 went into effect January 1, 2008. And the
24 estimated projected wattage savings or reduction
25 is 5 percent for the current regulations in effect

1 right now.

2 Next is we have this federal energy
3 bill, HR-6, which would go into effect -- will
4 become effective 2012 to 2014 for different
5 wattage -- and it's going to provide approximately
6 28 percent wattage reduction from 2012 onwards.

7 And then we have tier two. For tier two
8 DOE is required to start a rulemaking by 2014.
9 And the DOE must finish the rulemaking by 2017.
10 And that rulemaking, the adopted standard will
11 take effect in 2020.

12 And if the DOE fails to adopt any
13 standard by 2017, then the backstop requirement
14 kicks in, which would give 45 lumens per watt for
15 the lamps. This would give California 60 percent
16 wattage reduction after 2020 if that goes into
17 effect, if the backstop measure goes into effect.

18 Since California is preempted so tier
19 one will provide -- California has two options,
20 one option. That it can adopt the tier one
21 standards one year prior to the federal effective
22 date, which is 2012 to 2014. So, California can
23 adopt these standards 2011 -- for different 2011
24 to 2013.

25 And the tier two would take effect at 45

1 lumens per watt if the backstop requirement kicks
2 in. Then 45 lumens would take effect in 2020 for
3 the federal. But California can adopt that
4 requirement by 2018.

5 The question here is can California
6 adopt different standards for tier two. So we are
7 seeking proposals, and also ideas and identify the
8 opportunities which can take us to 50 percent
9 wattage reduction by 2018, as is required by
10 average 50 percent reduction, as is required by
11 the AB-1109.

12 And this is the end of the lighting
13 issues on the federal energy bill.

14 And by Assembly Bill AB-1109, we are
15 also required to come up with a 25 percent
16 reduction for indoor commercial lighting and
17 outdoor lighting. So we may have work with Title
18 24 or other areas to come up with some requirement
19 or some ideas to how to reduce this by 25 percent
20 by 2018. And that ends the lighting part of it.

21 I'll move to the battery chargers next.
22 Battery chargers, currently there are over 600
23 million products through the United States,
24 different battery chargers, out of which
25 approximately 120 million different battery

1 chargers are in California. These are the
2 approximate numbers.

3 And the battery chargers include small
4 household appliances, personal care products like
5 electric shavers, high-power battery-operated
6 forklifts.

7 The amount of energy consumed by the
8 battery chargers is quite a bit. It varies
9 actually from size. System efficiency of battery
10 chargers are very low, often 30 percent or less.
11 Significant savings can be achieved by improving
12 efficiency. Battery chargers in active mode can
13 draw as much as from 5 to 20 times more energy
14 than is actually stored in the battery.

15 I tried to show the power consumption.
16 This is the active mode, power consumption is
17 large. And time taken to charge is a medium,
18 which varies from six to 12 hours. And the
19 maintenance is the medium power consumption, but
20 it has a large time. And the standby mode, the
21 power consumption is small, but the time is large
22 because the battery charger stays plugged in.
23 People unplug their telephones or whatever the
24 devices are. So this accounts for quite a bit of
25 energy.

1 Since advanced designs for the battery
2 chargers are available, that can improve energy
3 consumption by more than 35 percent. So, again,
4 the significant energy savings can be achieved
5 with the use of efficient battery chargers and
6 millions of kilowatt hours per year.

7 Electric energy savings generated by use
8 of efficient battery chargers would result in
9 preventing the release of millions of tons of
10 greenhouse gas emissions.

11 And the current situation is that DOE
12 adopted a test method in July of 2006. The test
13 method adopted by the DOE measures two modes of
14 power battery chargers, maintenance mode and
15 standby mode.

16 And California Energy Commission, PIER,
17 Public Interest Research Program, funded ECOS
18 Consulting to develop a comprehensive test method.
19 And ECOS published their test method in September
20 21, 2007. And ECOS test method covers all types
21 of residential and commercial battery charger
22 systems, testing in active mode, maintenance mode
23 and standby mode. One more thing, that this test
24 was also funded by PG&E.

25 The EPA Act 2007 requires the U.S.

1 Department of Energy to determine that no energy
2 conservation standards are technically feasible or
3 economically justifiable or cost effective for
4 battery chargers by July 2011. Or if they find
5 that it's cost effective and feasible, then
6 prescribe standards for battery chargers by July
7 1, 2011.

8 And also DOE has to prescribe a test
9 procedure for the battery chargers at no later
10 than 31st of December 2008. At this time they
11 have one test procedure which covers only the
12 maintenance and the standby power. We don't know
13 what DOE's going to adopt by December 31, 2008.

14 So Energy Commission will consider
15 adopting a test method which was developed by ECOS
16 and also will consider prescribing standards for
17 battery chargers.

18 2000 rulemaking updates, clarifications
19 and other priority matters. Updates to clarify
20 standards and make consistent with the federal
21 legislation. That's section 100 changes.

22 And then we also are going to present to
23 the Efficiency Committee televisions -- consumer
24 electronics which includes televisions, set-top
25 boxes, home entertainment system, game consoles

1 and other items. As also as stated in SB-332.

2 At this time I would like to, if anybody
3 has proposals, I have a template available. My
4 business card is here at the desk, so if you are
5 interested in submitting proposals please email
6 me. I will send you the template for submitting
7 your proposal. And thank you very much.

8 Any questions?

9 The next presentation is by PG&E. And
10 Alex Chase is going to be making the presentation.
11 Thank you.

12 MR. FERNSTROM: Good morning,
13 Commissioners, Staff and interested parties. I'm
14 Gary Fernstrom from the Pacific Gas and Electric
15 Company. I'm a Senior Program Engineer at PG&E
16 and the Project Manager for our appliance
17 standards project.

18 I'd like to very briefly introduce our
19 presentation for you this morning. I see there
20 are a number of interested parties in the
21 audience, many of whom wish to speak, so we'll try
22 and be as quick as possible with our presentation.

23 Our team consists of the American
24 Council for an Energy Efficient Economy, the Davis
25 Energy Group, Energy Solutions with Alex Chase at

1 the podium who will do the majority of the
2 presentation for us, ECOS Consulting, LED
3 Consulting, Lighting Wizards and the California
4 Lighting Technology Center is supplying technical
5 advice to us on lighting issues.

6 I'd like to give you a very quick
7 history of the codes and standards program. PG&E
8 developed this program in 1997, just a little over
9 a decade ago. Its purpose was to bring into code
10 energy efficient measures which we have seen
11 through our other programs to offer a highly cost
12 effective opportunity for the State of California.

13 So, it's a supplement to voluntary
14 programs such as emergency technologies,
15 information, education and our incentive programs.

16 I'm happy to say that we've worked quite
17 collaboratively with the California Energy
18 Commission and the PIER program to make a
19 continuum of energy efficiency efforts that range
20 from the development of new technology to bringing
21 into code technologies that are fairly prevalent
22 in the marketplace, and offer energy saving
23 opportunities particularly for those that aren't
24 influenced by voluntary measures.

25 We've presented a number of code

1 advocacy recommendations, both in the building
2 standards and appliance standards, over 50 of
3 them; most of which have been adopted into
4 California code, many of which have been adopted
5 by other states as well as agencies of the federal
6 government.

7 So the program consists of
8 recommendations for improvement to the code
9 language; training and education associated with
10 that; and work at the federal level where that is
11 constructive with respect to codes that have
12 results in California.

13 Only recently have we gotten energy
14 saving credit toward our goals set by the
15 California Public Utilities Commission for this
16 program. We've pursued it mostly through the past
17 decade because it was the right thing to do, even
18 though credit wasn't forthcoming. Now that we do
19 get credit and the energy saving goals set for the
20 utilities by the Public Utilities Commission are
21 very high, it's critically important that
22 attribution be allocated correctly such that we
23 can realize some savings from our efforts in this
24 area in order to sustain our work here.

25 The program has gone statewide, and I'm

1 happy to say that the other utilities are
2 participating in codes and standards efforts and
3 have various proposals and efforts underway, as
4 well.

5 So, I'd like to take just one more quick
6 moment to introduce the others at PG&E here who
7 are involved in this effort, being that we've had
8 some new staff and staff changes, as well. Pat
9 Eilert is our Program Manager for codes and
10 standards; if he'd just raise his hand; he's
11 sitting out here in the audience.

12 Ed Elliot is a Senior Project Manager at
13 PG&E who has been helping, and will eventually be
14 taking over for me in this area. And Lianne
15 Williams is a new Associate Engineer who's also
16 helping with codes and standards.

17 So we have for you this morning 29
18 topics. We realize that the Commission resources
19 are limited and we may not be able to initially
20 address all of those. We believe that all 29
21 topics, however, are cost effective and are
22 merited in terms of their consideration.

23 Of these, 12 are lighting related; seven
24 are related to consumer electronics and plug
25 loads; three are related to HVAC and

1 refrigeration; and seven are miscellaneous.

2 We're prioritized these recommendations
3 and case studies, particularly with respect to
4 Assembly Bill 1109. And you will see that we've
5 given our recommendations a high priority, the
6 highest priority, that is, a high priority, medium
7 and so on, based on how we think they relate to
8 your legislative requirements in this proceeding.

9 The next slide we have shows an estimate
10 of the overall energy savings at time of full
11 replacement if all of these measures are adopted
12 on schedule. About 1710 of the measures -- pardon
13 me, 1710 gigawatt hours are subject to federal
14 preemption, and we're a little uncertain about the
15 potential savings there, as the outcome depends at
16 least in part on action of the federal government.

17 We'd like to also show you the
18 implications of this in terms of megawatts. In
19 2005 our Title 20 efforts were the equivalent of
20 about two combined cycle gas-fired power plants.
21 The opportunity associated with the
22 recommendations we're making here in 2008 are
23 slightly over that. So demand reduction is
24 critically important in terms of utility economics
25 and consumer economics and price. And these

1 recommendations have a significant impact in that
2 area.

3 We're also showing you what the total
4 potential impacts are with respect to greenhouse
5 gas reduction after stock turnover. And you'll
6 notice that if all of our recommendations are
7 adopted on schedule it amounts to about 11 percent
8 of the electricity greenhouse gas reduction goal.

9 Eleven percent may not seem like a very
10 big number; on the other hand, this just serves to
11 illustrate that it's critically important that the
12 California Energy Commission act aggressively in
13 this area to get whatever savings each of these
14 opportunities has to offer as the statewide
15 strategic goals are very aggressive.

16 The next slide, which Alex will go into
17 greater detail later, shows the annual electric
18 savings by measure that we're discussing. And
19 rather than speak to those individually, I would
20 just ask you to take a close look at the slide.

21 I think a couple of measures in here
22 that have high opportunity that have recently been
23 suggested are portable lighting fixtures and game
24 consoles. Actually, Gary Flamm of the California
25 Energy Commission suggested portable lighting

1 fixtures and we agree, given the federal
2 involvement with general service incandescent
3 lamps, there's a tremendous opportunity here in
4 California to take a look at portable lighting
5 fixtures with respect to the energy savings that
6 might be achieved through those measures.

7 The next slide here looks at the same
8 measures in terms of their megawatts of peak
9 demand reduction. In consideration of the Huffman
10 Bill, Assembly Bill 1109, we are specifically
11 looking at ten measures having to do with
12 lighting. And we believe this will help the CEC
13 with respect to trying to come into compliance
14 with the requirements of the Huffman Bill.

15 That concludes my brief introduction,
16 and I'd like to turn the presentation over to Alex
17 Chase to continue.

18 MR. CHASE: Thank you, Gary. As Gary
19 mentioned, we are -- in our presentation we have
20 29 specific topics. Because our time is limited,
21 and since I know a lot of folks here have other
22 presentations to present, my general approach will
23 be to highlight just a couple key points for each
24 of our standards focused on AB-1109 topics and
25 consumer electronics and plug loads, which we see

1 as the two significant opportunities here.

2 I would encourage folks to download our
3 presentation to get further details. For each of
4 the topics we've provided estimated stock and
5 sales in California, energy and demand savings
6 estimates, and potential savings from our proposed
7 standards levels.

8 In addition, by January 30th we will be
9 submitting detailed case reports and/or CEC
10 templates that will provide a comprehensive
11 technical, economic and market information for
12 each of the topics related to this workshop.

13 The first topic I'd like to discuss is
14 general service lighting. And as Harinder
15 mentioned in the earlier presentation, the federal
16 bill set tier one levels that would become
17 effective 2012 through 2014, and gives California
18 the opportunity to move those dates up one year
19 for each bin.

20 And the subsequent tier two standards,
21 which are to be determined on the federal level,
22 California can adopt those levels January 1, 2018.
23 So we are recommending that the CEC adopt general
24 service lighting standards as early as permissible
25 as the federal bill allows.

1 And in the afternoon session we will
2 have Chris Calwell on behalf of PG&E present a
3 more detailed discussion on general service
4 lighting and the implications for the AB-1109
5 bill.

6 The next topic is linear fluorescent
7 fixtures. And for this topic we propose that the
8 Commission set ballast efficiency standards for
9 new commercial and residential fixtures that are
10 four foot and eight foot in length. Primarily the
11 standard will be based off the Consortium for
12 Energy Efficiency, CEE, high-performance T8
13 specification levels.

14 And in some cases we may recommend
15 standards that slightly go beyond CEE levels in
16 product areas where there has been significant
17 growth in new, more efficient products.

18 This topic has a relatively significant
19 savings opportunity compared to the other topics
20 discussed today; represent nearly 2000 gigawatt
21 hours a year in savings after stock turnover; and
22 approximately 560 megawatt peak demand reduction.

23 The next topic is portable lighting
24 fixtures which Gary mentioned earlier. And we
25 recently added this primarily in response to the

1 aggressive AB-1109 goals. And we're currently
2 assessing a couple standard scenarios and will
3 most likely recommend a tiered approach to this
4 standard. We're setting certain levels that
5 become more stringent in phases.

6 One of the standards options that we're
7 currently assessing is to limit the maximum total
8 fixture power draw such as around 35 watts per
9 fixture. And an alternative approach is we're
10 looking at requiring fixtures that meet the
11 current EnergyStar specification levels.

12 The next topic is metal halide fixtures.
13 And California set efficiency standards for this
14 during the last cycle. The recent federal energy
15 bill explicitly excludes California's metal halide
16 fixture standards from preemption and provides a
17 one-time opportunity for the CEC to adopt revised
18 standards by January 1, 2011.

19 Therefore, we recommend the CEC adopt
20 revised standards that require metal halide
21 fixtures to have equivalent -- electronic or
22 equivalent efficiency ballasts. Specifically we
23 recommend ballast efficiency of 90 percent for 150
24 to 300 watt fixtures, and 92 percent for 300 to
25 500 watt fixtures.

1 This is a -- the next topic is
2 decorative string lights, and this is a photo of a
3 number of different types of decorative string
4 lights, both incandescent and the increasingly
5 popular LED decorative string lights.

6 We recommend at two-tiered standard
7 approach for these lights. Tier one would set a
8 maximum power level draw at .25 watts per lamp;
9 and a tier two standard would set a maximum power
10 level at .1 watts per lamp.

11 Tier two essentially would require low
12 wattage incandescents or LEDs. And tier two would
13 establish the majority of decorative lights being
14 LED.

15 We've also been assessing the
16 opportunities for standards for nightlights. And
17 ECOS Consulting, a partner on our technical team,
18 has been testing dozens of these nightlights,
19 three of which are shown here in the picture.

20 On the left is a nightlight used for way
21 finding, in the center for signal, and on the
22 right a nightlight is basically a novelty light.

23 We are recommending that the CEC adopt
24 standards that set the annual energy use per
25 nightlight at less than or equal to 3 kilowatt

1 hours per year with a maximum of 0.5 watts limit
2 for standby power.

3 Nightlights on the market will meet this
4 standard primarily through utilizing low power
5 light sources such as LEDS and/or automatic
6 switches such as motion detectors and photo
7 switches.

8 The next topic, which again we've
9 recently added, is shelving lighting systems.
10 Again, this is a product that could help
11 California prepare to meet the commercial goals of
12 AB-1109, which is a 25 percent reduction in both
13 indoor and outdoor lighting.

14 This photo here was taken by Kate Conway
15 of LED Consulting, another partner on our team.
16 It basically shows a drugstore that has five
17 vertical shelves, each shelf has about 25 linear
18 feet of linear fluorescent lighting. And it
19 appears that the shelving units come with the
20 lighting with it.

21 We are currently assessing standards
22 opportunities and we recommend that California
23 consider standards that could be similar to the
24 current Title 20 standards for under-cabinet
25 lighting.

1 Next topic is illuminated address
2 numbers. We are recommending that the standards
3 be set primarily aimed to replace the existing
4 incandescent lighting products in the market with
5 LED products, with photoswitches to eliminate
6 these address number signs being on 24 hours a
7 day.

8 Next topic is dimming ballasts. For
9 dimming ballasts we propose that the Energy
10 Commission consider efficiency standards for
11 dimming ballasts, looking to harmonize with the
12 proposed levels in the expressed Title 24 45-day
13 language.

14 That concludes the cluster of lighting-
15 related projects that could help California meet
16 the aggressive goals of AB-1109.

17 And the next cluster of slides I'd like
18 to present are seven topics related to consumer
19 electronics and plug loads. We currently have
20 seven topics, including television, set top boxes,
21 video display equipment, battery chargers, game
22 consoles plug-in luminous signs and power supplies
23 for signs that all fit in within this category.

24 And I think, as many folks in this room
25 are probably aware, electronics represents one of

1 the rapidly growing end-use sectors within
2 California. Energy Solutions conducted a study
3 for PG&E's mass market sector, which is primarily
4 residential and small commercial, showing various
5 scenarios for load growth within that sector,
6 looking at 33 unique electronic devices.

7 And this graph here shows the bottom bar
8 -- bottom axis is 2005 through 2010. On the left,
9 which is represented in the bars, is gigawatt
10 hours per year. And the line graph represented by
11 the percentage is the percentage of consumer
12 electronics as a part of the overall mass market
13 electricity use.

14 And you can see how the bars are rising,
15 and in this one scenario the relative end use goes
16 from about 18 percent in 2005 to 26 percent in
17 2010.

18 Now, these numbers may be off by a
19 percentage point or so. But the illustrative
20 example here, which is represented in other
21 studies looking at similar things, is that this is
22 one of the fastest growing end-use segments.
23 Which is why we are prioritizing these seven
24 topics as high-priority topics going forward.

25 The first topic in this category is

1 battery chargers. And as Harinder mentioned, some
2 of the details specific to that, our general
3 recommendation is that the CEC set standards for
4 active maintenance and no battery modes.

5 And we also recommend that the
6 Commission utilize the battery charger test
7 procedure developed by ECOS Consulting in EPRI,
8 which was funded by PG&E and CEC PIER. And,
9 again, in the afternoon session the PG&E technical
10 team will present a more detailed presentation on
11 battery chargers relative to the federal bill, and
12 more specifics in terms of what we recommend.

13 The next topic is televisions. Most
14 people here are probably familiar with some of the
15 common tv trends, generally getting bigger,
16 average usage time is increasing, and there's a
17 trend towards high-definitions capabilities. Tvs
18 will soon outnumber people in the United States,
19 and the average household is watching over eight
20 hours of tv per day.

21 The current energy use of tvs in
22 California is approximately seven gigawatt hours
23 per year, representing about 5 percent of all
24 residential electricity.

25 We're recommending that California set a

1 standard that addresses active mode. And
2 following up on the standard that addresses a
3 maximum standby level. Primarily because active
4 mode accounts for about 85 to 90 percent of the
5 tv's overall energy use.

6 For an illustrative example here we have
7 shown the savings for setting the standards,
8 standards set at the proposed EnergyStar
9 specification levels, which will become effective
10 in November of this year.

11 Currently estimates from EnergyStar is
12 30 percent of the tvs on the market today will be
13 able to meet that EnergyStar level. In that
14 hypothetical standard scenario California would
15 achieve about 2300 gigawatt hours per year after
16 stock turnover.

17 Next topic is digital set-top boxes for
18 cable and satellite purposes primarily. Set-top
19 boxes are one of the fastest growing product
20 categories that we're studying. The stock in
21 California was estimated to increase about 130
22 percent from 2005 to 2010.

23 And perhaps the most significant energy
24 characteristic is the fact that on average about
25 80 percent of energy consumption occurs in standby

1 mode when most users perceive the device as being
2 off.

3 Therefore, we're recommending that the
4 Commission consider a standard that has at least
5 two elements. One is to set a maximum standby
6 level at or around 10 watts; and to require the
7 set-top box to have an auto power down feature
8 after a certain length of time, for example four
9 hours or so.

10 The next topic is video display
11 equipment. And primarily this covers computer
12 monitors, but we're also looking at standards
13 opportunities for nonconsumer professional
14 displays which are increasingly being utilized in
15 such places as airports, retail stores and hotels.

16 We recommend that the Commission
17 consider standards for all operating modes on
18 standby and off. And we also will most likely
19 recommend a tiered approach. We're currently
20 looking at savings approaches that would set the
21 first tier at the current EnergyStar specification
22 level for the first tier, and then going more
23 stringent in subsequent years. I should note that
24 the computer monitor EnergyStar specification has
25 been effective since January 1, 2006.

1 We're also studying the opportunities
2 for setting standards for game consoles. And this
3 is similar to set-top boxes where we are
4 recommending that they have a auto down power
5 requirement and a maximum standby power level.
6 TIAX, on behalf of CEA, conducted a survey in, I
7 believe, 2006 showing about 36 percent of U.S.
8 households owned at least one video game system.
9 And for those households that owned at least one
10 system, they had an average of 1.5 systems.

11 And the general trends is with each
12 subsequent version of the major game consoles out
13 there, they're requiring higher capability, which
14 is driving the power use up in these game
15 consoles.

16 Next topic is plug-in luminous signs.
17 And here's a number of photos to illustrate what
18 types of signs we're looking at. On the top left
19 here is a -- all three up here are internally
20 illuminated box signs, that's what we're calling
21 them. And from left to right you have an
22 incandescent sign showing a pizza price; a
23 fluorescent Western Union sign; fluorescent ATM
24 sign.

25 We're also looking at exposed light

1 source signs, also known as skeleton or matrix
2 signs. And here's an example of a neon sign. And
3 right next to it is a LED sign. We're also
4 looking at pull signs as evidenced here on the
5 bottom right-hand corner. And here's another neon
6 open sign -- I'm sorry, LED open sign.

7 For these types of signs we recommend
8 that the Commission consider standards that will
9 follow two approaches. One establishing a watts
10 per square foot for different sign types. And
11 also requiring certain controls such as timers,
12 photosensors and on/off switches.

13 We're also looking at power supplies for
14 luminous outlines, text and channel letters for
15 indoor use. And again we have a number of photos
16 taken by our consultant, Kate Conway with LED
17 Consulting, looking at neon outline signs, this
18 photo up here; channel letter signs in the photo
19 in the upper right; these plug-in neon signs in
20 the lower left here; and generally looking at the
21 power supplies to the transformer for neon
22 ballasts for fluorescent signs and the circuit
23 driver for LED signs.

24 And I should mention that Edison has
25 conducted some market analysis for neon signs. We

1 are collaborating with them on aspects of this
2 study.

3 Generally we propose that the Commission
4 consider standards that are harmonious with the
5 Title 24 power supply signage efficiency
6 requirements.

7 So that concludes the cluster of topics
8 related to consumer electronics and plug load.
9 The remaining topics listed here are the three
10 topics for HVAC and refrigeration, and the ten
11 other products -- seven other products that fall
12 within the miscellaneous category. I'm not going
13 to go through each of these in detail, but, again,
14 we spell out our recommendations in our publicly
15 posted presentation and will be providing
16 subsequent case studies or CEC templates on a
17 majority of these topics.

18 I should mention that ACEEE, another
19 member of the PG&E technical team, has completed
20 case reports for residential refrigerators,
21 premium efficiency motors and fluorescent tube
22 lamps. And PG&E has successfully impacted federal
23 standards activities for motors and refrigerators.
24 And the fluorescent tube lamps, there's going to
25 be a DOE hearing in future years.

1 And we recommend that the CEC stays
2 actively involved with that, as will PG&E. The
3 potential energy savings with those measures are
4 approximately about 3000 gigawatt hours, which
5 relative to our other topics presented here would
6 put it in the top slot in terms of energy savings.

7 We also would like to recommend some
8 refinements to the current Title 20 pool and spa
9 standards listed here. I won't get into the
10 details here, but I should mention that PG&E has
11 been actively engaged with the pool and spa
12 industry and we expect that the recommendations to
13 be consensus agreements.

14 With that, this is a slide that Gary
15 introduced earlier, and it's probably worth
16 another 30 seconds going over. Again, we've
17 broken down these 29 products into highest
18 priority, high priority, medium priority and no
19 further action at this time.

20 The products that are in gold here are
21 all related to AB-1109. And the relative circle
22 size is gigawatt hours after stock turnover.

23 So, as Gary mentioned, we propose that
24 the Energy Commission consider all of these
25 standards going forward, but due to limited

1 resources and timing this is how we would
2 prioritize our different topics.

3 With that I'll turn it over to Gary to
4 provide some concluding remarks.

5 MR. FERNSTROM: So thanks, Alex.
6 Consistent with what we believe your priorities to
7 be, we'd like to recommend that you consider in
8 the first phase our recommendations for general
9 service lighting. The key topics are related to
10 AB-1109. As you've indicated, battery chargers,
11 metal halide ballasts and walk-in coolers where
12 the Southern California Edison Company is the lead
13 with respect to this proposal.

14 Not listed here you might also want to
15 consider one or two gas measures where the
16 Southern California Gas Company, Sempra is the
17 lead.

18 With respect to other timing factors, tv
19 and set-top boxes, Energy Star specifications
20 become effective late in 2008. And many of these
21 measures we're recommending are long-lived. So,
22 to come to the point where the complete market has
23 turned over will take substantial time. That
24 would indicate that it's critically important that
25 we reach some sort of decision and adoption on

1 these measures as soon as possible in order to
2 comply with the legislative requirements.

3 So, just a couple of concluding
4 comments. PG&E and the other IOUs are available
5 to assist the CEC. Our codes and standards
6 program includes recommendation for code language
7 improvement. Advocacy at the federal level, where
8 that makes sense, and training and education. We
9 have staff and technical team resources. We've
10 done market research. And so on.

11 We'd like to note the importance of
12 engaging all of the key stakeholders early in the
13 rulemaking process, so hopefully we can come to
14 some sort of consensus. And not have surprises
15 that would interrupt the quick resolution of many
16 of these recommendations.

17 We also recommend that the CEC establish
18 more definitive expectations for stakeholder
19 intervention including assertions must be
20 documented on a timely basis. And stakeholders
21 that sit on the sidelines and wait until the last
22 minute should be discouraged and not given undue
23 consideration.

24 One last concluding comment. The
25 savings opportunity we're pursuing here is large.

1 It needs to be pursued vigorously to the greatest
2 extent possible to realize the AB-32 goals.

3 Historically Title 20 has accounted for
4 a large part of both the utility and, I believe,
5 the CEC goals with respect to energy efficiency.
6 These appliance standards are, by far, the least
7 costly and most impactful tool for reaching the
8 population in general.

9 But, as we're currently proposing, our
10 recommendations represent only around 11 percent
11 of the needed impact. And subsequent rounds of
12 Title 20 will be too late to have the required
13 impact by 2020 that we're looking for.

14 So, given all of this, the costs and
15 challenges faced in scaling up the energy
16 efficiency standards are significant. And Title
17 20 needs to move quickly and aggressively in order
18 to achieve all of what we're recommending, plus
19 some more if we expect to get to the strategic
20 state and federal goals that have been outlined.

21 This concludes our presentation. Thank
22 you very much.

23 PRESIDING MEMBER PFANNENSTIEL: Gary,
24 just a conceptual question. In looking at the
25 list of possible appliances, some have fairly

1 substantial savings; and others, of course, have
2 fairly minor savings.

3 Would you recommend that we just do, at
4 some point, kind of a cutoff and say, given
5 relatively limited resources, both within this
6 agency and among the stakeholders whose
7 participation we value and really need, shouldn't
8 we really just be looking at those where you get a
9 fairly big bang for the buck?

10 MR. FERNSTROM: That wouldn't be my
11 recommendation. There are some opportunities that
12 are smaller in terms of their absolute benefit,
13 but may be less controversial and opposed in the
14 process.

15 So, I would say, in terms of
16 prioritization, we ought to pick those measures
17 that we think have the greatest likelihood of
18 success with the available resources, even though
19 some of them may be smaller.

20 PRESIDING MEMBER PFANNENSTIEL: Thanks.
21 Other questions? John.

22 MR. WILSON: Going back to Alex's
23 slides, just quickly, slide 31, when you talk
24 about consumer electronics, you had percentage of
25 mass market. What is mass market?

1 MR. CHASE: For PG&E that's primarily
2 residential with small commercial; primarily
3 commercial operations that have 100 or less
4 employees.

5 MR. FERNSTROM: So this would be
6 appliances that are sold basically through retail
7 to the general public, both to residential and
8 small commercial customers, such as outlets
9 through the Home Depot and Lowe's and so on.

10 MR. WILSON: So it's a category of
11 products, not customer classes?

12 MR. FERNSTROM: It's a category of
13 market including residential and small commercial.

14 MR. WILSON: Okay.

15 MR. FERNSTROM: We've reorganized our
16 energy efficiency programs in terms of their
17 delivery to serve different markets, what we call
18 the mass market and the targeted market.

19 Mass market is all those entities that
20 purchase through retail.

21 MR. WILSON: Okay.

22 ASSOCIATE MEMBER ROSENFELD: And what
23 was the other one, mass market and?

24 MR. FERNSTROM: Targeted market.

25 ASSOCIATE MEMBER ROSENFELD: Targeted.

1 MR. WILSON: So, Alex, looking at this
2 slide and then also the slide 8 where you had the
3 horizontal bar graph of savings by appliance type,
4 just trying to understand the big picture of how
5 those two things relate. Because some of the
6 things on this slide here on page 31 at not on
7 slide 8. I'm not quite following this.

8 MR. CHASE: That's correct. That's a
9 good question. This chart here was done for a
10 study outside of the codes and standards process,
11 kind of giving PG&E a general framework in terms
12 of what the energy use is for a number of
13 different consumer electronics.

14 So this figure here represents 33 unique
15 devices. So it also considers computers and
16 printers and fax machines that we're currently not
17 recommending to the CEC in terms of adopting a
18 standard.

19 MR. FERNSTROM: If I may I'd like to go
20 back to Commissioner Pfannenstiel's question with
21 a specific example. Someone has come up with a
22 better photocell for parking lot lighting and
23 street lighting. And what this better photocell
24 basically does is it turns the parking lot light
25 on a little later in the evening, and turns it off

1 a little later in the morning.

2 The photocell can't be set to turn on
3 and off at exactly the same light level. There
4 has to be what's called a ratio so it doesn't get
5 confused about whether it wants to be on or off.

6 Well, this one company's developed a
7 product to narrow that ratio; claims lighting
8 savings can be in the range of 8 to 10 percent.
9 This is a fairly small measure, but it seems to me
10 like it ought to be a slamdunk, a no-brainer. If
11 there are better photocells available, the state
12 should be using them.

13 So that's a small measure that I think
14 merits consideration even though it isn't really
15 significant.

16 MR. PENNINGTON: Could I ask a following
17 question to John's question? What percentage of
18 the total electricity is the mass market? This
19 slide is showing percentage of the mass market, so
20 what would this be a percentage of the total?

21 MR. CHASE: I believe it's about 43
22 percent, but I can get the exact figure.

23 MR. PENNINGTON: So, 43 percent of the
24 total is mass market?

25 MR. FERNSTROM: That would be my guess,

1 as well. The residential market, alone, is
2 probably about a third, adding the small
3 commercial component that we believe purchases out
4 of that market. Alex's estimate is pretty close.

5 MR. WILSON: One more quick question.
6 Alex, when you were estimating the energy use for
7 these electronics products, did you look at the
8 survey that the Consumer Electronics Association
9 did and published a year ago? I'm just curious if
10 methodologically you were taking that research
11 into account.

12 MR. CHASE: Absolutely. That and other
13 studies available in addition to product testing
14 that ECOS Consulting has conducted, as well.

15 MR. WILSON: Thank you. This is an
16 impressive presentation, Gary. Thanks.

17 MR. FERNSTROM: Thank you.

18 PRESIDING MEMBER PFANNENSTIEL: Now we
19 have Edison.

20 MR. HIGA: My name is Randall Higa. I'm
21 with Southern California Edison. I manage the
22 statewide codes and standards program.

23 First I want to say thank you,
24 Commissioners Pfannenstiel, Commissioner
25 Rosenfeld, for the opportunity for Southern

1 California Edison to talk about our Title 20
2 activities. And thank you, Gary and PG&E team,
3 for their presentation. Thank you, Gary,
4 especially for sort of the overview of the codes
5 and standards program.

6 The utilities do work as a statewide
7 group and we do coordinate these activities.
8 You'll see some similar projects that we're
9 working on, in many cases jointly, to make sure
10 that we're covering all aspects of a particular
11 subject matter and/or all parts of the state.

12 Also want to say that I work with a team
13 at SCE in the design and engineering services
14 group. We have a number of project managers who
15 manage these projects that we'll be talking about.
16 One is in the audience, who's hiding back, Vireak
17 Ly. Wave. One of our lighting experts.

18 We also work with a number of other
19 organizations and consultants including the
20 California Lighting Technology Center, led by
21 Michael Siminovitch, who's back there. And other
22 consultants such as HMG, Nancy Clanton, Jim Benya,
23 ADM. We also do some of the cooling-related items
24 with the Western Cooling Efficiency Center.

25 And last, but not least, one of the

1 primary groups that are in SCE that are working on
2 Title 20 items is our refrigeration and thermal
3 test center led by Ramin Faramazi. And he will be
4 also presenting, as part of the SCE presentation,
5 on some of the refrigeration items. So he'll come
6 up and deliver part of this presentation, also.

7 The way I've broken up this presentation
8 is to talk about first the lighting-related AB-
9 1109 issues; some of the completed, current and
10 future things that we're looking at. And then
11 we'll cover some of the preemption items which
12 primarily relate to the refrigeration-related
13 item, and then other items, other topics that
14 we've been working on.

15 So, timing-wise on some of these, we are
16 looking at trying -- we haven't identified the
17 timing of all the projects that will be talked
18 about today. Some of them are more immediate and
19 more ready for putting into regulations. And
20 others may be something that we want to look at,
21 scope out for future regulations. But that's
22 something that we have some flexibility on.

23 So let me get right into the AB-1109
24 items. These are projects or phases of projects
25 that have been completed. As noted earlier, we've

1 been doing some survey market assessment work on
2 neon lighting. And by the way on these AB-1109
3 items that I talk about here, we'll be talking --
4 we have more detail on these that we'll be
5 presenting in the afternoon. So I just want to
6 sort of go through really quickly right now.

7 The neon study was basically looking at
8 what percentage of neon lights are indoors, what
9 percentage are outdoors. Also, an of that what is
10 plug-in, covered probably more likely by Title 20
11 and those that are hardwired.

12 Now, a lot of the signage-related things
13 we did work with the sign industry, and again
14 we'll talk more about some of the results of that
15 survey and what that could potentially mean, and
16 how that could potentially fit in with some of the
17 work that PG&E's doing.

18 Low ambient task lighting project was
19 sort of a survey type work that we did, looking at
20 the behavior of workers working in cubicles. If
21 they have the ability to dim their ambient lights,
22 their overhead lights, with having task lights,
23 how much dimming will they actually do to their
24 overhead lights, given a variety of different
25 sorts of task lights and under-cabinet lights.

1 And what, you know, cut to the chase, we
2 found that when you have good task lighting
3 available and efficient task lighting, such as LED
4 task lighting, you have the potential to reduce
5 overall energy because most people or many people
6 in the survey did reduce the amount of overhead
7 lights when they had the task lighting available.

8 So that was kind of an interesting
9 thing. And this sort of, again, fits in with some
10 of the dimming ballast-related type things that
11 PG&E is doing. And also starting to look at the
12 effectiveness and what sort of task lighting we
13 may want to look at as being regulated as part of
14 Title 20.

15 Fluorescent sign lamp efficacy. One of
16 the things that we looked at in talking with the
17 sign industry is that we can't immediately jump to
18 T5, T8 type lamps. So we decided let's work with
19 T12 lamps and see if we can improve the efficacy
20 of those lamps.

21 And with T5 and T8s, going to a rare
22 earth tri-phosphor coding, you can increase the
23 efficiency. So we tried doing that. So the idea
24 was let's apply that technology to T12 lamps and
25 see if we can improve the efficacy.

1 And then once you do that then you have
2 to, to really get any energy savings, you're going
3 to have to change the spacing of the lamp. So
4 there's some component of what the geometry of the
5 lamp placement is within the signs.

6 We worked with one manufacturer of lamps
7 and unfortunately, with the tri-phosphor coating
8 we did not get the energy savings or efficacy
9 improvements that we were expecting. So we're
10 going to be actually continuing this study and
11 working with other manufacturers and see if we can
12 improve the efficacy of those lamps.

13 This is a Title 20 workshop, but I just
14 wanted to mention that there are some Title 24-
15 related things. Certainly, I mean AB-1109 is
16 going to be have to be met, not just with Title
17 20, but also Title 24, especially to get at some
18 of the nonresidential lighting.

19 And just mentioning some of the other
20 projects, as I mentioned, that ambient task
21 lighting, I think does have both Title 20 and
22 Title 24 implications.

23 Current projects that we're working on
24 now, dimming ballasts. What we're doing with this
25 is again sort of a market assessment study. We're

1 doing interviews and conducting surveys with
2 specifiers of light, of ballasts, to see how many
3 of them, how often do they specify dimming
4 ballasts; if not, why not. And then if they do,
5 what has their experience been with the use of
6 those dimming ballasts.

7 Again, it's sort of a market potential
8 study. Again, this will help feed into some of
9 the other dimming ballast work that's being done
10 by PG&E and others.

11 I just wanted to mention the super CFL
12 group that has been convening. The purpose of
13 that group is to develop specifications and CFL
14 lamps that have the ability to dim; high color
15 rendition index; and I'll say a more preferable
16 color temperature.

17 It's a statewide program, meaning that
18 all the utilities are involved, some industry, and
19 also -- and even SMUD is involved with this super
20 CFL group.

21 Again, some Title 24 projects that we
22 are working on, also, in concurrence with our
23 Title 20 work.

24 Items that we're looking at. As I
25 mentioned, task lighting. We had some experience

1 with LED task lighting, both under-cabinet as well
2 as portable. And I'll talk more about some of the
3 findings of that study in terms of what we found
4 as important drivers for getting these types of
5 products more into the market, and a way to
6 regulate them effectively.

7 We're going to be probably looking more
8 at the office, nonresidential applications. So it
9 will sort of dovetail with the PG&E work that's
10 doing mostly residential, but obviously there will
11 be some overlap that we'll be coordinating on.

12 Neon lighting kits. Again, we're
13 looking at various things. I'm not going to go
14 into too much detail on that right now.

15 Ceiling fan and landscaping lighting
16 kits. These are interesting ones. Actually the
17 ceiling fan is the interesting one. We have
18 another related to that, but they're really
19 hardwired devices. But they're something that you
20 go into Home Depot and people generally don't hire
21 contractors to put these in. They just buy them
22 and put them in, themselves. So they're kind of
23 effectively plug-in appliances.

24 So we're looking at what sort of way
25 that they can be regulated. Again, maybe sort of

1 a maximum wattage type of requirement there.

2 Landscape lighting kits. Again, we're
3 talking about the malibu-type plug-in lights,
4 either for pathway lighting and/or, you know,
5 landscape lighting of trees, et cetera.

6 Lighting options for vending machines
7 and beverage coolers. Because our refrigeration
8 test lab does a lot of work with vending machines,
9 this is sort of a natural part of that work there.
10 And, again, perhaps having a maximum wattage
11 requirement for the front of the vending machines.

12 And this is one area where, again, we've
13 worked with industry to get an understanding of
14 what the lighting requirements are, and the
15 importance of the marketing requirements for that
16 light level. So, again, we're looking at ways for
17 those requirements to be met, but doing it with
18 lower energy use.

19 Directional lighting. We're looking at
20 lamp types that are more directional in nature.
21 Again, we're not sure on how we're going to be
22 approaching this. I think this is really an early
23 sort of scoping type that we would look at doing.

24 Lighting controls, the same way. LED
25 open signs. Again, working with PG&E on that, and

1 also the sign industry.

2 Again, on all these sign industry things
3 we're working very closely with the sign industry
4 to see, you know, what makes sense and on the
5 timing and how to incorporate these into
6 regulation.

7 Track lighting kits. That's one that's
8 similar to the ceiling fans that are hardwired,
9 but still sometimes you buy in a box, go home and
10 install it.

11 Again, the communicating -- with ballast
12 luminaires. Again, perhaps progress from the
13 survey work we've done, looking at the outcome of
14 the survey, seeing what needs to be done there.
15 Again, working with PG&E. Also looking at the
16 demand response sort of opportunities with that.

17 Luminaire efficacy. Again, PG&E is
18 doing a lot of that with linear fluorescents. We
19 may want to look at other types of fixtures.
20 Again, that would be more of a scoping thing. And
21 the same with the regulation, looking at that for
22 non-A lamps.

23 With that, I'm going to go to the
24 technologies subject to preemption, which are the
25 refrigeration items. So I'm going to turn this

1 over to Ramin. And I'll come back at the end for
2 other items and a wrap-up.

3 MR. FARAMARZI: Good morning, Madam and
4 Mister Commissioners. I'm going to follow the
5 same structure that Randall is following with
6 respect to the projects, past, present and the
7 future projects that we have envisioned for
8 primarily technologies that fall into the
9 preemption areas.

10 And it happens to be that most of them
11 are refrigeration-related. And since I'm
12 overseeing the operation of the refrigeration and
13 thermal test center at Southern California Edison,
14 I have pretty much managed to come up with a list
15 for this presentation today.

16 I would like to start by talking about
17 the projects that we have completed, and we do
18 believe that these projects would be subject to
19 preemption. One of them is vending machines.

20 In the past four years, Southern
21 California Edison has been working fairly
22 intensively on the area of vending machines. We
23 have about half-a-million vending machines in
24 California estimated. And most of these machines
25 are either used in indoor or outdoor applications.

1 Currently Title 20 does regulate vending
2 machines, and the standards currently follows
3 EnergyStar tier one levels. And as of July 1,
4 2007, EnergyStar tier two has become effective.
5 And yet Title -- and also at the same time the
6 DOE's federal standards is considering vending
7 machines for inclusion in the upcoming standards.
8 And they have not yet developed energy consumption
9 data for it. And they anticipate to have this
10 information, standards, also available as of 2012.

11 We have been working with the federal
12 government to provide them with a lot of the
13 research work that we have done in the past. And
14 that has become basically the basis for some of
15 their standard development activities.

16 We have looked at the closed front and
17 glass front vending machines and both indoor and
18 outdoor applications, and we have a lot of
19 information on these projects that we have shared
20 with the federal government.

21 The current projects that we have that
22 are subject to preemption primarily fall into the
23 display case, refrigerated display case area. And
24 a little background about the refrigerated display
25 cases.

1 Again, we worked very closely with the
2 federal government and also their consultants to
3 provide them with the research data that we had on
4 open vertical display cases for most parts. And
5 then some region display cases.

6 The federal government is planning to
7 have standards that become effective as of 2012.
8 And we have provided a lot of information to the
9 feds and we think that the federal government is
10 really on the right path to establish a fairly
11 robust set of standards. And it's a fairly
12 complicated area, and we think that we might not
13 see feasible or advisable at this point for
14 creating a set of standards in California before
15 2012. And just wait for the federal standards to
16 become effective.

17 At this point, as part of our case study
18 for display cases, we're trying to document
19 everything that we have done with the federal
20 government with respect to the research and past
21 projects. And we have -- we are planning to
22 include them in a case study report.

23 We're also working on a scoping project
24 covering multizone heat pumps. And then some of
25 the future projects that we're considering falls

1 into the wide category of the walk-ins.

2 A little background about the walk-ins.
3 Edison worked closely with the American Council
4 for an Energy Efficient Economy and ARI to draft a
5 federal legislation which passed in December of
6 2007, that governed walk-ins, walk-in coolers and
7 freezers, with less than 3000 square foot
8 footprint.

9 As of 2008, federal government will
10 establish standards, prescriptive standards,
11 following essentially Title 20's footprints. And
12 starting in 2012 then would switch over to
13 performance-based standards which will include the
14 energy consumption of walk-ins based on their
15 sizes and all that in different climate zones.
16 And they would have a size and source energy
17 targets as of 2012.

18 However, we do think that from now till
19 2012, or at least 2011, California has a great
20 opportunity to establish more stringent standards
21 for the walk-ins beyond what the federal
22 government has considered.

23 In my next slide -- I apologize for the
24 slide, the fonts here -- what I've tried to do
25 here is to give you a quick, at-a-glance overview

1 of how the California standards, here on the left-
2 hand side column, compares to the proposed federal
3 language for the walk-ins.

4 In a nutshell what is important is that
5 in the area of lighting, California standards do
6 not address lighting, and the federal government
7 has set some minimum standards for lighting in
8 walk-ins, both coolers and freezers. So here is
9 an opportunity for us to work on the lighting.

10 The other area is infiltration barriers.
11 Currently we do not have any requirements under
12 our prescriptive regulations for walk-ins with
13 respect to infiltration barriers. Infiltration
14 barriers include any technologies, such as strip
15 curtains, air curtains, or swinging-type doors
16 that would prevent the infiltration of the warm
17 and moist air adjacent to the cold environment of
18 freezers and coolers.

19 And the federal government currently has
20 strip curtains and spring-hinged doors as part of
21 their minimum requirement for infiltration area.

22 Neither one of the standards, California
23 nor the federal standards, do address defrost
24 technologies. And this is another area that we
25 wanted to talk about today.

1 With that said, we are planning to set a
2 new project starting in this year that would look
3 at the effectiveness of different infiltration
4 barrier technologies, including strip curtains,
5 spring-hinged doors, door gaskets and air curtains
6 in walk-in coolers and freezers to quantify the
7 demand that energy impact of these technologies
8 under different weather conditions. So we're
9 going to actually change the ambient conditions,
10 and also assimilate or replicate the climatic zone
11 variations in order to quantify the savings in the
12 16 climate zones that we have in California.
13 Again, Title 20 currently does not address the
14 infiltration barriers at all.

15 Another technology that we're interested
16 in looking into is the use of variable speed
17 evaporator fans for walk-ins when the cooling load
18 of the walk-in freezers and coolers start reducing
19 and the system, and the walk-in box or the
20 refrigerator system for the box meets the
21 thermostatic setpoints, typically the compressor
22 shuts off.

23 At that point typically fans, evaporator
24 fans continue operation. What we are proposing
25 here to test in our test chambers is the testing

1 of a new technology that would actually, with the
2 use of a proper algorithm, would look at the
3 effects of reduction in the cooling load and
4 accordingly reducing the speed of the fan so that
5 we create some fan energy.

6 And when the system shuts off we operate
7 at the lowest speed of the fan. And as the
8 thermostatic setpoints, as the temperature inside
9 the box goes above the setpoint we start speeding
10 of the fan. And if, at the maximum speed of the
11 fan we have not satisfied the cooling
12 requirements, we will kick in the compressor to
13 commence.

14 Defrost technologies. Right now many of
15 the small walk-in freezers that we have in the
16 State of California rely on electric defrost
17 mechanisms. We would like to provide intelligence
18 and information with respect to demand and energy
19 impacts of switching over from electric to
20 potentially hot gas defrost; and quantify that,
21 again, for 16 climate zones in realistic operating
22 conditions.

23 Also looking at termination
24 methodologies. Currently many of the walk-in
25 boxes used in food service and also in

1 supermarkets rely on timeclock time-initiative and
2 time-terminated defrost mechanisms. We're
3 interested in seeing if we can go to a temperature
4 termination and quantify that and provide that
5 intelligence to all the stakeholders in the
6 process.

7 And in that process we are interested in
8 looking at some of the newer emerging technologies
9 that might impact defrost, such as advanced
10 controllers.

11 And with the area of anode heat
12 controls, almost all of the walk-in's solid doors,
13 walk-in freezers and walk-in coolers are equipped
14 with anodes with heater systems. So these anodes
15 with heaters are like resistant heaters that are
16 constantly providing heat to the perimeter of the
17 doors. And they're on at all time to prevent the
18 freeze-shut conditions of the doors.

19 Now, even if the humidity levels and the
20 adjacent space to the freezer is pretty low, still
21 these heaters are operating.

22 What we would like to address with this
23 project is to test the performance of advanced
24 controllers that are based on the humidity level
25 in the space adjacent to the walk-in cooler and

1 walk-in freezer and see if we can quantify the
2 energy and demand savings associated with
3 operating such controllers, and provide that
4 information for both medium- and low-temp
5 applications to all the interested parties.

6 We are proposing to conduct a whitepaper
7 study, so everything that I have said so far
8 pretty much relying on actual scientific testings
9 in our test chambers. This particular project,
10 the construction of the walk-ins, with respect to
11 moisture barriers and also the levels of
12 insulation, we propose this project to be a
13 whitepaper study. And kind of investigate the
14 best practices for specifying and building and
15 constructing walk-ins with respect to the
16 selection of the panels and the moisture barriers,
17 and the use of proper material for a more robust
18 and tight operation of the walk-ins in general.

19 As I mentioned, currently Title 20 does
20 not address any lighting-related requirements.
21 And we would like to propose a project that looks
22 at the efficacy of the type of fixtures that can
23 be possibly applied to walk-in freezers and
24 coolers and possible use of occupancy sensors.

25 And at some point, based on some metrics

1 that would be reasonable, we would like to see if
2 we can have some kind of a lighting power density
3 designator for walk-in spaces, depending on their
4 sizes.

5 Another area that we have identified to
6 be of interest to the industry based on our
7 exposure to the industry is that currently there
8 are not many simulation models out, simulation
9 models available that would simulate or model the
10 performance of the walk-ins.

11 And DOEII, currently, II.2, is supposed
12 to model walk-ins in a reliable way. And many
13 people have started using it in the industry.
14 What we would like to do is benchmark the
15 effectiveness of such design tools like -- or
16 simulation tools like DOEII.2R by Ashley,
17 replicating the conditions that we have in our lab
18 into a model. And see if the model can predict
19 the energy usage according to our test data.

20 Flooring selection is not addressed in
21 the Title 20 language. And in the low-temp
22 applications we would like to investigate that and
23 modify the language in the current code with
24 respect to requirements for floor insulation.

25 Floor insulation in low temperature

1 walk-ins has two purposes. One is the thermal
2 resistance and reduction of the conductive heat
3 transfer into the box. At the same time it
4 prevents it from the ice heating that would
5 ultimately damage the integrity of the floor and
6 the walk-in construction. And this requirement is
7 currently in the federal standards.

8 Other current projects that we're
9 working on. Currently in the Title 20 we have a
10 regulation that covers ice machines, but the
11 spirit behind that regulation is pretty much based
12 on the cube-type ice machines. We believe that
13 nugget-type ice machines consume significantly
14 less amount of energy than cube-type machines.
15 However, the current standards does not address
16 nugget-type ice machines.

17 And what we are actually conducting
18 right now in our lab, we are conducting a project
19 that we're looking at a common-type nugget-type
20 ice machine. We would like to see the performance
21 of this machine, quantify the performance of this
22 machine under different operating conditions
23 similar to what typically food service and also
24 supermarkets are exposed to. And, again, model
25 the -- not model, but quantify the savings for all

1 16 climate zones by using our test equipment.

2 We are also looking at the spot air
3 conditioners. And this is the end of the
4 refrigeration-related technologies that I had
5 planned to cover. Again, most of the technologies
6 that I mentioned are to be tested in our test
7 chambers using our research equipment. And some
8 of them are whitepaper studies.

9 And with that I can turn it over to
10 Randall for some closing remarks.

11 MR. HIGA: Thanks, Ramin. I just wanted
12 to run through a few of the projects that we have
13 in mind and/or we're working on.

14 One is, you know, looking at elevators
15 and escalators, currently they aren't regulated at
16 all. So it's something that we may want to look
17 at for the purpose of regulation. And there
18 certainly are some other -- there are on the
19 market, you know, regenerative sorts of systems
20 that capture energy as elevators descend, et
21 cetera. So there's opportunity for energy savings
22 there.

23 Commercial electric dryers. That's
24 something that we're going to tag onto the dryer
25 project that you'll hear next from Sempra on the

1 gas side. VAV LEV fume hoods. This has been one
2 of the favorite big energy savers out of Savings
3 by Design, the new construction program. So we
4 know that there's proven, cost effective
5 technologies there. We just need to think about
6 what we may want to do to include that in some
7 sort of regulation.

8 Same with VAV kitchen exhaust. Hasn't
9 been as popular, but again, systems are out there
10 on the market that do meet code and are available;
11 perhaps not yet cost effective, but something we
12 want to look at.

13 Few other things. Fault detection
14 diagnostic systems for HVAC package units.

15 ASSOCIATE MEMBER ROSENFELD: Hold on one
16 second while you're at the slide on escalators and
17 elevators. We've been thinking about something on
18 escalators and elevators. In Europe and Japan a
19 lot of escalators sense that there's nobody on
20 them and turn off. And then are turned on by a
21 personnel detector or a switch.

22 Have you been thinking about that?

23 MR. HIGA: We've certainly thought about
24 that one. We're aware of that. Currently we have
25 a third-party program in our energy efficiency

1 portfolio for escalators. And it's a control
2 system where the escalators are always operating
3 at a constant speed.

4 But because escalators are designed for
5 500 pounds on each tread, it requires a tremendous
6 amount of power to run that.

7 And there's a control system that I'm
8 not exactly clear on the technology, but it does
9 reduce power when there is no load on the
10 escalator. And there's apparently a fair amount
11 of savings with that.

12 It's a relatively new program, so we're
13 waiting to see what the outcome of that program
14 is, and to see how that technology actually works
15 in the marketplace.

16 But I think there's some promising
17 things there, because it gets away from that issue
18 of the concerns of escalators stopping and
19 starting that some people have here in this
20 country. And it overcomes that by having the
21 escalator run all the time, but with a potentially
22 lower energy use.

23 ASSOCIATE MEMBER ROSENFELD: I find that
24 a little hard to understand, that is it's a --
25 thank goodness it's a property of an electric

1 motor that if it's unloaded it doesn't take much
2 power anyway.

3 And certainly if you go to an escalator
4 in Germany or Scandinavia or England, you know,
5 most of the nonbusy time it's just off.

6 MR. HIGA: Right.

7 ASSOCIATE MEMBER ROSENFELD: So we ought
8 to coordinate on that.

9 MR. HIGA: Yes.

10 ASSOCIATE MEMBER ROSENFELD: The other
11 analogous question is elevators. I think that in
12 Europe a lot of elevators regenerate, so the
13 elevator which is going down powers the elevator
14 which is going up. And have you thought about
15 that?

16 MR. HIGA: Yes. One of the major
17 manufacturers of elevators has introduced that or
18 made that available. And they actually had a
19 booth at GreenBuild in Chicago this year. So I
20 spent some time talking with them about, you know,
21 the potential for that.

22 I was very interested in the retrofit
23 opportunities of that. They haven't really said
24 that's available without replacing the whole drive
25 system. But it certainly would be available in

1 new construction.

2 So, certainly that's sort of the idea
3 where this item came from is that there's actually
4 a manufacturer, you know, promoting this as a
5 viable system.

6 ASSOCIATE MEMBER ROSENFELD: Well, I
7 realize both you and I may be in the wrong
8 workshop; that is this is really a Title 24 issue
9 and not a Title 20 issue. Because it's new
10 buildings.

11 MR. HIGA: Yes. It may be more of a
12 Title 24 issue. And that's true.

13 PRESIDING MEMBER PFANNENSTIEL: Randall,
14 I would like to go back to Commissioner
15 Rosenfeld's question about the escalators, though.
16 I'm afraid I didn't really understand your
17 response.

18 Are you examining the potential for
19 escalators that don't run when nobody's on them?

20 MR. HIGA: Okay, yeah, there is a case
21 study that Sempra has been working on, --

22 PRESIDING MEMBER PFANNENSTIEL: Okay, so
23 we'll hear about that --

24 MR. HIGA: -- and they'll talk about
25 that when it's their turn next to do their

1 presentation.

2 MR. FARAMARZI: Also, Edison is
3 actually, with respect to the third-party
4 programs, in 2006 on their Idea Program, it's a
5 third-party administered program, we have an
6 escalator program which is looking at the very
7 similar technology that's been discussed here.

8 And that is underway, actually, we
9 started a project in 2006, and they're collecting
10 data.

11 PRESIDING MEMBER PFANNENSTIEL: But that
12 isn't the one that I think we were talking about.
13 That's a no-load --

14 MR. HIGA: Right, that's the one -- and
15 they claim that they cut the voltage down. And,
16 again, I don't quite understand how that works
17 according to their technology. But, yeah, so the
18 on/off version or the strategy, that will be
19 covered by Sempra.

20 PRESIDING MEMBER PFANNENSTIEL: Thanks.

21 ASSOCIATE MEMBER ROSENFELD: Let's see,
22 I just woke up to one email that I got in the last
23 month. There is a European community study on
24 elevators and escalators. So, at lunchtime I
25 should probably try to give you the email number

1 of Professor Almeda (phonetic) in Portugal, who's
2 chair of that study.

3 MR. HIGA: Okay, great. We'd really
4 appreciate that.

5 MR. FERNSTROM: Commissioners, this is
6 Gary Fernstrom from PG&E. If I could add
7 something. Our experience has been along the
8 lines of your comment about motors not drawing
9 very much power if they're lightly loaded.

10 Our experience has been that many of
11 these energy-saving devices intended for that
12 application have savings that are highly dependent
13 on how you do the measurement.

14 ASSOCIATE MEMBER ROSENFELD: Okay.

15 MR. HIGA: And these are just a few more
16 of the other things that we're working on. Just
17 wanted to sort of give you an idea of the kinds of
18 things we're thinking of.

19 And that's it for us right now. We
20 appreciate the opportunity to make our
21 presentation today, and we look forward to working
22 with the Energy Commission, as well as industry,
23 to, you know, move forward on these Title 20
24 activities.

25 And again, this afternoon we'll talk

1 more about the AB-1109 lighting topics. So, with
2 that, thank you.

3 PRESIDING MEMBER PFANNENSTIEL:

4 Questions? Tim.

5 MR. TUTT: Randall, Alex Chase mentioned
6 that PG&E intends, or their team intends to
7 provide the detailed case studies and/or templates
8 by 1/30 for many of the concepts they brought
9 forth in their presentation.

10 Are you on a similar timeframe, and do
11 you have similar kind of concepts about
12 prioritization of some of the issues you're
13 looking at?

14 MR. HIGA: We haven't identified which
15 topics we'll be submitting the case studies at
16 this point. We're still evaluating that. We have
17 some idea of those that have higher urgency, such
18 as the refrigeration items, and the AB-1109 items.
19 So we're going to have to internally prioritize,
20 you know, which ones we do.

21 But we do intend to submit some in the
22 near future. I don't know if it's exactly January
23 31st, but, you know, the idea is to get it in time
24 for this rulemaking.

25 PRESIDING MEMBER PFANNENSTIEL: Further

1 questions?

2 Thank you, Randall.

3 MR. HIGA: Thank you.

4 PRESIDING MEMBER PFANNENSTIEL: I think,
5 since it is noon, we're going to break now for
6 lunch rather than trying to push on for a little
7 while.

8 We will reconvene at 1:00.

9 (Whereupon, at 11:57 a.m., the Committee
10 Workshop was adjourned, to reconvene at
11 1:00 p.m., this same day.)

12 --o0o--

13

14

15

16

17

18

19

20

21

22

23

24

25

AFTERNOON SESSION

1:06 p.m.

1
2
3
4 PRESIDING MEMBER PFANNENSTIEL: We've
5 got a full agenda; we're running a bit late from
6 this morning. And I know there are a lot of
7 people here who would like an opportunity to speak
8 on this.

9 So why don't we move right along. I
10 think we're now going to the Sempra, the SDG&E
11 discussion.

12 MR. AHMED: Yes. Good afternoon,
13 Commissioner Pfannenstiel, --

14 PRESIDING MEMBER PFANNENSTIEL: Good
15 afternoon.

16 MR. AHMED: -- Commissioner Rosenfeld
17 and CEC Staff and workshop attendees. Thank you
18 for giving us an opportunity to present our
19 proposals that we have.

20 MR. SPEAKER: Louder.

21 MR. AHMED: Is this better?

22 ASSOCIATE MEMBER ROSENFELD: Yes.

23 SPEAKERS: Much better.

24 ASSOCIATE MEMBER ROSENFELD: Maybe for
25 everybody.

1 MR. AHMED: Okay. I know Gary Fernstrom
2 and Randall Higa spoke a lot about the things that
3 we do. A lot of it is collaborative, so that we
4 harmonize a lot of the activities and avoid a lot
5 of the duplication.

6 We are undertaking this case that is, a
7 lot of it has also to do with the Title 24
8 standards, and some are with Title 20.

9 On the current efforts that we are
10 looking at is standards that do not have any
11 federal standards so that there is no risk of
12 preemption. And we're looking at the test
13 standards where there are no test standards, and
14 establishing minimum performance standards.

15 We're looking at a commercial gas dryer
16 that's going to be presented in detail; HMG is one
17 of our consultants that's working on that.

18 Other appliances that we're looking at
19 is the commercial radiant heater, the gas
20 convection oven and we are also thinking about the
21 burner flame controls, barbecues and vacu-heaters,
22 and on air curtains. But some of those we have
23 not finalized any due dates on those. The one
24 that we have worked on in detail is the gas dryer.

25 Also, Randall had talked about the

1 escalators in the morning. We are looking at it
2 from the Title 24 point of view. And we have in
3 our fiat on that to work on escalators.

4 The major problem with escalators is the
5 ASME code that does not allow escalators to be
6 stopped or slowed down. So, I think one of the
7 major focuses would be to get the code changed to
8 come up with a new regulation.

9 And like I have seen in other parts of
10 the world where escalators, if nobody's occupying
11 it, it is always at a standstill. And the other
12 are based on pressure sensitivity or occupant
13 sensors and turns it on.

14 On the elevators, on the regenerative
15 control of elevators, we are going to be talking
16 to a manufacturer. We have set up an appointment
17 towards the end of this month. They'll be
18 presenting some data to us as to what potential
19 there is.

20 Right now it's only for new
21 construction. They don't have a product that
22 addresses retrofits.

23 And under regenerative they also are
24 talking about on these newer escalators with
25 smaller size motors, they reduce the shift sizes,

1 because the belts can have a shorter radius so
2 they can come up smaller motor sizes. So there is
3 potential for demand savings, as well as energy
4 savings.

5 Right now I'd like to turn it over to
6 Jon McHugh who has worked on the gas dryer
7 standard. And he's worked with Yonda Zang
8 (phonetic), also from HMG. And I'll come back and
9 if you have any questions, I'll take those after
10 Jon.

11 MR. MCHUGH: Thanks, Jerine. So first
12 off what we're looking at is regulating commercial
13 gas dryers. Currently the federal standards
14 regulate residential clothes dryers. So we're
15 looking at these commercial gas dryers, and
16 there's a lot of them, in coin-operated laundries,
17 in commercial laundromats, that sort of thing.

18 And DOE is looking at updating the
19 residential clothes dryer, but right now they
20 aren't making much progress so far.

21 And we're looking at around 16,000
22 commercial gas dryers in California. And if you
23 think about the energy efficiency measures we have
24 for the residential standards, those dryers are
25 operated a lot fewer hours. So we're expecting

1 that the standards that will be developed for
2 commercial gas dryers will be more stringent than
3 the ones that we look at for residential type
4 dryers.

5 And here are some of the issues that
6 we'll be looking at. The combustion efficiency of
7 the system. The controls. Many of you probably
8 have on your own dryers a moisture sensor that
9 rather than just setting a fixed time, there's
10 essentially a humidity sensor in the drum that
11 senses when your clothes are dry enough and turns
12 off the dryer. So that's a fairly important
13 technology.

14 The ability to efficiently control gas
15 flow and have good combustion air mixture is
16 important for the efficiency, as well as the flow
17 in the residence time of the air in the drum,
18 itself.

19 If we look at the energy savings
20 potential associated with this, making use of the
21 work that DOE has already done and reducing that
22 to the commercial gas dryer market in California,
23 we're looking at a annual savings of .3 million
24 therms per year.

25 So, the step would involve developing a

1 test and list requirement so that the
2 manufacturers are testing their equipment and
3 consumers are able to compare between an okay
4 efficiency with a high efficiency dryer.

5 And then also establish tier one
6 performance standards which would be somewhat
7 equivalent to the federal standards, which is
8 based on a test method that looks at the amount of
9 energy used to extract a certain amount of water
10 out of the clothes.

11 And probably also look at some
12 prescriptive measures, as well, such as the
13 moisture sensors. That's something that you
14 wouldn't capture in a test standard.

15 And in addition, the test and list also
16 allows the utilities to offer efficiency programs,
17 you know, incentive programs that are based on
18 exceeding the tier one standard.

19 And that's my presentation on this. Are
20 there any questions?

21 MR. TUTT: I guess I'd ask the same
22 question that I asked earlier of Edison. PG&E had
23 indicated that they were going to provide some
24 case studies and/or templates by, I think, January
25 30th. Do you anticipate following a schedule like

1 that, or are you in a different timeframe?

2 MR. AHMED: We are on schedule to
3 produce a template for the gas dryer. And we also
4 going to work and see if there is some other areas
5 that we might find and we might be able to come up
6 with potential projects.

7 PRESIDING MEMBER PFANNENSTIEL: No other
8 questions; thank you very much.

9 MR. AHMED: Thank you.

10 PRESIDING MEMBER PFANNENSTIEL: Moving
11 on to NRDC, Noah Horowitz.

12 MR. HOROWITZ: Can someone give me a
13 hand here? I'm our technology expert.

14 (Laughter.)

15 MR. HOROWITZ: Do I leave the WebEx?
16 What do you want me to do on the WebEx icon?

17 (Pause.)

18 MR. HOROWITZ: Okay, great, thank you.

19 Good afternoon, I'm Noah Horowitz, I'm a
20 senior scientist with the Natural Resources
21 Defense Council, NRDC. We're an environmental
22 advocacy group.

23 We've been very active over the last
24 five years in taking a look at the consumer
25 electronics area from an energy use and an energy

1 savings potential. And we've been very active in
2 a lot of these conversations that have been with
3 the industry, and I'm glad they're here in the
4 room to discuss things like test methods, and
5 testing standards.

6 And EnergyStar has some parallel
7 processes, and we've been very active in those.
8 And also in discussions with other regulators
9 around the world who are looking at those same
10 questions.

11 What I'm going to do this afternoon is
12 kind of give you an overview. Alex did a great
13 job and stole a little of my thunder, so I'll try
14 not to be redundant. But I'm going to give a
15 little more background.

16 While we do have some ideas on
17 proposals, we haven't given a hard proposals
18 today, but we're prepared to do that in the near
19 future working with others.

20 One thing I'd add here, I don't know if
21 everybody can read the slides, but standards
22 readiness. If we had these discussions 18 months
23 ago, test methods didn't exist. I'm delighted to
24 say they do exist so we can measure apples-to-
25 apples. Is anybody here from Apple so I can use

1 that term. They're all at the MacWorld show
2 today.

3 Let's start with tvs. As Alex
4 mentioned, we did some work a few years ago
5 measuring the energy use of tvs and back of the
6 envelope we're almost 5 percent of residential
7 electricity use, and about 1 percent or more
8 nationally overall energy use -- electricity use,
9 rather.

10 And why is this? It used to be a 25-
11 inch tv was a big tv. And in the kids' room was
12 the 12-inch tv. Now that 25-inch tv is now the
13 small one going into the den or one of the other
14 bedrooms. And you might have a 40 or larger inch
15 tv.

16 So, in general, these things scale with
17 screen size, with the screen size with the
18 exception of one of the technologies. TVs are on
19 more hours per day, and that's because there's a
20 lot more content due to cable and satellite tv.
21 People are watching movies more at home.

22 Game consoles, which we talk about in
23 general, are played on the tv. So you add that
24 all up, that's driving the annual energy use for
25 tvs. And also high definition tv, in some cases,

1 also increases the energy being consumed.

2 So what do we know? We've got some
3 data, but I'm going to try and stick at order-of-
4 magnitude numbers. A big screen tv will use
5 between 150 and some of them now are topping out
6 at more than 500 watts of power being consumed
7 when they're on.

8 Round numbers, if you assume the tv is
9 on five hours per day, and you crank that out,
10 that's 365 to as much as 900 kilowatt hours per
11 year. And Commissioner Rosenfeld like to talk in
12 terms of how many ANWRs is that. I like to
13 convert this to refrigerators. It's a ballpark
14 500 kWh per year is a fridge, and some of these
15 tvs now are consuming as much energy per year as a
16 new refrigerator.

17 There's also a large spread between the
18 best and the worst models of similar size. So if
19 we say 37-inch tvs, of a certain resolution,
20 there's a big spread. And when there is a big
21 spread that's often a potentially ripe place to
22 set standards and eliminate the least efficient
23 ones on the market.

24 There's a lot of mythology out there,
25 but in general it is true that the plasma tvs of

1 similar size use considerably more power than the
2 equivalent LCD tv. A huge caveat, though. The
3 landscape is changing very rapidly. Maybe we'd be
4 surprised 18 months from now that the best plasma
5 may be using less power than the worst LCDs. And
6 Panasonic and some other companies have made great
7 claims that our plasma is going to be a lot
8 better; please wait and see. So, I'm hoping
9 they're right, but we don't know.

10 There's a lot of data here -- is there a
11 pointer?

12 (Pause.)

13 MR. HOROWITZ: Can I talk over here and
14 you still transcribe me?

15 PRESIDING MEMBER PFANNENSTIEL: I don't
16 think so. I think you need to be at the mike.

17 MR. HOROWITZ: Okay. There's a lot of
18 data here, but the conventional sizes now for big
19 screen tvs, they're at some common breakpoints of
20 32 inches, 42 inches, and 50. And 47 is now a
21 very popular size, as well.

22 And these orange dots which predominate
23 the dataset, those are LCD, liquid crystal
24 displays. The green squares are plasma. And
25 these turquoise ones down here are rear-projection

1 or sometimes called DLP tvs. Those tend to be a
2 little bit fatter, they're not a flat panel the
3 way an LCD or plasma are.

4 Ignore all the different lines on here,
5 but in general, the data follows a trend of power
6 use on the Y axis, and screen area on the X axis.
7 We think a future potential standard would be
8 watts per square inch, or per square centimeter.

9 What's interesting to note is look at
10 the huge spread. For tvs all along the same size,
11 some of them use 500 and many of them are
12 clustered around 200.

13 The EnergyStar spec that's likely to
14 come out, first I had a straight line, and then
15 for some reason, to people like us seemed somewhat
16 random and arbitrary, they have a step function
17 where they gave another originally 100 watts at
18 this breakpoint for the 50 inch and larger. And
19 they did that largely to make sure at least some
20 of the plasmas would comply. There was a lot of
21 pressure from the plasma industry that they wanted
22 to make sure they had qualifying models for this
23 voluntary standard.

24 So that's not for the discussion here,
25 but some people are proposing, hey, let's do what

1 EnergyStar did. I think EnergyStar came close at
2 the less-than-50-inch side, but they might have
3 missed the mark over here. And we can talk more
4 about this, and our templates will provide some
5 more specificity.

6 So let's talk about policy stuff. In
7 the past there was no way to measure the on-mode
8 power use of tvs. The test method that was on the
9 books at DOE was only for black-and-white tvs. We
10 called this to the attention of the industry, and
11 to their credit they agreed; they wanted to have
12 an industry consensus test method that could be
13 used around the world by all these manufacturers.

14 And lo and behold, they did come up with
15 a test method that's in the process of being
16 finalized through the IEC, is that right, Doug?
17 Through an international standard setting body.
18 It doesn't have the pedigree stamp, but everybody
19 agrees it's final and it just has to go through
20 the formal steps to make it an official standard.

21 So that uses moving clips, a series of
22 different color clips. And you measure the on-
23 mode power. And it does a very good job.

24 So manufacturers were asked to test
25 their products, and some of that data came to

1 EnergyStar, and that's what you saw on the screen.

2 We don't have names and models, so is
3 that the Sharp model X, 42 inch, that data isn't
4 available in the public domain. We at NRDC had
5 requested it, but for some reason that's not
6 publicly available to date.

7 Another outcome from the federal energy
8 bill is that the energy guide labeling program,
9 the little yellow sticker that enables you to
10 compare like models, will be on tvs. FTC was
11 ordered to add tvs, computers, set-top boxes,
12 monitors and one other device that escapes me.

13 And side discussions, we should all work
14 together. If it's up to us to provide good input,
15 what do we want that label to look like for these
16 products. And they're ordered to do that in
17 roughly 18 months timeframe. So some of that
18 information will be available that's not currently
19 available to consumers. And that's a good thing.

20 Title 20, as you all probably know, does
21 regulate tvs right now. But it's just for standby
22 power.

23 As Alex mentioned, the vast majority of
24 the annual energy use is when a tv is on. So a tv
25 may spend 18 to 20-something hours in standby,

1 it's only drawing 1 watt. During those five hours
2 or so when you're on, you're multiplying by 200 or
3 something, so that drives the annual energy use.
4 So we need to address active mode and current
5 policies don't.

6 Some of the potential policy options
7 that I'd like to put out here in terms of the
8 spirit of brainstorming is would it make sense for
9 California to do a test and list to gather that
10 data if the other vehicles out there aren't
11 sufficient.

12 We at NRDC agree completely with PG&E
13 and I think some of the other people that will
14 follow us, that it's time to add an on-mode power
15 use element to the standards. And we think watts
16 per square inch is the way to do that, to
17 normalize for size.

18 At a minimum it's our belief you should
19 remove the worst performing models from the
20 market. We now have EnergyStar, there's no energy
21 hog. We think those least performing models
22 shouldn't be allowed to be sold in the market some
23 time in the future.

24 A big debate that I don't want to get
25 into now, I just want to flag it for people,

1 should this be performance neutral, so all tvs --
2 I'm sorry, technology neutral, so all tvs of a
3 certain size, whether you're plasma and LCD, a DLP
4 or some technology we don't even know yet, do you
5 say here's the level, or do you say if you're
6 plasma here's the bar for you. If you're an LCD,
7 here's the bar.

8 EnergyStar went technology neutral and
9 for that forum we thought that was the right thing
10 to do.

11 I'd like to move to cable and satellite
12 set-top boxes. Or should I see if we have any
13 questions on tvs?

14 PRESIDING MEMBER PFANNENSTIEL: We want
15 to keep going. We'll, at the end, ask questions.

16 MR. HOROWITZ: Okay, thank you. So,
17 more than three out of four homes in the U.S., and
18 my guess is California is similar, have
19 subscription tvs. So they're either subscribing
20 to cable or satellite; or increasingly in the
21 future they might get their tv service from the
22 phone company. The technical term there is IPTV,
23 internet protocol television.

24 So I have a lot of data here. NRDC,
25 with help from our consultant, ECOS, went into

1 roughly 50 homes to measure the power use of
2 various set-top boxes.

3 So this first cluster of data here,
4 that's your simple box, your subscribing to cable
5 in this case. It's not high definition. It
6 doesn't have what many people generically call
7 tivo built in.

8 So the basic boxes are drawing between
9 10 and 20 watts when they're on. Most importantly
10 is the yellow bars. So this is one model, this is
11 another model, and here are their names. And we
12 have the identifier separately. It gets too
13 difficult.

14 But let's say this Motorola 1 here;
15 there's at most a half a watt difference between
16 when it's on and when it's in standby. Many of
17 these boxes don't have an on/off switch. Or if
18 they do, all it does is dim the clock or channel,
19 the red LED. So these things are fully on, or the
20 equivalent of that, 24 hours a day, even though
21 the user is not watching tv many hours of the day.

22 Now we're moving to the world where many
23 devices have high definition, provides a better
24 picture, and there's a little bit of a power
25 penalty associated with that.

1 Then we move to the far right, ignore
2 that last data point, that's gone. But once you
3 added a DVR, a digital video recorder, or, you
4 know, a smart VCR, if you will, so you can
5 automatically record all the Don Knotts shows or
6 Monday Night Football without you having to input
7 it, or you can stop live tv, rewind, and there's a
8 lot of great functionality there.

9 These boxes have two and three tuners in
10 some cases, or high definition. Many of them are
11 pegging out between 30 and 40 watts. And
12 increasingly, when you sign up for cable or
13 satellite people are getting one or more of these
14 boxes in their home. So we're moving from the
15 world of people having this box on all their tvs
16 to at least one of the tvs having this, and maybe
17 this being in the other bedrooms. So that's the
18 cable.

19 Satellite's roughly a similar picture,
20 and again these are power numbers. And what's
21 interesting to us is there's a pretty big spread
22 amongst the best performing and the less well
23 performing models here.

24 Same picture, though, in terms of if I'm
25 not watching tv how does the power consumption

1 change. It virtually doesn't.

2 We are starting to see a positive sign.
3 This is Sisco subsidiary, Scientific Atlanta, on
4 the cable side; and I can't read on the satellite
5 side. We are starting to see deltas of 5 or 7
6 watts, so they're spinning down the hard drive in
7 the middle of the night, which makes it quieter.
8 As well as saving energy. So the industry is
9 starting to address this. They're starting to put
10 in better power supplies. But, again, why should
11 these devices be using so much power in the middle
12 of the night.

13 To condense the data a little bit, a
14 high definition receiver with a DVR, when you
15 aggregate all those cable and satellite boxes,
16 we're seeing roughly 40 watts when on, and a
17 couple of watts lower in standby.

18 Many people like to think, okay, what
19 does this mean in kilowatt hours per year. The
20 boxes here that I think are where all the action
21 is, we're seeing roughly 300 to 400 kilowatt hours
22 per year for that single box that's sitting on top
23 of the tv.

24 So we spoke about that tv, in some cases
25 consuming 500 kWh per year. Now you're having a

1 large fraction of another tv just sitting on top
2 of it.

3 So, where are we? Where do we think we
4 could go here? I've mentioned a lot of this. To
5 be fair, if you hit the standby button, it's
6 unrealistic to think we're going to be a half watt
7 or a watt. These boxes need to stay connected to
8 what's called the head-end; the Time Warners and
9 their Comcasts of the world who want to send an
10 update to you, or update the channel guide or they
11 need to verify that you're not stealing the
12 signal.

13 So there needs to be some level of
14 baseline activity. That doesn't need to be 40
15 watts, though. So what's the right number.
16 That's the discussion that I think we should all
17 be having in policy forums like this.

18 There's been very little progress, and
19 personally I've been banging my head against the
20 wall on this one, so the market dynamic is the
21 following: In general the cable or your service
22 provider, the cable or satellite company, they buy
23 the boxes. And they provide it to you either for
24 free or renting. They don't pay the electric
25 bill. They haven't been very interested in this

1 issue.

2 The box makers say we can make a better
3 box, but the service providers aren't asking. And
4 we keep getting this sort of situation. So I
5 think it's going to take some policy intervention
6 to move this industry along faster than they'd
7 like.

8 So some of the technical things that
9 could be done to dramatically reduce the power
10 use. These hard drives, in many cases, are
11 spinning all night long. When you're not
12 recording or playing back a show that makes no
13 sense at all to us. At least one company, and a
14 few others, are starting to provide that option to
15 spin down the hard drive in the middle of the
16 night.

17 We are seeing second and third tuners so
18 you can watch one show and record another. But
19 that's probably not happening very many times a
20 day, if at all. But those second and third tuners
21 are staying fully live, drawing power. Those
22 should go to a lower power mode just to keep the
23 tuner alive that's being used.

24 I think we're going to see in the next
25 year or two a quick move to flash memory, which is

1 more energy efficient. You don't have the
2 spinning moving parts. That could be incorporated
3 into the box's flash memory. Still costs a fair
4 amount today, but one could expect that price to
5 decline rapidly.

6 I don't know if we do these through a
7 standard, but so let's say I happen to love -- and
8 I'm dating myself -- the Andy Griffith Show. And
9 the box will say, hey, you asked to record the
10 Andy Griffith Show all the time. I'm always going
11 to be scanning for shows with Don Knotts in them.

12 Or if you watch Pittsburgh Steeler
13 football games, they'll record all the shows ever
14 set in Pittsburgh. The software does that, but as
15 a result there's an energy penalty of it always
16 recording these shows for you. You should be able
17 to turn off that speculative recording feature.

18 On the satellite side of the world, pay
19 tv is a big profit center for the service
20 providers. Cable, you can hit a button and then
21 you can automatically, you know, within a few
22 seconds watch the show. Satellite can't do that,
23 so what they do is they beam down the most popular
24 movies to you at night, which causes your hard
25 drive and your box to be working pretty hard.

1 Let's say you're the type of person that
2 over a year has never watched a pay-per-view movie
3 and don't intend to. How many boxes are being
4 used at night drawing power to download movies
5 you're never going to watch. So you should have
6 the ability to turn that off, as well, we believe.
7 These two things are not in any of the boxes that
8 are currently being designed.

9 So what could Title 20 do? We think a
10 mandatory standard is needed here, because the
11 industry said, you know, we care about efficiency,
12 we're working on it. We haven't seen the actions
13 meet their words.

14 So we don't know what the right number
15 is. We do agree the number needs to be something
16 higher than the horizontal 1 watt standard that
17 many people have been working on for standby.
18 This is a different industry with special needs,
19 and we want to make sure we meet those needs that
20 make sense.

21 Should it be 5 watts or 10 watts? We
22 don't know what the number is, but we think more
23 discussion is needed here to set a maximum
24 allowable standby level. So when you're not
25 watching or recording a show or doing an update,

1 what's that baseline level of energy that's needed
2 to keep the system ready. We'd be very interested
3 to hear from the industry stakeholders on how low
4 they can go, and what incremental cost, if any,
5 there is to get there.

6 It's one thing for the box to only use
7 let's say X watts, but will the box ever get
8 there. So we think there needs to be an auto
9 power down feature. Many of the peripherals
10 hooked up to the tv the user doesn't hit the off
11 button and it stays fully on all the time. So
12 it's one thing to say yes, my box only uses 5
13 watts in standby, but we need to make sure it
14 actually gets there.

15 The CEA led two working groups to create
16 test methods and kudos to them. It was an open,
17 transparent process, and they came out with some
18 good test methods. The one place where they fell
19 short is if I make a very efficient box those
20 features only work depending on what's happening
21 with the service provider.

22 So just for example point of view, if I
23 have a box made by company X, if I test it on Time
24 Warner I might get a very low power number. And
25 they enabled this auto power down feature. But

1 Comcast could have turned that off. So we
2 actually need to test the box with the live
3 system. That provides some added wrinkles that I
4 think we can fix, but the testing needs to be done
5 on a live system, not just in a lab.

6 So that's game consoles. The third and
7 last category I'd like to talk about are game
8 consoles. We're still learning; we have less data
9 here, but what we do know is pretty alarming.
10 That's why I want to bring it up to you.

11 Think of three different modes, or a
12 couple of different things. There are three
13 manufacturers that dominate the game console
14 industry, Microsoft with their X-Boxes, Nintendo
15 which now makes the Wii, W-i-i, and Sony which
16 makes different iterations of PlayStation.

17 So the X axis is power consumption and
18 watts. And each, with the exception of Nintendo,
19 which is kind of a different sort of animal, the
20 Sony and Microsoft boxes, their power use is
21 increased dramatically each generation of product
22 they introduce.

23 So the X-Box that first came out in 2001
24 was around 60 watts when on. And now it's drawing
25 150 watts or so. Sony started out less than 20,

1 and now they're drawing close to 200 watts when
2 on. This is somewhat out of control from our
3 point of view.

4 So let's focus on the PlayStation-3.
5 The top bar here, some of you may see this in
6 black-and-white, that's on. So you've physically
7 turned the device on, the game is loaded and
8 you're playing the game. These are instantaneous
9 measurements, you know, depending how hard you're
10 flooring the driving game or something, the number
11 may change a little bit. But for illustrative
12 purposes that's how much power when it's on.

13 If you go away from the game, go to the
14 bathroom or go for a snack or something, you're
15 not playing the game, but it's loaded, it drops
16 down a little bit. Where the industry has done a
17 great job is if you physically hit the off button
18 it's drawing less than 1 watt.

19 The problem is the vast majority of
20 people, and we're trying to get some hard data to
21 back this up, many people don't turn off their
22 device for two different reasons. One, they're
23 lazy or didn't think about it. Or another
24 systemic problem is these games don't have the
25 ability for you to save the game in the middle.

1 So you've been playing a game and some of these
2 things you build to a higher level. And even if I
3 wanted to turn it off I'm not going to turn it off
4 because I don't want to lose my place in the game.

5 And these are very sophisticated
6 companies. Microsoft, the developers of Window
7 and Word, they automatically save all your Word
8 documents and Excel and other things. We've
9 engaged in some preliminary dialogue, how do we
10 get this whole game industry to save the game. I
11 think that's needed.

12 Microsoft is the only company that
13 currently has a auto power down feature. So after
14 six hours of inactivity, nobody's touching the
15 shooter or the driving console, then it will
16 automatically power down to 1 watt. Great
17 solution. Is six hours the right number? We
18 could quibble around the edges there.

19 The problem is that chip disabled. How
20 many people are going to go in the menu, find the
21 auto-off feature and turn it on. So that's the
22 state of the art right now. Sony's current box
23 does not have that capability.

24 The Nintendo Wii doesn't have the high-
25 end graphics, and some of the other elements of

1 the Microsoft and Sony product, it's drawing much
2 lower levels of power and we're trying to better
3 understand how they can make their games use
4 roughly 10 percent of what some of the others are.

5 These boxes go through cycles at roughly
6 five-year increments, so I think the challenge is
7 the next generation of boxes are being designed,
8 how do we get ahead of that cycle and make sure
9 these auto power down -- that these boxes really
10 do go down to 1 watt at 2:00 in the morning when
11 hopefully most of society is sleeping.

12 So what if the box is never turned off.
13 If it's running 24/7, whether it's the Sony
14 example or the Microsoft, order of magnitude
15 you're using an extra 1000 kilowatt hours per
16 year. That's two refrigerators you just brought
17 into your house in terms of energy use and your
18 electric bill simply by not turning off your game
19 console. And we think we need to find a way to
20 solve that.

21 That's roughly \$100 a year or more in
22 California with our higher rates and electricity
23 costs. So after three years or so you've just
24 paid as much to operate your game console as you
25 did to buy it. Or the industry should take

1 advantage of that, buy my box and you could get
2 the equivalent of two games for free. So there
3 are lots of different ways to think about these
4 numbers.

5 So I met with one of the manufacturers
6 whose name doesn't need to be mentioned; a good
7 conversation. So we said, let's say the best case
8 scenario that somebody's playing the game for an
9 hour a day, and when they're done they're good and
10 they hit the on/off button. You're drawing about
11 70 kWh per year.

12 Let's say you've got the person who
13 plays the game two hours a day and it stays in
14 that idle mode, they never turn off their game.
15 Now you're over 1200 kWh per year. So this is
16 where I got that 1000 number.

17 if the device had six hours auto-off, it
18 goes down to 400. Still a big number, but much
19 better than that.

20 So here's just some back-of-the-envelope
21 numbers to illustrate what a great opportunity
22 this is for energy saving. So we want people to
23 play the games, but not play games with the
24 environment.

25 So what's our recommendation? We think

1 these boxes should be shipped with an auto power
2 down feature enabled. And we can have a
3 discussion about what's the right amount of time
4 for that to kick in so it's not disrupting their
5 gaming experience.

6 And then a standby limit, is 1 watt the
7 right number? Probably for today's boxes. But as
8 we'll probably hear from some of our colleagues
9 from industry, some companies are hoping that this
10 is the hub of the user's experience. It will be
11 their DVD player over time and it will be hooked
12 up to the network. And that has some power
13 implications. We might need a slightly higher
14 standby level. But that shouldn't stop us from
15 being able to do this.

16 One way to do this is if you're finished
17 playing with the game then having your box
18 automatically power down shouldn't be disruptive
19 to the user. And it should be relatively easy for
20 the industry to figure out is the game over or
21 not. There could be some sort of flag or the
22 equivalent in software-ese. Maybe that's where we
23 start.

24 We have learned that the game makers,
25 the electronic arts of the world, they're the ones

1 that design the games and they have roughly full
2 control of the console. So they need to be part
3 of the solution and we need to include them in the
4 dialogue.

5 They'll need to change how they write
6 these games. That's not going to happen
7 overnight. But maybe our long-term vision is the
8 next generation of boxes and game consoles, the
9 auto power down will kick in whether your game is
10 over or not because it saved the game for you.
11 It's smart enough to do that.

12 So I'm thinking we might have a two-tier
13 process here. And we'd obviously need to provide
14 more time to get to what I'm calling tier two.
15 What's important, I think the CEC can drive this
16 process and telegraph to the industry that they
17 need to begin to work on this.

18 And we can do this in a way that's not
19 even talking about on mode for now. That leaves
20 them the most flexibility to design these boxes.
21 It's getting that, you know, 15 to 23 hours a day
22 that thing should be sleeping. And that's where
23 the big energy savings potential is.

24 So, getting back to the high level. I
25 would recommend the CEC host a workshop dedicated

1 to consumer electronics, and we should do that in
2 the next couple of months to continue these
3 discussions and figure out which of these
4 technology categories the CEC has the appetite to
5 set a standard for and to set a process for doing
6 that in a sound way.

7 We're not the only ones -- California,
8 that is, aren't the only ones thinking about these
9 things. So let's stay in close touch with
10 EnergyStar, who is setting or considering setting
11 specs for these products.

12 The European Union has their own process
13 called EUP, energy using products, where they are
14 going to set mandatory energy efficiency standards
15 for products. Some of the ones we went over here
16 today.

17 The Australia Greenhouse Office and
18 their analogs are looking at this very carefully,
19 as well, so we can learn a lot from them, as well.

20 So that concludes my comments. And I
21 really appreciate the opportunity.

22 PRESIDING MEMBER PFANNENSTIEL: Thank
23 you, Noah. Are there questions here?
24 Commissioner Rosenfeld.

25 ASSOCIATE MEMBER ROSENFELD: Noah, I

1 broke the rules this morning by raising Title 24
2 topics in a Title 20 workshop. Now I'm going to
3 break the rules again.

4 But -- back to set-top boxes.

5 MR. HOROWITZ: Please.

6 ASSOCIATE MEMBER ROSENFELD: -- I think
7 you had made the suggestion that if the
8 manufacturer or the vendor had to pay the
9 electricity bill, they would listen to you.

10 Has anybody talked with the Public
11 Utilities Commission about a really high level
12 solution which would involve your monthly rental
13 including some proxy for the utility bills for
14 your set-top box? This isn't a Title 20 issue, I
15 understand, but it intrigues me.

16 MR. HOROWITZ: Yeah, there are different
17 ways to go about this beyond an energy efficiency
18 proceeding. Allen has come up with a provocative
19 idea of make the service provider pay for the
20 standby power at a minimum. That has some
21 implementation challenges, but that could be a
22 worthwhile discussion.

23 I'm blanking out for the term, but it
24 used to be you would get an exclusive arrangement
25 to be the service provider so the City of Oakland,

1 is it Time Warner or Comcast, and it's franchise
2 agreements. Could energy efficiency be part of
3 the franchise agreement.

4 The rules on how franchise agreements
5 are set are changing, as well. That's an FCC
6 issue. These are things we can talk offline, but
7 I agree, there might be other avenues to have
8 these discussions.

9 ASSOCIATE MEMBER ROSENFELD: Maybe at
10 the end of this topic we could talk about that.

11 MR. HOROWITZ: Be glad to.

12 PRESIDING MEMBER PFANNENSTIEL: Tim.

13 MR. TUTT: Noah, I'm going to ask one
14 more time, and I'll note as I'm asking that I
15 realize in the workshop notice for this workshop
16 we did request written comments and proposals by
17 January 30th at 5:00 p.m.

18 So, are you preparing something along
19 those lines?

20 MR. HOROWITZ: I was unaware of the
21 January 30th requirement, but we'll get it in.

22 MR. TUTT: Okay.

23 MR. HOROWITZ: The only thing I might
24 not have is some of the market data of how many
25 set-top boxes are in California, but I'll make

1 some assumptions and we can update them.

2 MR. TUTT: One other question. Can you
3 talk about how the set-top boxes you're discussing
4 today relate to the high definition receiver
5 standard we had last year, and what's happening
6 federally with incentives for those.

7 MR. HOROWITZ: Okay, --

8 MR. TUTT: It seemed like we had a
9 different standard than you're proposing, and it
10 seemed like, as I remember, there's an auto power
11 down feature in the federal --

12 MR. HOROWITZ: Yes, thanks, Tim. What
13 Tim's talking about, for those of you who aren't
14 aware, you will be soon. The federal government
15 is shifting how we receive and broadcast tv. So
16 as of February 2009, conveniently between the
17 Super Bowl and the final four, our nation's
18 converting to digital-only broadcasts.

19 What does that mean to the average
20 consumer? If you're not subscribing to cable or
21 satellite, and you have an analog tv or a CRT,
22 thick tv, if you will, you will no longer be able
23 to use that unless you buy what's called a DTA, a
24 digital tv adapter.

25 Nationally the estimates are there might

1 be 25 to 30 million tvs that will stay in that
2 situation. One of two things will happen. People
3 have been drooling for the big screen tv, and this
4 is the additional incentive, okay, I'll get rid of
5 my tv; I don't know what a DTA is; and I've always
6 wanted that thing, and the prices have come down.

7 We're going to see a spike in tv sales
8 as a result. I neglected to mention that. So,
9 next holiday season and fall I think we can expect
10 a huge spike in tvs. And the question is, can we
11 do anything to get ahead of that on the tv
12 standard side. I don't know. If time permits,
13 I'm hoping we could.

14 To really answer your question in this
15 background, California set a standard that said
16 those digital tv adapters, when they're on, it's 8
17 watts; and when it's in standby it can't use more
18 than 1 watt.

19 There was an agreement, many
20 stakeholders, including NRDC, the Consumer
21 Electronics Association, the retailers and
22 broadcasters all got together and said, hey, the
23 real game here is let's make sure these things do
24 go into standby, and when they're in standby
25 they're not using too much power.

1 So, there's \$40 per DTA rebate that's
2 going to be provided. There's over a billion
3 dollars in federal money that people can apply for
4 these coupons. And it's not dependent on your
5 income. And all those boxes will have used less
6 than 2 watts in standby, and they have the auto
7 power down. After four hours, if you don't hit
8 the remote control, it will automatically go on
9 standby.

10 So that policy exists. It's kind of a
11 quasi-voluntary. As a result, California pulled
12 its standard on DTAs because it appeared to be
13 taken care of on the federal level. And Doug
14 Johnson is here, and he might be able to talk to
15 that later if I missed any of the fine points.

16 PRESIDING MEMBER PFANNENSTIEL: Noah, I
17 was struck by the difference in power consumption
18 of the game consoles. And, you know, some of the
19 more popular ones use a fraction of what some of
20 the others use.

21 And is it, for example, because Nintendo
22 has specifically gone out of its way to be more
23 efficient in their game consoles? Or is it
24 totally a function of the kind of games that
25 they're targeting?

1 I mean, they look, from my perspective
2 they're sort of interchangeable, and I never quite
3 know which is which. And then to see this
4 enormous difference in energy consumption baffles
5 me.

6 MR. HOROWITZ: Yes, we have those same
7 questions. We're trying to better understand it.
8 We're starting to reach out to these
9 manufacturers, but in an over-simplified form,
10 think of the Sony and Microsoft products as
11 roughly having the same functionality, very high
12 end gaming.

13 Where Nintendo, although it's a good
14 experience, is not as high powered from a
15 computing point of view.

16 This gentleman here --

17 MR. STRAIT: I have some experience in
18 this area. I can probably provide a pretty
19 comprehensive answer if --

20 PRESIDING MEMBER PFANNENSTIEL: Yes,
21 please. I would appreciate that.

22 MR. STRAIT: All right. The one thing
23 to understand about the modern --

24 MR. SPEAKER: Would you identify
25 yourself for the record, please.

1 MR. STRAIT: Oh. My name is Peter
2 Strait. I'm an employee here at the California
3 Energy Commission. I happen to have done this as
4 a hobby growing up, so I'm somewhat well versed
5 here.

6 The major differences in the two high-
7 energy consumption products, where the console
8 game market is going is that these boxes are
9 moving more and more into the computer realm.
10 They're incorporating more and more functions of a
11 full computer.

12 Microsoft, in particular, way back when
13 Bill Gates was a big advocate of WebTV as an
14 avenue to get Microsoft out of the office room,
15 out of the computer room, and into the living
16 room. And the X-Box grew out of that, and the X-
17 Box 360 took that a step further where you have a
18 fully internet-capable device that can do
19 everything a computer can, and is very highly
20 focused on the very demanding graphics
21 applications.

22 The PlayStation-3, which is Sony's
23 product, is moving in a similar direction to try
24 to match those features.

25 Nintendo's product is not trying to

1 accomplish that. They aren't integrating the same
2 computing features that Microsoft and Sony have.
3 They're keeping more toward the traditional role
4 of what they feel a videogame console should be,
5 which is why their energy consumption has not
6 increased very much.

7 So, if I can offer this: Probably if
8 we're going to consider regulating any of these
9 console systems we would probably want to align
10 that with any regulation we do of computer
11 products, because they are going to grow to be
12 more and more similar over time.

13 PRESIDING MEMBER PFANNENSTIEL: Thank
14 you very much; that did answer my question.

15 Any other questions here for Noah?
16 Thanks

17 MR. HOROWITZ: Thank you.

18 ASSOCIATE MEMBER ROSENFELD: Noah, when
19 I see you in the future I'll think of
20 refrigerators.

21 MR. HOROWITZ: Okay.

22 (Laughter.)

23 MR. HOROWITZ: Here's copies I should
24 have provided --

25 PRESIDING MEMBER PFANNENSTIEL: Now,

1 from 3M Company. Good afternoon.

2 MS. PEACOCK: Good afternoon; thank you
3 very much for the opportunity to meet with you
4 today. I do not have a presentation. I'm sort of
5 a last-minute add to the agenda, but, again, very
6 much appreciate the opportunity to speak.

7 My name is Tracey Peacock; I'm a Global
8 Market Manager. I work in the optical systems
9 division of 3M. So, 3M is a large, diversified
10 manufacturer headquartered in balmy St. Paul,
11 Minnesota. We manufacture over 60,000 different
12 products.

13 And the area that I'm particularly
14 focused in is optical film. So we manufacture
15 optical film that's integrated into the back light
16 of LCD technology, be it computers, monitor, hand-
17 held, and specifically televisions.

18 So that's just a brief summary of our
19 background, of 3M's background. And really the
20 reason we're here today, the reason I'm here today
21 is to provide a brief summary of a letter that we
22 submitted from 3M Company to the California Energy
23 Commission last week.

24 In that letter we asked the CEC to
25 consider minimum standards for energy efficiency

1 for on-mode for televisions. And what I would
2 like to cover today, I certainly don't want to be
3 redundant. I think a lot of the key points that
4 I came to talk about today have already been
5 covered.

6 But I really just wanted to comment on a
7 couple of points, provide a little bit of
8 background as to why we see this opportunity, and
9 talk specifically about sort of the technical
10 feasibility of what we're proposing.

11 Our expertise as a company is definitely
12 science and engineering. And certainly part of my
13 interest in being here today is to make ourselves
14 available as a technical resource. We participate
15 throughout the LCD industry.

16 So, briefly, in terms of background, and
17 I think, again, a lot of these comments have been
18 covered, but when we look at the television
19 industry it's over \$25 billion in the U.S.; over
20 30 million units that were sold.

21 There was a report that was published by
22 the Department of Energy in early 2007 that
23 started talking about the increase in residential
24 electrical consumption. And as part of their
25 analysis they had pulled out an investigation of

1 some of the drivers behind that.

2 One of the areas they focused on was
3 televisions. Depending on which report you'll
4 read, they talk about an increase from 2005 to
5 2010 between 20 and 40 percent.

6 Now, when we received that Department of
7 Energy report we started to investigate. And we
8 really feel that there are really two primary
9 shifts in the market. As has been commented on
10 earlier, the transition from analog to digital
11 signals in the U.S. is driving a lot of flat panel
12 television adoption, both LCD and plasma.

13 In terms of -- there is that primary
14 shift; and then the second shift, I would say, is
15 a preference shift, again towards larger
16 televisions. Historically we would have a 27-inch
17 CRT. Now we're moving towards bigger televisions.
18 That 27-inch television is being replaced by a
19 32-, 37-, 40-inch.

20 Another trend that was mentioned
21 earlier, as well, is we have more televisions per
22 household now.

23 But in defense of the televisions, in
24 defense of televisions, there is actually a very
25 dramatic shift in terms of behavior. And this,

1 too, has been commented on earlier, which is we
2 are using televisions for many different
3 applications than existed 20 years ago.

4 The average household right now has over
5 100 channels. Gaming, as mentioned, 40 percent
6 penetration in the U.S. DVD, satellite tv. So
7 this is, again, driving the fact that televisions
8 are on longer. Nielsen Media Report put out a
9 study the end of Q4-06 that talked about in an
10 average household the television was on greater
11 than eight hours.

12 And, again, when we looked at that data,
13 we went back and looked at census data to validate
14 this was true. So that's just background to
15 simply say we see not only a preference, but a
16 behavior shift.

17 Certainly a lot of what we cited in our
18 letter to the CEC is based on the EPA. 3M has a
19 very long-standing relationship working with
20 EnergyStar. And our recommendation to the CEC was
21 to consider the EnergyStar specification for
22 televisions as a starting point in terms of
23 looking at minimum standards.

24 So, as part of that, I won't go through
25 a lot of the details. I think earlier

1 presentations commented on increasing power
2 consumption and what the potential benefit is in
3 terms of energy savings.

4 When we talk about energy efficient
5 televisions, though, I would just make the comment
6 that it's not only plug power, but a point that we
7 also think is relevant is reduced thermal load.
8 Energy efficient televisions typically generate
9 less heat.

10 Now, again, not necessarily relevant in
11 St. Paul where it's 18 Fahrenheit right now, but
12 in areas where there is air conditioning we think
13 that that's another benefit of having an energy
14 efficient television.

15 A key point, though, and we recognize
16 this, is the cost/benefit analysis. And, again,
17 our investigation shows that there are positive
18 factors that are enabling the industry to meet
19 energy efficient targets. These are improvements
20 in panel transmission; these are improvements in
21 bulb technology. We are certainly not the only
22 manufacturer that has developed technology that
23 improves the energy efficiency of televisions.

24 But in parallel we also see factors that
25 will negatively impact energy efficiency. And

1 again, these have been commented on earlier. The
2 trend towards larger televisions; the trend
3 towards higher resolution.

4 So our real interest is, also, again
5 just to reinforce this point, that we would like
6 to be involved in the dialogue as the CEC
7 considers this going forward. We feel a lot of
8 our technical expertise is something that would be
9 of value as well, to complement the data that you
10 would already be generating.

11 So, in conclusion, as I said, I didn't
12 want to reiterate a lot of points that have
13 already been made, but I would simply ask that if
14 the CEC does consider initiating rulemaking on
15 televisions, that they consider 3M as a potential
16 resource to you going forward.

17 PRESIDING MEMBER PFANNENSTIEL: Thank
18 you very much, Tracey. Are there questions?
19 Thank you for presenting this to us. I think it's
20 an important area for us to consider.

21 Now, public comment. Anybody here have
22 comments on the information provided so far,
23 before we get into specifically the lighting, the
24 battery chargers, if anybody would like to make a
25 comment, please come up to the mike up in the

1 front so we can record that.

2 Seeing none, why don't we move into the
3 lighting efficiency part, then, of the discussion.

4 Let's start with Alex Chase and Chris
5 Calwell.

6 MR. SPEAKER: Jackie, I need to call
7 Chris to make sure he's on.

8 PRESIDING MEMBER PFANNENSTIEL: Okay,
9 sure. Alex, do you want to --

10 MR. CALWELL: This is Chris Calwell's
11 office in Durango here. We have him on email.
12 He'll be signing on in just a moment.

13 PRESIDING MEMBER PFANNENSTIEL: All
14 right, thank you very much.

15 MR. EILERT: Commissioner, may I ask a
16 question while we're waiting?

17 PRESIDING MEMBER PFANNENSTIEL: Of
18 course, Pat. Is your mike on, Pat? Make sure
19 that the green light is -- has to be illuminated.

20 MR. EILERT: Fine. So earlier, at the
21 beginning of this meeting, Harinder had a --

22 ASSOCIATE MEMBER ROSENFELD: Tell us who
23 you are.

24 PRESIDING MEMBER PFANNENSTIEL: Yeah,
25 get your name in the record, please.

1 MR. EILERT: I'm Pat Eilert, PG&E.
2 There was a slide that showed a 2011 effective
3 date for lighting. Was that only for
4 incandescent, general service lamps, or was that
5 an expectation for all the lighting measures?

6 MR. TUTT: If I remember that slide
7 right, Pat, that would be for general service
8 lights.

9 MR. EILERT: Okay, thanks.

10 MR. POPE: This is Ted Pope with Energy
11 Solutions for PG&E. I talked to Chris; he was
12 going to be on momentarily.

13 PRESIDING MEMBER PFANNENSTIEL: All
14 right, that's fine. We'll wait for him, Ted.

15 (Pause.)

16 MR. FERNSTROM: This is Gary Fernstrom
17 from PG&E. While we're waiting it seems to me
18 there might be a good opportunity for synergy
19 between some of these digital set-top boxes and
20 tropical fish tanks.

21 You could put your fish tank on top of
22 the set-top box and then you wouldn't need to heat
23 the water in the tank.

24 (Laughter.)

25 PRESIDING MEMBER PFANNENSTIEL: Yeah,

1 but that only improves the efficiency. All the
2 fish will die.

3 (Laughter.)

4 PRESIDING MEMBER PFANNENSTIEL: And
5 we'll get blamed for it.

6 (Pause.)

7 PRESIDING MEMBER PFANNENSTIEL: We're
8 just going to go off the record until we get Chris
9 on.

10 (Off the record.)

11 PRESIDING MEMBER PFANNENSTIEL: I think
12 we're complete and can be back on the record.
13 Chris, you're here. Ted, do you want to
14 coordinate this?

15 MR. POPE: I'll go ahead and drive and
16 Chris is just going to help me change slides.

17 PRESIDING MEMBER PFANNENSTIEL: Okay,
18 Chris.

19 MR. CALWELL: Very good. Thank you,
20 Commissioners. This is Chris Calwell from ECOS
21 Consulting. And I wanted to present today on
22 behalf of PG&E about some of what we've learned
23 from analyzing the federal energy bills, and also
24 the Huffman requirement in California.

25 Could anyone let me know, is this okay

1 for volume?

2 ASSOCIATE MEMBER ROSENFELD: It's just
3 fine.

4 MR. CALWELL: Okay, thank you,
5 Commissioner. So, this is the second slide, Ted.
6 The key topics I want to run through today are
7 shown here. And we'll talk a little bit about any
8 enforcement issues we've observed to the existing
9 standards, devote a significant amount of time to
10 consideration of the recently adopted federal
11 standards.

12 I'm going to be looking at the Huffman
13 bill requirements of California; not all of them,
14 but just the indoor residential provisions for a
15 50 percent reduction.

16 And then talk a little bit about recent
17 market research findings, primarily for DSL; and
18 lastly, some brief recommendations to the
19 Commission.

20 And I've been instructed to talk for
21 about 20 to 25 minutes; does that still match with
22 the agenda for the day?

23 PRESIDING MEMBER PFANNENSTIEL: Yeah, I
24 think that-- we still have a bit to cover, so --
25 but, go ahead, let's --

1 MR. CALWELL: I'll stay --

2 ASSOCIATE MEMBER ROSENFELD: There's a
3 lot of meat in your slides, Chris, we recognize
4 that.

5 MR. CALWELL: Okay, I'll stay as close
6 to 20 minutes as I can. And if there's time for
7 questions let me know, when you need to cut it
8 off, just let me know.

9 Okay, thanks. Next slide, Ted.

10 So, regarding the enforcement issue, we
11 had a huge staff, including Ted, himself, that
12 paid visits to retail stores recently in
13 California to see what we've seen on shelf
14 development.

15 And most incandescent bulbs on the shelf
16 in California today do not meet the tier two
17 standards that took effect January 1, '08.
18 However, we know that the standards are based on
19 date of manufacture rather than date of sales.
20 And so there may be changes imminent in what's
21 stocked. But right now you wouldn't notice a
22 major difference as a result of the standards in
23 what's for sale.

24 In some cases, interestingly enough, we
25 had major national chain retailers that were still

1 selling bulbs that don't meet the tier one
2 standards. And that concerns us more, because
3 those standards took effect two years ago.

4 So, Ted may be able to provide specifics
5 to you, but in total we visited Home Depot,
6 Target, Lowe's, and a few grocery store chains.
7 And the photo you see here is from one of those
8 visits.

9 Probably the main thing you notice is
10 CFLs have definitely risen in the amount of shelf
11 space devoted to them, which is great. Of the
12 remaining shelf space, it's split about 50/50
13 between modified spectrum products and standard
14 products. And, of course, it varies from store to
15 store.

16 We didn't see marketing materials to
17 explain the new wattages and help people navigate
18 the tier two. So we'll be interested to observe
19 that over the next few months, since I think a lot
20 of consumers will be surprised when the 100, 75, a
21 60s and 40s go away, and are being replaced by
22 bulbs that are 5 percent lower in wattage.

23 Next slide. Regarding the federal
24 standards, as I said I won't speak to all of them.
25 In particular at the bottom there you can see a

1 reference to incandescent reflector and metal
2 halide standards. Those are sort of the purview
3 of other experts.

4 I wanted to speak primarily about the
5 general service provision. And here you see a
6 summary of some of the key provisions addressed by
7 the standards. A tier one requirement federally
8 will be facing between 2012 and 2014. Tier two
9 would take effect after 2020, which is far-
10 reaching nationally, but it's too late to affect
11 the Huffman deadline in California.

12 The (inaudible) exempted from the
13 standards or subject to later time -- by DOE if
14 the sales double, include various things like
15 three-way lamps and rough -- vibration service
16 type lamps.

17 Modified spectrum lamps were given
18 significantly less stringent standards and did not
19 have the DOE-imposed sales limit. I'll talk a
20 little bit more about that later.

21 And there's broad preemption of action
22 by states other than implementing the federal
23 standards early and acting if DOE doesn't on the
24 tier two. And there's, of course, changes to FTC
25 labeling that are encouraged, as well.

1 Next slide. Here you see on an
2 efficiency versus light output basis the -- I
3 apologize for the age of the slide. It says U.S.
4 Energy Bill, and of course now it should say EISA,
5 since it was adopted.

6 But here you see the lumen and wattage
7 being expressed on an efficiency basis. And they
8 rise as the light output increases. Then they
9 drop suddenly again to the next bin. And then
10 rise, drop, rise, so they give you kind of a
11 sawtooth image when you plot it this way.

12 We've also plotted on the same chart the
13 proposed standards in Canada, which are undergoing
14 final decisionmaking now, just to see the relative
15 stringency of each, and which parts of the curve,
16 one is more stringent than the other.

17 The tier two federal requirements are
18 shown as 45 lumens per watt, straight line. And,
19 of course, DOE has the ability to modify that.
20 But that's the max'd out provision in the law.

21 The next slide shows the exact same
22 information, but we have plotted it on a watts-
23 versus-lumen basis. And what you can conclude
24 from this is that for lamps that are brighter than
25 today's typical 40, 60, 75 and 100 watt bulb, for

1 lamps that are brighter, the U.S. requirements are
2 more stringent than the Canadian requirements.
3 But for lamps that are dimmer than today's bulbs,
4 the U.S. standards are less stringent than the
5 Canadian requirements.

6 And so it'll finally settle out depends
7 on what the manufacturers do. See again the tier
8 two requirement as the much more stringent version
9 of the tier one in Canada, and a straight line on
10 an efficiency basis.

11 Next slide illustrates the treatment of
12 modified spectrum lamps by the U.S. law and the
13 Canadian Law. And here the situation is somewhat
14 different. You can see that the Canadian line is
15 more stringent than the U.S. across most of the
16 range. And with very limited exceptions, unless
17 the lamps are significantly brighter than today's,
18 the Canadian model would be more stringent than
19 the U.S. one, and require greater improvements in
20 efficiency.

21 One more slide. You can see the same
22 relationship again, but (inaudible) versus limits.
23 And so I think the rationale in Canada was to look
24 at the lamps that are currently the least
25 efficient, and apply the greatest percentage

1 improvement to their efficiency.

2 Whereas in the U.S. case the same difference
3 that you see in efficiency today between modified
4 spectrum and standard incandescents, was
5 essentially preserved in future regulation.

6 Okay, let's go on to the next slide.
7 Ted, are we on the one that says, what will the
8 new standards bring?

9 MR. POPE: Yes, we are.

10 MR. CALWELL: Okay, thanks. So, this is
11 a very difficult question to answer. We don't
12 know exactly what's going to happen to the market
13 as a result of all these standards.

14 So, I've just highlighted a few general
15 observations. I'll show you the result of a model
16 exercise we did with PG&E.

17 I think, at its best, the new federal
18 lighting requirements would, of course, lead to
19 the introduction of new bulbs that would have
20 different and lower wattages than today's. And
21 some consumers will definitely shift to those
22 lower incandescent wattages. Many will buy CFLs
23 instead.

24 At the price difference they've been
25 introduced at, of course, the CFL is less

1 expensive than the first generation of
2 significantly more efficient incandescents, the
3 Halogena from Philip. So that'll likely create
4 differentials in CFL.

5 At the worst, or if the standards do not
6 deliver all that they're promised, what could
7 happen One scenario is that manufacturers would
8 shift their current general service -- business
9 wholly or mostly to modified spectrum lamps that
10 are dimmer, less efficient and longer lasting than
11 the standard bulbs they sell today.

12 And of course, they would be less
13 expensive than the efficient products their
14 competitors are offering. At the same time,
15 because Three-Way vibration service, their niche
16 folks are not immediately regulated. Some
17 consumers may buy those to keep getting the
18 similar lamp types and prices they're used to
19 until DOE regulates for increasing sales.

20 So, do I think that either of these two
21 extremes is definitely what's going to happen?
22 No. As you can see on the next slide, of course,
23 the most outcome is somewhere in the middle. But
24 it's instructive as we look at scenarios for the
25 Huffman Bill to consider what would happen if most

1 of the loopholes are exploited, and what would
2 happen if very few of the loopholes were
3 exploited.

4 So, most likely outcome, CSL sales will
5 continue to rise; LED will start gaining market
6 share, as well, beginning with the lowest lumen
7 product. And I've shown some of those examples at
8 a previous CEC hearing; they seem most likely to
9 replace the 25 and 40 watt incandescent first, and
10 then gradually migrate up to brighter factors.

11 The modified spectrum lamps will sell in
12 larger numbers than conventional incandescents and
13 continue to be dimmer in the most likely scenario,
14 I think, because they don't have as much
15 regulatory pressure to improve their efficiency.

16 And a large fraction of incandescent
17 buyers will switch to the wattage bin immediately
18 below or above the one where they currently buy,
19 rather than the one recommended by the wording on
20 the package. I say large fraction; how large of a
21 fraction, we don't know. And I think it depends
22 on how effective the marketing is in the store,
23 how well educated the retail staff are in steering
24 people to the best choices, and what sorts of
25 labeling the MTC goes for in their rulemaking.

1 So, the next slide indicates wattage
2 plateaus versus purchase decisions. And I just
3 wanted to illustrate the point I just made, to
4 give folks in the room an example.

5 So, what you see here are the federal
6 requirements for general service lamps. Those are
7 the four red plateaus that are shown on the graph.
8 And then there's some dotted blue plateaus
9 extending to the left. Those are the modified
10 spectrum ranges. And you see that the wattages
11 are the same for the general service, but they're
12 extended quite a bit to the left in light output.
13 And in some cases they overlap, which we try to
14 show on the graph, as well.

15 Now, take a look at the two light bulbs.
16 One of them is a fairly conventional 840 lumen
17 soft light 60 watt bulb. And one of them is a 630
18 lumen conventional modified spectrum bulb.

19 So the first question to answer is what
20 would a manufacturer do to change the design of
21 each of those. So, Ted, if you can advance the
22 slide one click, what we've shown here are three
23 possible design changes. The first one going
24 straight down is essentially saying what if they
25 improve the efficiency of that bulb and made no

1 sacrifice in light output.

2 So naturally lumens stay the same;
3 wattage drops by a little more than 25 percent;
4 and you get a fairly ideal outcome.

5 The second scenario that might occur is
6 the manufacturer would migrate to the lowest light
7 output level the standard allowed for a
8 conventional lamp, and you can see that middle
9 arrow around 750 lumens.

10 And then the third scenario is they
11 decide to not sell the conventional lamp anymore,
12 but to go for a modified spectrum instead. In
13 which case the standard would allow the light
14 output to drop all the way back to about 550
15 lumens, which still is the same allowed wattage.

16 So, go ahead and advance that slide,
17 Ted. Those are the manufacturer options. Let's
18 look at what's the consumer decision in the store
19 when faced with new alternatives. And here we see
20 three green arrows.

21 So starting with the one at the lower
22 left, the thing we all want to happen from these
23 standards, of course, is that the consumer goes to
24 a 43 watt lamp and purchases it instead of a 60.
25 And that 43 watt lamp may be a little dimmer or

1 similar brightness; and it could even be a little
2 brighter. We don't know. But it would be 43
3 watts.

4 The second outcome which I think we have
5 to acknowledge is fairly likely is that the
6 consumer looks for the new wattage that's closest
7 to the wattage they used to buy. In that case
8 it's a 53, or thereabouts. And that's shown by
9 the middle green arrow. And it's not unlikely
10 that the average consumer would choose the wattage
11 closest to what they're used to buying unless they
12 have a rally good reason to do otherwise, like
13 prominent packaging, educated sales staff,
14 prominent marketing materials in the store or
15 other guidance.

16 And then, of course, the last option is
17 that they might choose the next wattage level
18 above the one they're used to buying, which is
19 shown by the upper right green arrow.

20 I can't predict -- I don't think any of
21 us can predict how many consumers will do each of
22 these three things. But if we know they're all
23 possible, we can work together on effective
24 communication strategies to reduce the chances of
25 them buying a higher wattage than is needed for

1 the amount of light output they want.

2 The next slide is a table illustrating
3 some of this. And I won't bore you with all the
4 details, you can look at it more closely after the
5 presentation. But let me just, for simplicity's
6 sake, let's just pick the column that says 60 watt
7 bulbs. And then you don't have to watch as many
8 numbers.

9 So, 60 watt bulbs today, the federally
10 allowed standards wattage is 43. The wattage
11 savings is 17 watts. And therefore the percentage
12 savings is 28 percent, which is great. If that
13 happens that's a big success for federal policy.

14 And you notice in the next column I
15 calculate the efficiency change. And if light
16 output stays the same, and wattage drops by 28.3
17 percent, then efficiency goes up by 39.5 percent.

18 What happens if the bulb is dimmed to
19 the maximum extent that the standard allows.
20 Well, we get a 10.7 percent reduction in light
21 output. But now the efficiency gain is down to
22 24.3 percent. Still a success, but not as much
23 savings as the 39.5 percent we thought we were
24 getting.

25 What happens if the manufacturer uses

1 the full amount of dimming allowed by the modified
2 spectrum provision. That's another 33 percent
3 drop in light output. And now we're actually, you
4 see in the final row, that our efficiency has
5 actually dropped by 6.6 percent from the lamp we
6 have today.

7 So this is what I mean by mapping the
8 loopholes of the standards. And it's why it's so
9 very important that marketing and consumer
10 education and incentive be directed to encourage
11 light output to stay the same rather than products
12 to be sold at lower levels while the wattage is
13 dropping.

14 Next slide. Want to get into the
15 modeling discussion now. Which factors are
16 driving up residential lighting energy use. I've
17 listed a few here. There are undoubtedly others.
18 And since we've talked about most of these before
19 in Commission meetings, I don't want to focus on
20 them, other than one of them.

21 The second-to-the-last bullet, Title 24
22 standards discourage use of CFL. I was at a
23 recent meeting of the California utilities where
24 many of the participants were complaining that the
25 most recent Title 24 revisions had encouraged the

1 use of dimmers in new construction, which is
2 generally an energy-saving measure.

3 Unfortunately, most CFLs don't work well
4 with dimmers. And so it was the belief of the
5 people in the room that that Title 24 revision was
6 actually costing more energy than it was saving
7 because you might get a small percentage benefit
8 from installing dimmers on incandescent lamps, but
9 it's dwarfed by the savings you could have gotten
10 from CFLs if they were easier to put in.

11 So, my encouragement would be to the
12 Commission for the next round of Title 24 to take
13 note of that and look for a change that uses
14 controls where incandescent lamps are required,
15 but otherwise encourages the maximum use of CFLs.

16 Next slide. Which factors are reducing
17 residential lighting energy use. And fortunately,
18 there are a few pieces of good news here, as well.
19 There's the (inaudible) increasing availability of
20 CFLs, the testing programs that have been running
21 with utility funding for awhile in the U.S. have,
22 I think, actually improved the quality of CFLs.
23 And generally given people more confidence that a
24 labeled CFL will perform well.

25 There's an increasing prevalence of

1 EnergyStar fixtures in new construction. The
2 energy prices has probably encouraged a lot of
3 standard conservation behavior like shutting off
4 lights in unoccupied rooms. And then the controls
5 are certainly an energy saver for incandescent
6 situations. And, of course, we have Title 20
7 requirements tier one and tier two now in effect.

8 Okay, now come the scenarios for
9 modeling, and then the quantitative results of our
10 work. And here I wanted to especially thank the
11 staff at CLTC, whom many of you know, because the
12 modeling exercises are incredibly difficult to do,
13 and they're filled with many assumptions.

14 So they also took a crack at this, and
15 we compared models and tried to see which
16 assumptions were reasonable. And so as the
17 Huffman response goes forward I think more of this
18 modeling should be done by more parties. And we
19 should all try to arrive at some consensus
20 assumptions regarding what will happen in
21 particular aspects of the California economy.

22 So, how will residential lighting energy
23 use change by 2018 from the federal standards
24 alone if the CEC takes no further action? And
25 this is what I labeled as the low efficiency

1 scenario.

2 Well, the first and best news, of
3 course, is that average lamp wattage would drop by
4 about 24 percent. And the assumptions behind that
5 are that there are some continued increases in
6 sales of unregulated lamp types; that standards
7 enforcement around the existing tier one and tier
8 two standards is not as thorough as everyone would
9 like; that most of the new incandescent products
10 that have come out are introduced at the dim end
11 of the allowable bins, as I showed before.

12 Modified spectrum sales continue to
13 rise. Number of consumers would jump up a bin to
14 get enough light or would at least go to that
15 intermediate bin I showed you.

16 On top of this I assume CFL's socket
17 share would rise to 25 percent. And we think it's
18 about 15 percent in California right now. So,
19 what do I mean by socket share? That's percentage
20 of stock, rather than percentage of sales. So, in
21 other words, 15 percent of residential sockets are
22 occupied by CFLs. That number is higher in
23 California than in the nation, as a whole, of
24 course.

25 But we tried to assume further

1 increases, and in this case of 25 percent, and
2 that LED technology, which is fairly noticeable in
3 residential today, might gain a 5 percent socket
4 share by 2018.

5 So, if you make all those assumptions
6 the model says that average lighting energy use
7 per household would drop about 9 to 19 percent,
8 depending on changes in average hours of
9 operation. And the 14 percent expected growth in
10 the number of households in California between now
11 and then would be just about large enough to wipe
12 out those gains.

13 And so in a pessimistic scenario we show
14 roughly constant total residential lighting energy
15 consumption between now and 2018, even with the
16 adoption of the federal standards.

17 Now, let's look at an efficient scenario
18 which I'm kind of considering as the middle case.
19 And I won't go through all these assumptions in as
20 much detail as I did before, but just the
21 highlights are that average lamp wattage goes down
22 by 41 percent.

23 We take CFL socket share all the way up
24 to 40 percent, which would be remarkably high.
25 And LED efficiency continues to improve; their

1 socket share reaching 15 percent. And the big
2 picture finding for Huffman compliance is in this
3 scenario we could get to a 28 to 38 percent drop
4 in lighting energy use per household, depending
5 again, on what's done with hours of operation and
6 control of the Title 24. And on an overall basis
7 you get a reduction of about 24 percent.

8 So that's encouraging for helping to
9 meet the state's AB-32 climate requirement, but of
10 course it's not enough to comply with Huffman.

11 So we ran one more scenario -- next
12 slide, Ted -- which is what would be possible in a
13 best case scenario. And I want to emphasize that
14 this one is highly unlikely because so many things
15 would have to go right, and so much government
16 policy action would be needed immediately to get
17 there.

18 In this best case scenario we see a drop
19 in average lamp wattage of a full 57 percent.
20 That's unprecedented, by the way. There's no
21 record of a state having ever achieved anything
22 like that before in the U.S.

23 But if California could, there'd be
24 virtually no sales of unregulated lamps; there
25 would be aggressive enforcement of existing and

1 newly adopted standards. Nearly all new
2 incandescents introduced would actually improve
3 efficiency with no loss of light output. And
4 they'd cut power an additional 10 percent after
5 2014.

6 Let me emphasize there that the
7 standards don't require them to do so, so this
8 would be manufacturers moving beyond the federal
9 requirements because they've been encouraged to do
10 it, after 2014. Modified spectrum lamp sales
11 would not increase from today's levels. There'd
12 be zero bin jumping, so consumers would only buy
13 the lamps that deliver the same light output as
14 today's lamps at lower wattage.

15 CFLs would run all the way to 45 percent
16 socket share and get even more efficient than
17 today. LEDs would grab most of the rest of the
18 socket share, and they'd be 50 percent less power
19 consumptive than the forecasts we already made for
20 2018.

21 And so you'd see the CFLs and LEDs would
22 be two-thirds of all the sockets. And if that
23 happened we can see average energy use per
24 household dropping about 50 to 54 percent, which
25 is just barely complying with the Huffman bill on

1 a per-household basis. And, of course, on a
2 statewide total basis, it would be 43 to 48
3 percent. So not quite a half.

4 Okay, let's turn to some brief market
5 research pieces, and then I'll wrap up. So, this
6 is a slide you all have seen before. Marcie
7 Sanders (phonetic) showed it when she came down to
8 the Commission last fall -- I'm sorry, last
9 summer.

10 And it's just an illustration of what
11 one region can do to encourage greater CFL share
12 with a very deliberate market transformation
13 program. So, while the national market share for
14 CFLs was ranging between zero and about 5 percent,
15 the northwest market share ranged upward to 16
16 percent, back down in the teens, and then back up
17 again to over 30 percent in late 2006.

18 This was a radical success for a region
19 to achieve. And what we've found more recently in
20 some other data to show what's possible nationally
21 with these kinds of larger programs. So, this is
22 the data you've seen before from the northwest.

23 The next slide is some brand new
24 information that was just released in a very
25 general form by a company called Esource. I've

1 listed the source at the bottom there, Bill
2 LeBlanc, if you have questions about it.

3 And they were able to do a survey of
4 115,000 customers in early 2007. And they found a
5 national average of 3.4 CFLs per household. This
6 is not purchases, this is installed, or what we
7 call socket share.

8 So interestingly enough, the regional
9 variation was pretty high. In the southeast and
10 midwestern states the number was typically less
11 than three. California had 4.6, which is great
12 news and a testament to the success of utility
13 programs.

14 But Vermont, which runs probably the
15 most intensive utility efficiency programs in the
16 country, had an average of more than six. And
17 perhaps most interestingly to me, half of all the
18 households they surveyed had no CFLs at all. So
19 what does that mean? The households that do have
20 CFLs would have to have six or seven each in order
21 for the averages to work out.

22 And so the implication of that to me is
23 that marketing has done a better job motivating
24 current users to buy more CFLs than it has
25 encouraged new users to try them.

1 And that may suggest some strategies for
2 the Commission and the utilities to think about as
3 they try to gain further lighting energy savings.
4 Namely, you've got to find a reason and a way for
5 the people who are not persuaded to try CFLs for
6 the first time.

7 CFL purchase rates rise with age and
8 income. And men are more likely to purchase them
9 than women, according to the Esource data.

10 They also asked people why they bought
11 CFLs, and interestingly enough the long life and
12 the financial savings on energy and buying more
13 bulbs was definitely a larger motivator than
14 environmental benefits and utility rebates.

15 I think the utility rebates, as a small
16 motivator, is a fairly recent phenomenon, and it
17 has to do with just how inexpensive CFLs have
18 gotten. Even where I live in a small town in
19 Colorado CFLs are routinely available for \$2
20 apiece or less with no utility rebate. So, it's
21 not clear that utility giving me 50 cents or a
22 dollar would make much difference in my desire to
23 purchase them. That's probably true in much of
24 the country now.

25 Let's take a look at the next chart.

1 This is brand new information that our team spent
2 a considerable amount of time in analyzing in the
3 last month or two. The U.S. Department of
4 Commerce gathers trade statistics monthly on
5 product imports into the U.S.

6 And so what you see here are monthly
7 import levels on a units basis of CFLs from
8 January of 2000 through November of 2007. So I
9 want to emphasize the 2007 totals that appear at
10 the bottom are not quite complete, because we
11 don't have December data yet. But with December
12 data we believe the 2007 number will exceed 400
13 million units.

14 And what does that mean? It means that
15 in 2007 alone more screw-based CFLs were sold in
16 the U.S. than in 2004, 2005 and 2006 combined. So
17 it's a remarkable accomplishment. It bodes well
18 for California's effort to comply with Huffman.
19 But sustaining levels of purchase that high and
20 increasing them is going to be our collective
21 challenge in the years to come.

22 The next slide finishes up the
23 discussion of CFL market data. And let me just
24 walk through this very quickly. In 2007 CFLs were
25 about one-third of screw-based bulbs imported into

1 the U.S. That's amazing. And something I don't
2 think any of us thought we would ever see when we
3 started working on this subject 20 years ago.

4 What's the share that CFLs represent of
5 total unit sales of screw-based bulbs? That's a
6 harder number to estimate because so many general
7 service incandescents are still manufactured in
8 the U.S. But, roughly speaking, our model shows
9 that around 25 percent. And then you see a Wall
10 Street Journal graphic over here with data
11 originating from NEMA that also seems to suggest a
12 fairly similar number.

13 And you can tell by looking at the 2007
14 bars that the CFL total is in the range of a
15 quarter to a fifth the size of the incandescent
16 bar. And most importantly, incandescent sales
17 have been dropping steadily since 1999. And are
18 dropping more and more rapidly with each passing
19 year.

20 One other interesting finding from an
21 EnergyStar analysis that was done in early '07,
22 California was 9.6 percent of the EnergyStar CFLs
23 sold by six major retailers in early '07. And
24 that's a little bit surprising because as all of
25 you know California's more than 9.6 percent of the

1 U.S. population. And has been a very steady and
2 well-funded proponent of CFLs.

3 So for California to have sold slightly
4 less than its per capita share means probably that
5 a lot of other regions are starting to catch up
6 with California, and also put major resources into
7 CFL promotion.

8 We think that national socket share of
9 CFLs by early '07 was around 10 percent. That's
10 the implication of the Esource data. And we think
11 that California's socket share is closer to 15
12 percent, which is the basis for the modeling
13 information I gave you before.

14 So to conclude the recommendation slide,
15 these are, I don't think, a big surprise and they
16 are themes that I've touched on before. But just
17 quickly, first and most importantly, we urge the
18 Commission to enhance its enforcement of existing
19 Title 20 standards.

20 Second, lead to pursue Title 20
21 standards for the residential lamp and fixture
22 types that weren't already preempted by the
23 federal standards. And I think the other members
24 of the PG&E team may have already touched on some
25 of those earlier today.

1 We'd like to encourage California to
2 accelerate its adoption of the federal standards
3 as soon as the law allows. That's, I believe, the
4 one-year acceleration clause that's in there. Use
5 your Title 20 standards to require greater use of
6 efficient fixtures. And as I mentioned before,
7 avoid penalizing use of CFLs.

8 I think the state should also consider
9 financial disincentives on the continued sale of
10 inefficient incandescents. There's nothing about
11 federal standards that preempt the state from
12 assessing a charge on the sale of inefficient
13 bulbs or using the money collected from such a
14 charge to further encourage the sale of efficient
15 ones. It's an old idea of fee-bates that's been
16 applied to cars and buildings and other things
17 like that. It could just as easily be applied to
18 product.

19 And then lastly to consider some strong
20 financial incentives for what Michael Siminovitch
21 and others have called super CFLs and for best-in-
22 class LED products.

23 With that I'll conclude and would be
24 happy to take questions as time permits. Thank
25 you.

1 PRESIDING MEMBER PFANNENSTIEL: Thank
2 you, Chris. Questions? Tim.

3 MR. TUTT: Chris, I just have one
4 question related to modified spectrum lamps under
5 the new federal standards. As you know, in our
6 current Title 20 standards we exempted them. The
7 federal standards did not do that.

8 And as I understand it, the modified
9 spectrum lamps are capped at the same wattages as
10 regular lamps and would therefore have to
11 presumably use the same changes in technology as
12 regular lamps, regular incandescent.

13 So, I'm curious as to why under that
14 scenario people would move towards modified
15 spectrum lamps any more than they are today.

16 MR. CALWELL: That's a good question.
17 The 25 percent allowance that was granted to the
18 modified spectrum lamps federally is larger than
19 some of the technologies need. There are
20 different ways of approaching modified spectrum,
21 and they don't all require 25 percent less light
22 output.

23 So the manufacturers who choose to use
24 the more efficient means of modifying spectrum
25 would have more room to meet the standards and not

1 require as efficient of technology to get there.

2 That's probably the shortest way to
3 explain it.

4 Some of the manufacturers' own
5 statements about what their future incandescent
6 technology can do gives them enough head room, if
7 you will, above the federal requirements to be
8 able to absorb much of the light with the new
9 modified spectrum coding and still comply.

10 So we will see what happens. But I
11 think as incandescent sales drop more and more,
12 some manufacturers may be tempted to reduce the
13 number of different -- in incandescent lamps they
14 sell. And dropping them all to a modified
15 spectrum might be a potentially appealing way for
16 them to go.

17 MR. FERNSTROM: So, Tim -- this is
18 Gary -- are we being clear about that? The
19 modified spectrum lamps are federally covered all
20 right in terms of their wattage, but there's an
21 allowance to allow them to be dimmer.

22 MR. TUTT: Yes, I understand. And for
23 purposes of meeting our Huffman goals if they are
24 dimmer and consumers accept that dimming without
25 changing wattage bins, you still get the energy

1 savings.

2 MR. FERNSTROM: Indeed, but the
3 speculation is because they're dimmer consumers
4 might step up to a higher wattage level, a higher
5 category. And furthermore, the manufacturers are
6 currently marketing these as superior in terms of
7 the quality of light they offer, which would
8 further influence consumers to purchase them.

9 PRESIDING MEMBER PFANNENSTIEL: Are
10 there other questions? Commissioner Rosenfeld.

11 ASSOCIATE MEMBER ROSENFELD: Hi, it's
12 Art. I've had this same concern that you
13 mentioned, Chris, early in your talk about our
14 dimmers, Title 24 dimmers, I'm looking at Bill
15 Pennington -- are they really the right thing to
16 encourage.

17 To my mind dimming got started when
18 incandescent lamps used a lot of energy and there
19 was some joint reason for dimming. One was decor
20 and the other was you actually saved electricity.

21 CFLs are so efficient now that the
22 motivation is not really to save electricity, but
23 the decor idea has caught on.

24 So I agree that in your dining room
25 you're going to need dimmers. But I'm sort of

1 looking at -- I'm encouraging a two-minute debate
2 between Bill Pennington and Chris about whether we
3 should really be encouraging dimming of
4 incandescents in kitchens and bathrooms and so on.

5 MR. CALWELL: It seems to me what I can
6 do, Bill, is offer another additional thought, and
7 then leave time for you to react. Would that be
8 fine?

9 MR. PENNINGTON: I was about ready to
10 answer the Commissioner.

11 ASSOCIATE MEMBER ROSENFELD: He was
12 ready to react, Chris.

13 MR. CALWELL: Oh, do you want to go
14 first, Bill?

15 MR. PENNINGTON: Sure. Dimmers are not
16 allowed in kitchens or bathrooms. So, those are
17 required to be high efficacy fixtures. Or manual
18 on occupancy sensors in bathrooms.

19 Dimmers are only provided for in Title
20 24 for those parts of the house that have very few
21 hours of use of the lighting fixture. And in
22 those cases the analysis that we did for the 2005
23 standards was that CFLs were not cost effective
24 because of very low hours of operation. And so
25 dimmers are there.

1 You can choose to do either one, so we
2 didn't require CFLs in those applications. But
3 you can choose to do those. But dimmers are
4 required at a minimum.

5 So we saved a little bit of energy
6 relative to those applications where CFLs would
7 not have been cost effective.

8 That's how we got that.

9 MR. CALWELL: Maybe, Bill, maybe the
10 biggest change since the original analysis is just
11 that the base price of CFL has now become so low
12 that they're cost effective on a bulb replacement
13 basis only, without any consideration for the
14 energy savings.

15 MR. PENNINGTON: So that's something
16 that could be revisited.

17 ASSOCIATE MEMBER ROSENFELD: Yeah.

18 MR. CALWELL: Yeah, and so it's probably
19 possible to show that CFLs would make sense in
20 nearly all applications where they're
21 aesthetically sufficient. And then what you have,
22 as Art mentioned, is situations where people
23 really want a lamp to be able to dim.

24 And my wife and I did buy some dimmable
25 CFLs for use in our dining room, and some of them

1 work pretty well in a dimmer and some of them
2 flicker like crazy and were not acceptable, so --

3 ASSOCIATE MEMBER ROSENFELD: And they're
4 expensive.

5 MR. CALWELL: What's that?

6 ASSOCIATE MEMBER ROSENFELD: And they're
7 expensive.

8 MR. CALWELL: Yeah. And because they're
9 not available in mass market retail we were paying
10 \$14 apiece for them on an internet site. And so I
11 think this points, if nothing else, to again the
12 merits suggested by Michael and others that a new
13 generation of super CFLs, if you will, be
14 encouraged to be produced that not only can dim
15 easily and affordably, but the aesthetics of their
16 dimming more closely resembles CFLs -- I'm sorry,
17 excuse me, more closely resembles incandescent.

18 Because many fluorescent technologies,
19 when you dim them, the color shifts in a way
20 that's not as aesthetic or as familiar as people
21 would like.

22 ASSOCIATE MEMBER ROSENFELD: Okay,
23 thanks.

24 PRESIDING MEMBER PFANNENSTIEL: Other
25 questions of Chris?

1 MR. FERNSTROM: This is Gary. Just one
2 more quick comment. In defense of the building
3 standards, the way they're currently written, we
4 believe that the super CFL has a lot to offer.
5 We've offered rebates on one product this year by
6 a company by the name of ULight that makes a
7 dimmable CFL that was offered at essentially the
8 same price as all of these other products.

9 So, I expect to see the growth of high
10 quality dimmable products be substantial in the
11 next couple of years.

12 PRESIDING MEMBER PFANNENSTIEL: Go
13 ahead, Gary.

14 MR. FLAMM: This is Gary Flamm, CEC
15 Staff. One important consideration in Title 24 is
16 that we're looking at the rating of the fixture,
17 not the rating of the lamp.

18 In Title 20 we're looking at the lamp.
19 So the fixtures that are dimmed in Title 24 have
20 an incandescent socket in them.

21 So the cost effectiveness is not based
22 on the fact that a screw-based compact fluorescent
23 lamp is now cheaper; it's we still need to bring
24 cost effective compact fluorescent fixtures to the
25 market at least the way that Title 24 currently

1 evaluates lighting.

2 MR. CALWELL: Yeah, I think that's a
3 great point. I think screw-based CFLs have become
4 phenomenally affordable because of the sheer
5 volume at which they're being produced. And the
6 hope is that that same phenomenon would trickle
7 down to fixtures, even though, as everyone knows,
8 the fixture has the components of a screw-based
9 CFL split into two parts, a hardwired ballast and
10 a pin-based lamp.

11 So, I haven't studied it nearly as
12 intensively as I have screw-based CFLs, but I
13 imagine, Gary, the most defining analysis is that
14 the pin-based EnergyStar fixtures can still have a
15 significant price premium over a conventional
16 screw-based fixture. And if utilities direct
17 additional attention and resources there maybe
18 that price premium can be overcome.

19 PRESIDING MEMBER PFANNENSTIEL: Okay, we
20 probably need to move on. We have a ways yet to
21 go, and it's many others yet to speak.

22 Edison to speak to lighting efficiency.

23 MR. HIGA: Randall Higa, Southern
24 California Edison, again. What I wanted to do in
25 this segment, I guess the first thing is to --

1 (Pause.)

2 MR. HIGA: Thanks. So this afternoon
3 what I wanted to do was go through those same
4 lighting topics that I talked about this morning,
5 and go into them in more detail.

6 And on some of these I may enlist the
7 support and help from Luis from the CLTC, since
8 some of these ideas were generated by the CLTC.
9 So I'll try to, in the interest of time, just kind
10 of skip over some of those that I already talked
11 about in some detail earlier this morning. So
12 I'll just try to sort of pick and choose those
13 that I have more data to provide.

14 So, again, these are just the Huffman
15 bill related projects. Again, I mentioned this
16 study. And as I mentioned, it was a survey we
17 did, in all three service territories in
18 California. We did a variety of building types
19 and we have all these tabulated in the report.

20 We looked at the distribution of indoor,
21 outdoor plug-in versus hardwired. And also what
22 the load per fixture is. We looked at what the
23 energy use per foot of neon.

24 And I just wanted to mention a couple of
25 the key findings there that really surprised us,

1 in that 70 percent of the neon we found was
2 indoors. What's relevant there is that means that
3 it's on all day long, as opposed to neon outdoor
4 signage, much of which is on only during the
5 evening.

6 So what that means is you have a lot of
7 neon lighting that's on during the peak periods.
8 So there's real opportunities to impact onpeak
9 power both from a standpoint of energy use, but
10 also from demand response opportunities.

11 Again, there was also differences in the
12 wattage of each fixture between indoor and
13 outdoor, and also plug-in and of hardwired. So
14 you can see that there's some differences in the
15 linear feet versus the wattage versus the annual
16 kWh of the various types of lights.

17 Again, this will have some impact on
18 where we may want to focus our efforts in terms of
19 looking at various types of controls and/or
20 efficiencies in some of the power supplies to neon
21 lighting.

22 In this one we actually had a test
23 facility set up in our lighting lab at SCE where
24 we had a mock-up cubicle, where we had overhead
25 lights. We have adjustable height ceiling; we

1 adjusted the height to the ceiling to what we
2 think is sort of a typical office.

3 We tried to replicate what the most
4 typical sort of office cubicle lighting would be,
5 and the furniture layout, et cetera.

6 But we did give the users various -- we
7 took surveys and we put people into different
8 types of scenarios. One where they could dim the
9 lights, ones where they couldn't, and then those
10 of various different types of task lights and
11 under-cabinet lights. And took and did surveys on
12 what their satisfaction was with the type of
13 lighting that they're given. And also when they
14 had that ability to dim the lights, how much they
15 dimmed the lights.

16 And we allowed them to dim the lights in
17 two different ways. Sometimes we put the lights
18 full brightness and allowed them to dim down. Or
19 sometimes we put the lights at minimum levels and
20 allowed them to ramp the lights up.

21 And as you can imagine, when they
22 started at low level they didn't -- the end point
23 of their overhead lighting was much less than if
24 they started bright and went downwards.

25 So that was an interesting issue there

1 which may have some ramifications in how lighting
2 controls are done with dimming ballasts.

3 The other key thing was with the task
4 lighting and how people reacted differently and
5 used the task lighting differently, whether it be
6 under-cabinet, and we had both fluorescent under-
7 cabinet lights and LED under-cabinet lights.

8 We also, for some of the cases, we gave
9 them one portable LED light, and allowed them to
10 locate it anywhere on the desk that they chose.
11 And my interest in the beginning was to give the
12 test subjects sort of an education in how to use
13 those task lights in the proper way to reduce
14 reflections and all the other good stuff, and
15 uniform light, but we decided not to do that in
16 the tests. And it's something that I think we
17 need to work on in future studies. We just didn't
18 want to inject too much into this particular
19 study.

20 Again, the key findings. Overall
21 lighting was reduced 5 to 19 percent. And those
22 were in the cases where they were able to dim the
23 overhead lights, and they did have some type of --
24 the range is because it depends on, well, the test
25 subject range, but also depending on what kind of

1 task light they were using. Whether it was a
2 combination of under-cabinet and the portable task
3 light.

4 And in each case it was interesting
5 because even though we allowed them to dim the
6 lights to whatever level they wanted, sometimes
7 they would, if they had only overhead lights and
8 no task lights, they may come down to the lowest
9 light levels, but they would also have the very
10 lowest satisfaction levels, too.

11 So it wasn't that they were trying to
12 reach a uniform satisfaction level. So, anyway,
13 the study provides a lot of interesting sort of
14 data on what can be done and what further tests
15 and studies need to be done with respect to the
16 combination of task and ambient lighting and
17 dimming ballasts.

18 MR. PENNINGTON: Question, Randall.

19 MR. HIGA: Yeah.

20 MR. PENNINGTON: Is this a Title 24 kind
21 of change or a Title 20 change?

22 MR. HIGA: It could be a combination of
23 both because some of the further studies this
24 would lead into is with regard to Title 20 is on
25 the portable lighting and the task lighting.

1 Because while -- I mean there's only going to be
2 an energy reduction if the task light is
3 efficient.

4 In this case we were using the most
5 efficient task light we could find, and it was an
6 LED. And so the 5 to 19 percent energy efficiency
7 range is highly dependent on having an efficient
8 source for that task light.

9 So, you can try to, you know, reduce
10 ambient lighting, which is Title 24, but unless
11 you have that efficient task light in Title 20, it
12 would be hard to regulate the whole thing under
13 Title 24, because you have these plug-in loads
14 which aren't regulated by Title 24, so --

15 MR. PENNINGTON: Okay, thank you.

16 MR. HIGA: That's sort of the tie-in.
17 So it's really a little bit of both on this one.

18 I think I talked about most everything
19 here. Again, this is where we used improved
20 phosphorus for the T12 lamps that are used in
21 signage. One of the issues with signs is that
22 they have very odd sized light of lamps. They're
23 five foot, nine foot, ten foot, they come in a
24 variety of sizes. So it isn't easy just to
25 retrofit them say with T8s, T5s, et cetera.

1 There's issues of banding where you
2 don't want to have light, dark, light, dark. And
3 also the continuity of lighting going across the
4 sign, so again the signs necessitate some of these
5 very odd, but very long lengths.

6 So eventually we may get to a point and
7 the signage industry may get to a point where
8 other types of lamps are used. But for right now
9 in the near future anyway, it's T12. So that's
10 why we're concentrating on this.

11 Again, we'll be working with other lamp
12 manufacturers and try to drive the efficacy
13 higher, try to play more with the spacing and the
14 optics of the sign, itself, to get uniform light
15 with lower wattage.

16 Again, this is the survey that I
17 mentioned earlier. Not much more to say except,
18 you know, that list there at the bottom is some of
19 the things that we're looking at and the
20 information that we're gathering.

21 We're hoping that this project would
22 have been completed last year, but turns out that
23 our consultant, who will remain nameless, couldn't
24 get to enough specifiers in the period of time, I
25 mean to get, you know, a statistically significant

1 number of people to get anything meaningful out of
2 this.

3 So, we hope that this will be done in
4 the next month or so. And hopefully this, again,
5 will feed into some of these other dimming
6 ballasts and dimming types of both Title 20, as
7 well as Title 24 codes and regulations.

8 The super CFL, Chris mentioned that
9 again. Again, those three things are the issues
10 that are being looked at. I know that in my own
11 home, my wife, who's an interior designer, is not
12 going to allow CFLs in certain fixtures until the
13 super CFL is available.

14 And I realize that there are lamps that
15 are available now that's lighting -- CLTC does
16 have some lamps in their lab that do have the high
17 CRI and the appropriate color temperature, but
18 they're not available at Home Depot yet, so that's
19 something that has to be worked on.

20 Again, this is a sort of continuation of
21 that task ambient lighting project. We also think
22 that there are other areas for task lighting such
23 as under-cabinet lights. Partition-mounted
24 lights, again those could be the up-lights for
25 general lighting. The portable task lights as we

1 use in the task ambient study. Or office
2 torchiers.

3 I don't know, Luis, is there anything
4 you want to add onto any of these or --

5 MR. FERNANDEZ: (inaudible).

6 MR. HIGA: Those are the ones that --
7 okay. Maybe you want to -- I'm going to have Luis
8 take over here and just so you can get some new
9 information on stuff that I've already talked
10 about. There's not too much more I could add on
11 these items. So I'll let you add more onto some
12 of these topics here.

13 MR. FERNANDEZ: This is Luis Fernandez
14 from CLTC. Is this loud enough? I can't tell
15 here. Good.

16 The neon lighting systems effort is
17 something that can be continued. There are other
18 opportunities for improving energy efficiency.
19 Ceiling fan lights are --

20 ASSOCIATE MEMBER ROSENFELD: Luis, a
21 little closer to the mike, please.

22 MR. FERNANDEZ: Oh, I'm sorry. Ceiling
23 fan lights are things that can be bought at the
24 big box stores that anyone can install in their
25 homes. And they're currently very energy

1 efficiency with respect to lighting. They come
2 with incandescents.

3 So that's energy -- making these things
4 with LED lights is not a complicated thing, so
5 that's something that CTLC is developing within
6 the framework of a PIER project. And we are
7 hoping to move that into demonstration very soon.

8 I guess this one is a bit -- could be a
9 Title 24 thing, too. Landscape lighting kits
10 again, things that people can buy and self-
11 install, are not covered right now. And if these
12 things were regulated by Title 20, this is a very
13 large opportunity for energy efficiency.

14 And there are products now available
15 that have incorporated LEDs and occupancy sensors.
16 So, they are only activated when someone is
17 walking by. So, again, these things are available
18 now and regulation could address this very
19 effectively.

20 I haven't been involved with this one,
21 so, again, high efficiency lighting is very
22 appropriate for vending machines and beverage
23 coolers. Especially because LEDs increase
24 efficiency as temperature drops. So this is,
25 again, a very good opportunity to increase the

1 efficacy of the light sources used in these types
2 of machines.

3 And again, directional lighting is --
4 talking again about LEDs, the lamp products that
5 we've seen with LEDs are much better in the realm
6 of replacing reflector lamps than replacing
7 general service lamps, which have still a little
8 ways to go.

9 So, if certain -- especially in the low
10 wattage ranges, they can be replaced by LEDs very
11 soon. And those low wattage ranges are usually
12 the ones that cause problems for replacements
13 with, of incandescents with CFLs. But in these
14 ranges it could be argued that LEDs are already
15 there. So, again, this is another good
16 opportunity.

17 Lighting controls, either demand
18 response or occupancy driven. There are many
19 applications in which they are already available.
20 But this kind of technology is something that
21 could be generalized and a more extensive study of
22 where controls are feasible or useful, a more
23 systematic study is something that we envisage as
24 being a very useful exercise. And, again, this is
25 related to replacing the neon technology.

1 Another opportunity that's related to
2 the readiness of LEDs for low wattage, replacing
3 low wattage reflector incandescents, is in track
4 lighting, which predominately uses that type of
5 lamp. And, again, something that is unregulated
6 and people purchase and install in their homes.

7 And this on the more high tech approach.
8 Studying the applicability and the mass
9 applicability of communication -- we enter
10 building communication systems and addressable
11 ballasts.

12 So there's also the -- another approach
13 that can be taken is to address the whole
14 luminaire, regulate the luminaire instead of just
15 the lamp.

16 There are other types of lamp --
17 something else that can be -- that's very
18 important to address is the specialty lamps.

19 And I guess that's the end.

20 MR. HIGA: Yeah, that concludes our
21 presentation on the Huffman bill-related items.
22 Again, we appreciate the opportunity to present
23 some of the things that we're working on.

24 Are there any questions?

25 Yeah, Jon.

1 MR. McHUGH: Jon McHugh, HMG. One of
2 the research topics was dimming ballasts; and this
3 is actually something that's been of notable
4 importance for Title 24 is we've been expanding
5 the scope of daylighting and increasing the use of
6 dimming ballasts.

7 One of the things that is an ongoing
8 concern is the issue of dimming ballasts actually
9 working correctly. And the issue of flicker and
10 of dimming ballasts dropping out either in the
11 situation of, you know, sort of quality control of
12 the ballasts, but also in terms of tandem wiring
13 and wiring configurations with inside of
14 luminaires.

15 I've talked with one specifier of
16 thousands of luminaires with dimming ballasts.
17 One of the things to work out their issues, they
18 actually had to go through sort of a trial-and-
19 error period with actually how the, you know, the
20 wires in the luminaire were laid out so that the
21 ballasts were not causing a distraction.

22 So, --

23 ASSOCIATE MEMBER ROSENFELD: Causing
24 what, Jon? I didn't hear you.

25 MR. McHUGH: Causing a distraction, you

1 know, because of flicker or dropping out. Related
2 to that is another issue related to flicker which
3 is I contacted Terry McGowan. He used to be at
4 General Electric. And he said that this is an
5 issue; and the other issue that he's seen recently
6 has to do with power supplies for LEDs where some
7 of them are not using enough filtering and they're
8 getting the 60 cycle flicker in those power
9 supplies.

10 So if we expect that these products,
11 either dimming fluorescent ballasts or also LEDs,
12 are going to be accepted by the marketplace, some
13 of these quality issues, I think, also have to be
14 addressed in the standards.

15 MR. HIGA: Yeah, I'll make one response
16 to that, and that is in our dimming ballast survey
17 work we're hoping that when we get feedback from
18 the designers and specifiers of lighting systems
19 on dimming ballasts that -- we're specifically
20 asking them questions about how did the, you know,
21 systems work after they specified them.

22 Now, they don't always go to the site
23 and see what happens. And, you know, talk to the
24 occupants. But hopefully we'll get some feedback
25 on, you know, some of the dimming ballast

1 performance out of our study, so. Yeah.

2 MR. ERHARDT: Yeah, I just wanted to
3 comment on that last point. I'm Bob --

4 PRESIDING MEMBER PFANNENSTIEL: Would
5 you -- okay, sorry. Would you give your name for
6 the record.

7 MR. ERHARDT: I'm Bob Erhardt, Philips
8 Lighting and Electronics. I'm also Chairman of
9 the NEMA ballast section.

10 I wanted to report that the lighting
11 industry is aware of compatibility issues between
12 lamps and dimming ballasts. We have a task group
13 that has been formed to address this issue.

14 We've just been involved in a rather
15 extensive study on compatibility between lamp and
16 ballast interactions. And we're in the process of
17 developing standards for specifying lamp/ballast
18 interaction.

19 We've also released, or in the process
20 of releasing, a NEMA whitepaper that addresses
21 this very issue; goes over the concerns of wiring
22 and lamp holder interconnections are critical; and
23 we've developed a whitepaper to address these
24 issues.

25 PRESIDING MEMBER PFANNENSTIEL: Tim, do

1 you have a question?

2 MR. TUTT: Yes. Randall, I had a
3 question about the super CFLs. Can you give us a
4 better idea of the timeframe that effort is on,
5 and what it's intended to lead to, particularly in
6 terms of the efficacy of the resulting product and
7 so on?

8 MR. HIGA: Yeah, I was going to say,
9 Luis, go ahead.

10 MR. FERNANDEZ: Hi, this is Luis
11 Fernandez from CLTC. I've been involved with the
12 super CFL effort more or less from the beginning.
13 And your question was about what's the intent
14 relative to the efficacy beyond the color and the
15 other things, and also the timeframe.

16 MR. TUTT: Yeah, the timeframe and what
17 your expectation about the impact on the efficacy
18 would be from that.

19 MR. FERNANDEZ: The timeframe. At this
20 point in time the utilities are initiating
21 discussions with, or contacts with the
22 manufacturers. But that is something that's going
23 to go on during this first quarter.

24 When the super CFL could hit the
25 shelves, I assume, I think it would be hard for me

1 to make a prediction, but sometime next year maybe
2 I think it would be possible. Some CFLs are very
3 close already.

4 So, it would depend on many things that
5 haven't happened yet. Many discussions that
6 haven't taken place yet.

7 But it's something that's close to
8 existing. I'm sorry there was --

9 MR. FERNSTROM: Tim, if I could comment
10 on that. The objective of the effort isn't so
11 much to increase the efficacy as it is to address
12 compatibility and user satisfaction issues.

13 MR. TUTT: Yes, I understand that, Gary;
14 and, in fact, the super CFL might be a little bit
15 less efficient than some of the models out on the
16 market today, but we have greater consumer
17 satisfaction.

18 Is the intent to have the utilities
19 provide incentives for this brand of CFL that does
20 have that consumer satisfaction, and increase
21 sales in that fashion?

22 MR. FERNSTROM: Indeed. The utility CFL
23 programs have been under pressure with respect to
24 their savings relative to net-to-gross issues.
25 So, in order to address that, efforts are being

1 redirected to better products that aren't
2 currently in the marketplace to re-establish a
3 higher level of effectiveness.

4 MR. HIGA: One of the issues that can
5 come up as CFLs become more efficient is that the
6 more efficient newer CFLs, if they have the same
7 light quality as the CFLs currently available,
8 they may end up replacing CFLs that are already in
9 service, or replacing CFLs that burn out.

10 And what we want is something that
11 addresses the concerns of people who currently
12 prefer incandescents. And so replacing
13 incandescents is a much better efficiency
14 proposition than replacing CFLs that are say 10
15 percent efficient.

16 MR. FERNSTROM: So there's one more
17 quick issue with the CFL with respect to -- or
18 super CFL with respect to energy savings. And
19 that is the current products in the market have
20 terrible power factor resulting in maybe 5 to 10
21 percent of the energy savings additionally lost in
22 the building distribution system.

23 So, if power factor can be improved,
24 energy savings overall perhaps, not that measured
25 and paid by the customer, but from a societal

1 point of view, might be improved by 10 percent or
2 so.

3 PRESIDING MEMBER PFANNENSTIEL: Okay,
4 thank you. Philips.

5 MR. ERDHEIM: Good afternoon, Madam
6 Commissioner, Commissioner Rosenfeld, John and
7 Tim. My name is Ric Erdheim; I'm Senior Counsel
8 for Philips Electronics.

9 I did come today because I wanted to
10 make some comments on battery chargers, which I'd
11 like to come back for later. So I was a little
12 bit surprised to see that Philips was listed on
13 lighting. But I'm happy -- Philips being a
14 resourceful company, I have a few comments to
15 make. And we actually have put, this afternoon a
16 very short presentation, together that Bob Erhardt
17 is going to give. So let me just make some brief
18 comments.

19 First, as you know, on December 7, 2006,
20 it was the Philips president of lighting who
21 called for a worldwide effort to ban incandescent
22 bulbs. As a result of that effort we now have a
23 major improvement, both in California with the
24 Huffman bill, and the federal bill. We're very
25 proud of that.

1 We've come along with a new product that
2 Mr. Calwell mentioned, the energy efficiency
3 halogena. There's no fakery with this. We didn't
4 move in the wattage range, in the ballast -- any
5 of the ranges. It's a real live product that gets
6 30 percent efficiency today. This product's on
7 the shelf. And there will be other products
8 coming from Phillips, and I suspect the other
9 manufacturers. And I think we will see
10 significant savings from these products.

11 Now, we just received a couple of days
12 ago the presentation from PG&E. And I guess it
13 would have been more useful, I think, for this
14 workshop if we had had more time so we could have
15 put together not only Philips' comments, but
16 industry comments. So we're at somewhat of a
17 disadvantage.

18 But we did have a brief opportunity to
19 review this, and I have a couple of points,
20 preliminary points that I wanted to make. First,
21 Chris talked about enforcement being important; he
22 talked about it for your regulations. But we see
23 enforcement as a critical issue, also.

24 We can have the greatest standards we
25 want; we'll met the standards; the other major

1 companies will meet the standards. But we suspect
2 there's going to be some people that won't meet
3 the standards. So enforcement has to be a
4 critical effort.

5 Second, we think that the focus should
6 be on efficiency standards, not particular
7 technologies. We think the marketplace can
8 address the technologies.

9 And finally, we think the focus should
10 be on systems and not components. And a lot of
11 what we've heard is focus on improving the
12 luminaire here and the ballast here, but these are
13 all working together. And we think the critical
14 importance is to work on systems.

15 And so with your permission, Madam
16 Chair, I'd like Bob to come up and talk very
17 briefly about that concept.

18 MR. ERHARDT: Again, Bob Erhardt,
19 Philips Electronics, and Chairman of the NEMA
20 ballast section, former Chairman of the NEMA
21 lighting control section.

22 (Pause.)

23 MR. ERHARDT: I just wanted to expound a
24 little bit on the benefits of taking a system
25 approach compared with a component approach. This

1 has been addressed a couple of times here today.
2 And most recently by the gentleman from Southern
3 California Edison.

4 In a system approach lower limits on
5 lighting power density has a limited ability to
6 minimize total lighting energy usage. As an
7 example we've heard of recommendation for
8 specifying CEE limits for high efficiency T8. And
9 from my experience this results in approximately a
10 3 to 5 percent improvement in power efficiency.

11 By contrast, we have some evidence that
12 a systems approach can reduce total lighting
13 energy use by as much as 63 percent.

14 It can be shown that just giving users
15 control of light levels can result in -- we have
16 some examples of 30 and 40 percent reduction in
17 energy usage for some users.

18 If someone is working at a cad station
19 or in front of a CRT all day, they may not want so
20 much light. Conversely, though, if you are doing
21 reading at your desk you're going to want the
22 highest light levels.

23 When you only address lighting power
24 density what you're doing is you're specifying the
25 least light for the task that requires the most

1 light. When you use controls you allow users to
2 have higher light levels for tasks that require
3 them, and give them the opportunity of using lower
4 light levels for tasks where increased light can
5 even be counter-productive.

6 Use of occupancy sensors also has been
7 shown to result in similar savings, although
8 they're not cumulative. You're not going to get
9 20 percent and 20 percent because if you're
10 running at lower light levels.

11 In addition, daylight harvesting can
12 result in over 70 percent energy savings during
13 peak periods of operation since you have the most
14 daylight during the highest peak level. And this
15 is of particular importance when you consider the
16 need to build new power plants.

17 I've been involved -- I think this is
18 all public domain, so I think I can speak about it
19 -- I've been involved in the Department of Energy
20 commercial lighting initiative. The DOE
21 commercial lighting initiative is studying ways to
22 quantify savings from lighting systems.

23 This approach is they are not only doing
24 some modeling of lighting systems, but they are
25 actually developing a tool that they hope to make

1 a web-based tool that will allow you to model your
2 installation for verification of lighting, of
3 energy savings.

4 In the model so far, lighting systems
5 optimized just for lighting power density alone
6 are projected to save 9 to 28 percent energy
7 compared to a baseline. And I think the baseline
8 was 1.7 watts per square foot. But in their
9 models it has been shown that systems further
10 optimized for lighting control with daylight
11 harvesting are projected to save as much as 33 to
12 63 percent compared with the 1.7 watt per square
13 foot baseline.

14 NEMA, National Electrical Manufacturers
15 Association, which I'm involved in, is working
16 with Pacific Northwest National Laboratories in
17 developing product type specifications that can
18 then be plugged into this model. So, that goal is
19 that during 2008 there will be a web-based tool
20 that will allow you to plug in specified product
21 types; and you will be able to model your
22 installation and verify energy savings.

23 It's the recommendation of Philips
24 that -- well, first of all, it's our opinion, we
25 share this opinion with Pacific Gas and Electric,

1 that lighting power density alone will not result
2 in the energy savings needed to meet the
3 provisions of AB-1109.

4 Twenty-five percent in commercial
5 installations, if you consider installed base
6 represents a very dramatic energy savings that
7 cannot be achieved by product alone. You have
8 many products that are already in the 90 percent
9 efficiency. You're not going to save an
10 additional 25 percent.

11 Assistance approach, though, however, as
12 indicated by the commercial lighting initiative
13 approach, could meet the requirements of AB-1109.
14 Again, there's projections of -- there were
15 conservative projections of 30 and 40 percent
16 energy savings, and as much as 50 and 60 percent
17 energy savings.

18 So Philips Lighting urges the California
19 Energy Commission to strongly consider looking at
20 a systems approach with controls when it's
21 considering meeting the requirements of AB-1109.

22 Thank you.

23 PRESIDING MEMBER PFANNENSTIEL: Thank
24 you. Questions? None, thanks.

25 California Lighting Technology Center,

1 is there a presentation? Yes.

2 (Pause.)

3 MR. FERNANDEZ: Good afternoon; I'm Luis
4 Fernandez from the California Lighting Technology
5 Center. I'm replacing Michael Siminovitch who
6 couldn't attend this afternoon.

7 For those who don't know the Center, our
8 mission is to develop and demonstrate energy
9 efficient lighting technologies for California.
10 And we have been involved in policy initiatives,
11 as well.

12 So I'm going to be very broad and quick
13 because a lot of this came as the result of a
14 study that was sponsored by the CEC, and on which
15 we worked last summer.

16 So, as you know, the Huffman bill was
17 approved in October, and demands quite aggressive
18 reductions in lighting energy consumption in
19 California. And we consider that one of the most
20 ambitious ones is the 50 percent reduction in
21 lighting energy in California residences.

22 If we look at what's installed right
23 now, what kinds of lamps are installed in
24 California houses, we see that there's still a
25 great -- the incandescent lamps are still the

1 norm. And that's where we believe the greatest
2 opportunity lies.

3 And this is the biggest rock that we
4 have to move if we are going to meet the goals of
5 this legislation. There are many other things
6 that can help. Addressing the yellow, getting
7 sort of rid of the yellow part of those charts is
8 the -- although in 2007 it's a little smaller.
9 That is going to make or break this initiative in
10 our opinion. So, as I said, it's a little higher
11 last year.

12 Building codes have been very effective
13 in new housing, so for just the hardwired
14 fixtures, this doesn't count portables, of course,
15 which may cloud this picture a little bit. Most
16 of the fixtures going in in houses from a survey
17 that we conducted are high efficacy. So this is
18 very good news.

19 However, the new houses each year are a
20 very small sliver -- see the pie chart on the left
21 -- are a very small sliver of the existing housing
22 stock. So, since we have a timeframe of 2018,
23 it's very unlikely that this alone will -- you
24 know, it's very unlikely that all of California
25 houses will be retrofitted until then. And, of

1 course, there's the question of dimmers that has
2 been addressed.

3 So what happens if we do nothing is, of
4 course -- there are several examples. This is the
5 first of several examples that we prepared last
6 summer to see what kind of things could happen
7 depending on the actions that are taken.

8 If we do nothing, nothing happens, and
9 the lighting consumption per house will actually
10 -- there's a trend for increasing light use in
11 houses. We don't know if that's because the
12 houses are bigger or people have more lamps. It
13 would be very interesting to conduct a study and
14 find out.

15 Now, there are new incandescent products
16 that are more energy efficient, and the most
17 inefficient lamps of the present incandescent
18 technology is going to be banned pretty soon, in a
19 few years. However, that only gets us part of the
20 way. And that, alone, won't -- will get us not
21 even halfway.

22 So, again, addressing the incandescents,
23 the prevalence of incandescents is, I think,
24 should be the main goal of an effort to meet AB-
25 1109.

1 If incandescents, if people switch from
2 incandescent to any other -- so say a technology
3 like CFL, either at once or gradually, and we saw
4 the results from ECOS Consulting. And so
5 they've -- we agree more or less on the numbers.

6 So if there is a dramatic reduction in
7 incandescent energy use, the goals can be met. If
8 it's not dramatic then it's more questionable if
9 we can get there. This is only 50 percent
10 adoption of CFLs.

11 Just a final example just to see the
12 importance of building codes. Building codes are
13 extremely -- this is just if no lighting in houses
14 was allowed from 2007 on, in new or retrofitted
15 houses. First, the rate of the decrease in
16 lighting energy consumption per house in
17 California would depend a lot on the growth rates,
18 the number of houses, or the renovation rate,
19 which we can predict to a certain extent. Depends
20 on economic factors that we can't control.

21 And the other fact is that it's very
22 very effective, but it takes a longer timeframe
23 for it to be significant. So that's something to
24 have in mind.

25 So, again, we believe the goal is

1 achievable but it requires a very firm investment
2 in replacing incandescents with other high
3 efficacy technology such as CFL or LEDs.

4 And, of course, building codes should
5 continue to evolve in stringency. But that may
6 only get us a little bit of -- for 2018 that may
7 only get us a little bit of savings.

8 And that's it. If anybody has any
9 questions. Oh, there's only one thing that I --
10 when Chris Calwell was talking about there's
11 households that have a lot of CFLs and there's
12 households that have no CFLs, so the distribution
13 of CFLs seems not to be very homogeneous. And I
14 think that again addresses the necessity of a
15 program like the super CFL.

16 Also, the difference in CFL, more men
17 tend to buy CFLs, or men are more likely to buy
18 CFLs. One of the things that seems to be the
19 factor is that women have a much better ability,
20 or most women have a much better ability to
21 discern color by the nature of their own vision.
22 Physiologically their eyes are different. And
23 they have a better ability to discern color than
24 men.

25 And some of the domestic conflict over

1 CFLs may be due to some physiological differences
2 that are real. The research on those topics is
3 still ongoing, so we don't know.

4 I'm sorry to go on for so long. Any
5 questions?

6 PRESIDING MEMBER PFANNENSTIEL: Any
7 questions?

8 ASSOCIATE MEMBER ROSENFELD: Except to
9 tell Gary I think you were on the right track with
10 super CFLs. Saving another 10 percent in energy
11 isn't -- the problem is just what you said, get
12 something acceptable.

13 PRESIDING MEMBER PFANNENSTIEL: Thanks.

14 MR. FERNANDEZ: Thank you very much.

15 PRESIDING MEMBER PFANNENSTIEL: Anybody
16 else have comments on lighting? Noah, come on up.

17 MR. HOROWITZ: Noah Horowitz with NRDC.
18 I don't have any slides. My comments are going to
19 be focused on the federal energy bill that passed.
20 It's law, whether we like it or not. We need to
21 move beyond and figure out how do we live with it
22 and complement or build -- patch the things that
23 it didn't do right to the extent we're not
24 preempted. So that'll be the basis of my
25 comments.

1 As was mentioned by several people it's
2 obvious, but worth restating, California and
3 Nevada were given special treatment in the federal
4 standard due to their existing laws. And
5 California has the ability to move up to tier one
6 standards each bin by year, so the 100 watt
7 replacements rather than 1/1/2012 could be
8 1/1/2011. Similar, the 75s can move up. And we
9 strongly urge and expect California to take
10 advantage of that and to ratify that in its Title
11 20.

12 California was also given the
13 opportunity to advance the tier two standard by
14 two years. So rather than 1/1/2020 it would be
15 1/1/2018, which would enable it hopefully to get a
16 good running start, if not meet the Huffman
17 standard requirements.

18 The challenge there is it's based on a
19 DOE rulemaking. It sets a floor, if the timing is
20 missed or the stringency isn't sufficient, a
21 backdrop of a minimum 45 lumens per watt for all
22 bulbs goes into effect.

23 DOE has the ability to set something
24 even more stringent. We don't know what that
25 standard will be till 2017. I think it would, at

1 a minimum the CEC should telegraph its intent to
2 adopt the DOE tier two standard by 1/1/2018 so the
3 industry knows what's coming.

4 But I don't think you have the ability
5 to write in a number because you're limited to do
6 what the DOE does. And we don't know what the
7 outcome will be. You couldn't, although this is
8 probably a question for counsel Jonathan Blees
9 from the CEC, could you adopt the minimum of 45
10 lumens per watt. I don't know the answer to that.

11 So now I'm going to shift to where the,
12 from my personal point of view, where the energy
13 bill fell short, and there's still the opportunity
14 for the CEC to fill in some gaps.

15 Certain bases or lamp types were
16 outright exempted, or they weren't covered by the
17 standard. In simple language that means
18 California, if it wants to, could set its own
19 standards; they're not preempted.

20 And we think in some of these cases it's
21 worth California proactively filling these gaps so
22 these potential omissions don't become loopholes.

23 I'll start with the federal standard
24 only covers bulbs that are medium bases. The
25 conventional, what everybody calls today's

1 incandescent lamp, that's a medium screw base.
2 You know, the one that's about that big in
3 diameter. I don't have any props today.

4 But it does not regulate bulbs that have
5 the candelabra base, the more narrow one that
6 often has the shape of a candle on top. Those are
7 limited to 60 watts if it has a candelabra base.

8 There is no reason these can't be made
9 more efficiently. So we think -- so if you're a
10 candelabra base and more than 60 watts you are
11 regulated. But if you're less than 60 watts,
12 you're not regulated. We think these lamps should
13 have to meet the same standards. Or an alternate
14 would be to limit them to 40 watts, which is most
15 of these are decorative in nature. It's not a
16 reading lamp where you really need the higher
17 light output.

18 We also want to point out that Ostrum
19 Sylvania, a NEMA member, and a major U.S.
20 manufacturer of lamps already offers an energy
21 saving halogen in a candelabra base configuration.
22 So the better bulb already exists that would
23 comply.

24 Now, I'm going to shift to specialty
25 lamps that for one reason or another, while

1 they're not today's everyday lamp, they were
2 exempted due to some pressure from industry. And
3 I think we need to frame all of this, is today the
4 reality is the incandescent light bulb, when you
5 buy it in a four-pack, costs a quarter. And
6 that's the least efficient bulb.

7 Compact fluorescents are over here at
8 about \$2 a bulb. Much more efficient and much
9 better deal for both the environment and people's
10 wallet. But enough people aren't willing to make
11 the leap from a quarter to \$2 a bulb, or, you
12 know, paying \$8 to \$10 or so for the multi-pack.

13 As long as that 25 cent incandescent is
14 still on the shelf, that's what they're going to
15 buy. And, again, we've seen some data, a lot of
16 Americans have multiple CFLs in the home, half the
17 people don't. And it's, I believe, for one of two
18 reasons. They can't get past the first cost; or
19 for whatever reason they think they don't like
20 CFLs or they might have tried it and didn't like
21 it. But I think that's the minority.

22 So we have to get that very inefficient,
23 very inexpensive bulb off the shelf. And that was
24 the intent of the tier one standard.

25 So we will see products. Philips took

1 the lead, and kudos to them; their 100 watt bulb
2 is replaced by a 70 watt improved incandescent in
3 this form, a halogen. That bulb is retailing for
4 \$5 right now. It's a two-pack for 9.98 at Home
5 Depot. They are the first to market; that price
6 will probably come down with volume as other
7 competitors are there.

8 I don't know if that, over time, will
9 cost the same or less than a CFL. This is a real-
10 life experiment. But the reality is as long as
11 there's that 25 cent bulb on the shelf, it's going
12 to steal sales from the CFL, the LED that
13 initially will cost a fair amount of money or the
14 energy saving halogens.

15 GE's made a lot of noise. They're going
16 to bring a high-efficient incandescent to the
17 market that will be twice as efficient as today's
18 incandescent, or roughly 30 lumens per watt and
19 has the promise to do even better. We don't know
20 where that's going to fall out.

21 So that's all background. So that's the
22 landscape. We need to make sure that there aren't
23 loopholes that someone could still take today's
24 incandescent technology, the bulb would cost a
25 quarter or 50 cents, and its sales would thrive

1 compared to the CFL and these other alternatives.

2 Example number one. Vibration resistant
3 or vibration service lamps. So imagine an
4 escalator or a ferris wheel or some other thing
5 that might be subject to vibration and need a
6 little bit more of a robust filament --

7 ASSOCIATE MEMBER ROSENFELD: A common
8 one, Noah, is just a garage door opener. I have
9 to get vibration proof lights in that fixture.
10 There are a lot of those.

11 MR. HOROWITZ: Correct.

12 MR. FERNSTROM: Or for that matter,
13 Noah, a ceiling fan.

14 MR. HOROWITZ: Yes. So, it is a reality
15 that there's certain lamps that are going to be
16 subject to an environment where there are
17 vibrations. And so a simple view of that would be
18 exempt them. They deserve special treatment.

19 But the new efficient incandescents that
20 are coming will have shorter filaments that will
21 be more robust and most likely could survive these
22 sort of environments. CFLs, in many cases, work
23 well; LEDs won't suffer from these high vibration
24 environments.

25 The potential world we're looking at is,

1 so I was told by industry these bulbs cost a whole
2 lot more to put the supports on the filaments,
3 that's what a vibration service lamp is. Take
4 today's incandescent and put some supports around
5 it. That costs a lot of money to make, and they
6 don't make them in volume. Why are you worried
7 about this, Noah?

8 Well, on Father's Day I was in
9 Walgreens. My daughter scraped her knee, and on
10 the front display, it was a whole wall display of
11 these bulbs -- I'll pass it around. It says, it's
12 a 12-pack of bulbs, wow, \$3. It's printed on
13 there. It wasn't a sticker. It's made by Feit
14 Electric, who's a NEMA member, and is one of the
15 top five sellers of CFLs. It's not some fly-by-
16 night company.

17 It's an American company and it says
18 household light bulbs in big language, big font.
19 And that looks like your regular light bulb. And
20 it says 60 watts. And that's a 12 pack. So these
21 only cost a quarter.

22 So before the federal standard goes into
23 effect we already have a vibration service bulb
24 available for a quarter. So what's the consumer,
25 who's not predisposed to buying a CFL going to do?

1 They're going to gravitate towards this. So this
2 is a huge potential loophole.

3 And worse yet, it's 60 watts at 600
4 lumens. That's 10 lumens per watt. The regular
5 60 watt bulb, the conventional ones, around 800
6 lumens. So this is 25 percent less efficient. So
7 we'd be going backwards. We'd be worse off than
8 having a federal standard if this bulb takes off,
9 which we posit it would.

10 So we think the solution here is simply
11 to limit these to 40 watts. Again, you're not
12 going to be putting this in a reading lamp.
13 You'll still get sufficient light output. If you
14 want to use the regular incandescent, we don't
15 think people would be gravitating towards a low
16 light output incandescent.

17 So we think that's the patch and you can
18 still put this in your garage or your ceiling fan
19 or those other applications if you chose to. So
20 that's number one.

21 To be thorough, the DOE rulemaking, the
22 approach they took was -- or, I'm sorry, in the
23 federal legislation, if sales double of this
24 technology or some of the other ones, then DOE is
25 required to do a rulemaking. And then if they

1 don't meet a certain deadline, then there's some
2 sort of failsafe in this case. It restricts the
3 power to 40 watts.

4 We think California could get ahead of
5 this. Let's not have to rely on DOE getting the
6 data, acting upon it, having an on-time
7 rulemaking. We'd lose several years through that
8 process, given DOE's track record.

9 Next I want to point your attention to
10 what are called shatter resistant, or shatter
11 proof bulbs. There are some environmental where
12 it would be unsafe for the bulb to break. Imagine
13 a food safety application or a gymnasium where the
14 ball would hit the light bulb and it would break.
15 You don't want that to happen.

16 Legitimate. A few pennies you can put a
17 plastic coating on today's incandescent bulb.
18 It's clear; it would give off roughly the same
19 amount of light. Now I'm selling a 27 cent
20 incandescent light bulb. Same story, people are
21 going to flock to the shelves

22 Just the fact that you have a clear
23 coating on there that provides this special
24 protection against breakage, that doesn't
25 adversely impact the efficiency in a dramatic way.

1 We should subject those to the same regulations.
2 Right now those are exempt, as well. So that's
3 shatter resistance.

4 Three-way light bulbs. They're given
5 the same treatment as well. They're not covered
6 unless their sales take off. We already have
7 three-way CFLs. Why is there an exemption here.

8 So those are the ones where we bring to
9 your attention. And we're concerned that if we
10 don't address those now, we're setting ourselves
11 up for several years of accelerated sales, and we
12 could miss out on meeting the Huffman requirements
13 if we don't act proactively.

14 MR. FERNSTROM: Noah, do you know how
15 130 volt lamps are treated? I don't, but I see
16 them in stores, and they're less efficacious than
17 120 volt models. They're often sold in contractor
18 packs and so on.

19 MR. HOROWITZ: Yes. I have to look at
20 the legislation. This came up, so you know, the
21 traditional bulb might be 110 or 120, what's to
22 prevent somebody from making a 121.

23 So the standard covers 110 to 130. I
24 don't know if above 130 is practical in our
25 system. And if it were, is that not covered, and

1 should California step in or think about stepping
2 in.

3 MR. FERNSTROM: Well, just to add a
4 little bit to that, the 130 volt lightbulb was
5 originally developed for cases where utilities
6 might have high line voltage so you can get a
7 reasonable expectation of life. And utilities
8 rarely have high line voltage any more, so you
9 could make the argument 130 volt lamps aren't
10 really needed or shouldn't be treated specially.

11 PRESIDING MEMBER PFANNENSTIEL: Yes,
12 Gary.

13 MR. FLAMM: This is a question for Gary
14 Fernstrom. Isn't it true that if I take a 130
15 volt lamp that meets the new federal requirements,
16 operate it at 120 volts, it no longer is high
17 efficacy?

18 MR. FERNSTROM: Yes, because the light
19 output increases more proportionately than the
20 power reduces.

21 MR. HOROWITZ: Gary, the language,
22 without getting into too many details in terms of
23 what is covered, and therefore preempted by
24 California. The lamp must be capable of being
25 operated at a voltage range of at least partially

1 within 110 and 130.

2 So let's talk offline without boring
3 everybody, but is this a problem? If so, what's
4 the fix?

5 PRESIDING MEMBER PFANNENSTIEL: Thanks,
6 Noah. Further questions?

7 ASSOCIATE MEMBER ROSENFELD: Noah, I'm a
8 bad notetaker. You said there are three villains.
9 One is vibration, --

10 MR. HOROWITZ: The vibration resistance
11 that --

12 ASSOCIATE MEMBER ROSENFELD: -- one is
13 the anti-shatter. And what was the third?

14 MR. HOROWITZ: Three-way light bulbs.

15 ASSOCIATE MEMBER ROSENFELD: Oh, three
16 way, thank you.

17 MR. HOROWITZ: And some of these terms
18 have multiple terms in the field, so it's
19 vibration service, also called vibration
20 resistant. And there's shatter resistant and
21 shatter proof, all describing the same thing
22 technically.

23 MR. FERNSTROM: Well, and I think we
24 ought to add to that list maybe 130 volt light
25 bulbs. I don't think we know.

1 PRESIDING MEMBER PFANNENSTIEL: Tim,
2 question?

3 MR. TUTT: Noah, the federal bill does
4 define vibration service as fairly specifically as
5 requiring that it be marked on the package and not
6 be sold in the kind of packages you passed around.
7 Does that make a difference in your mind?

8 MR. HOROWITZ: I need to look at that
9 more carefully. That helps, but I don't think it
10 completely solves the problem.

11 PRESIDING MEMBER PFANNENSTIEL: Thanks,
12 Noah.

13 MR. HOROWITZ: Thank you.

14 PRESIDING MEMBER PFANNENSTIEL: Any
15 other discussion or comments on the lighting?

16 Okay, let's move on to the discussion of
17 battery chargers. Power Tools Institute.

18 MR. ALBERT: Good afternoon. My name is
19 Larry Albert; I work for Black and Decker. I
20 offer my comments today on behalf of the Power
21 Tool Institute, which is a trade association of
22 power tool manufacturers. Thank you for offering
23 me this opportunity to make comments to the
24 Commission.

25 I'd like to be able to talk a little bit

1 about the anticipation of creating regulation
2 regarding battery chargers. Know that there's a
3 test method currently being released that covers a
4 wide range of testing, wide range of products to
5 be tested. And specifically want to talk about
6 the impact that regulation would have upon battery
7 chargers intended for small appliances, including
8 power tools.

9 Overall we support national regulations
10 regarding small appliance battery charger energy
11 efficiency. And also we're supporting the
12 harmonization with any potential international
13 standards that might be developed.

14 We acknowledge that California has
15 demonstrated a leadership role in promulgating new
16 energy efficiency standards that have ultimately
17 become national standards, either through adoption
18 or in fact.

19 It's not in our industry's interest to
20 have multiple standards, perhaps with diversion
21 coverage and diversion approaches. It's much more
22 effective for us to have a single standard through
23 North America, and possibly throughout the world,
24 that reflects the method by which energy
25 efficiency for battery chargers would be

1 evaluated.

2 Therefore we'd like to request that the
3 Commission consider encouraging their staff to
4 work cooperatively with other standards-making
5 bodies that have an interest in developing these
6 standards, so that we'll have a common standard at
7 least throughout North America.

8 We'd also like to make the same kind of
9 offer that we've made in the past with respect to
10 working cooperatively and collaboratively with the
11 Commission Staff to help develop these standards
12 in a way that makes sense for industry and makes
13 sense for furthering the goals of higher energy
14 efficiency and appliance battery chargers.

15 One problem that we have as a trade
16 association is our inability to comment on a wide
17 range of different applications of battery
18 chargers. We make power tools and we can speak
19 somewhat knowledgeably about those products and
20 the battery chargers intended for them.

21 However, we have difficulty in
22 reflecting any sort of competent commentary when
23 it comes to things like golfcarts and other sorts
24 of products that are being considered in the test
25 method.

1 Consequently, we'd like to encourage the
2 Commission to consider adopting criteria for
3 acceptance in the standard for appliance battery
4 chargers separate from maybe some of these other
5 categories of products. Because we believe some
6 of the differences in how the products are being
7 used and how they're evaluated may justify that.

8 We believe that battery charger energy
9 efficiency regulation should seek to ascertain the
10 excess energy consumed by the battery chargers
11 over and above the energy that is recoverable from
12 the battery.

13 We believe this is best achieved by
14 considering the energy used by the battery charger
15 in representative use conditions. That would also
16 include active mode energy. I know this is one of
17 the issues that's come up in the past.

18 And we also believe that any energy
19 efficiency standard should be sensitive to the
20 possibility of having technological improvements
21 and innovations occur that could fundamentally
22 change how battery charging is achieved. And
23 therefore should not be too prescriptive with
24 respect to design requirements in the energy
25 efficiency standard.

1 That's all the comments I have at the
2 moment. Any questions?

3 PRESIDING MEMBER PFANNENSTIEL: Thank
4 you for being here and participating. Are there
5 questions? Bill.

6 MR. PENNINGTON: Yes. I'm wondering if
7 your trade association commented on ECOS' test
8 procedure during the development process? And to
9 what extent do you view those as reasonable?

10 MR. ALBERT: I guess our perception of
11 the test procedure is that it's the energy
12 efficiency standard that is actually the important
13 element of all of this. And to the extent that a
14 test procedure provides sufficient data to support
15 the energy efficiency standard, then it's
16 adequate.

17 And so in that sense I think, since we
18 don't know yet what that standard would look like,
19 right, but presumably it would contain information
20 -- would require information from active mode
21 standby and maintenance, right. And that's
22 provided by the test method.

23 As long as the test method provides
24 reasonably accurate information in that regard I
25 think it, and perhaps other ones, would satisfy

1 that goal.

2 MR. PENNINGTON: So you didn't
3 particularly object to that test procedure as it
4 was proposed? I think I understand your point --

5 MR. ALBERT: Yeah, I think --

6 MR. PENNINGTON: -- that it needs to be
7 matched with the standard --

8 MR. ALBERT: Right, right. I believe
9 that might have been the comment we made somewhere
10 along the line, that we said, you know, we're
11 unsure how the data's going to be used, so it's
12 hard to ascertain whether it's appropriate or not,
13 right.

14 And it may come out that as the standard
15 is developed that there might be a recognition
16 that there's information that for small appliance
17 battery chargers that the information, there might
18 be a piece of information that's still needed, in
19 which case you'd expect that the test method would
20 be adapted to provide the additional information.

21 MR. PENNINGTON: Thank you.

22 PRESIDING MEMBER PFANNENSTIEL: Thank
23 you. Any other? Thanks very much.

24 MR. ALBERT: Thank you.

25 PRESIDING MEMBER PFANNENSTIEL: PG&E/

1 ECOS. Ted.

2 MR. POPE: Thank you, Peter. Ted Pope,
3 Energy Solutions, on behalf of PG&E. Again,
4 thanks to the Commission for allowing us this
5 opportunity to talk to you briefly this afternoon
6 about power -- excuse me, battery charger test
7 methods, as well as standards, discussing
8 potential standards activities.

9 I want to note that these slides and all
10 the research behind them were prepared by ECOS
11 Consulting. Unfortunately their staff couldn't be
12 here today. I don't know, do we have Dr. Paul
13 Bendt on the phone?

14 DR. BENDT: Yes, I'm here in our
15 Colorado office.

16 MR. POPE: Great. So, Paul is the
17 gentleman that runs ECOS laboratory that does a
18 lot of the testing on battery chargers and the
19 small consumer electronics. And very involved in
20 the development of the test method and thinking
21 about potential efficiency standards going
22 forward. And so he's on the line to catch any
23 technical questions that I'm unable to answer if
24 we go to that depth in the conversation.

25 First of all, and I think I'll try and

1 run through these pretty fast. I think the
2 Commission's heard a fair bit of the test method
3 discussion in the past. Wasn't sure how much
4 dialogue there was going to be between industry
5 and the PG&E team, so we probably have more slides
6 than we need. Stop me, please, if I'm going too
7 fast.

8 But a quick definitional comment.
9 Battery chargers -- and let me say that I'm going
10 to first start out talking about the test methods.
11 So my first slides are on test methods.

12 Battery charger system refers to both
13 the charger and the batteries to which they're
14 attached. And it's a pretty comprehensive scope
15 we're talking about here, ranging all the way
16 from, you know, electric toothbrushes all the way
17 up to golfcart battery charging systems and
18 electric cars and so forth. So the test method
19 scope is quite broad.

20 The products, again all over the map.
21 You can see here on the chart, broken out into ten
22 descriptive categories. Starting with number one
23 being the most common, all the way down to the
24 least numerically common lighting lanterns.

25 But you see things like on electronics,

1 cellphones, cordless phones, various different
2 information appliances, laptops and so forth.
3 Emergency backup systems, personal care products,
4 tools, universal battery chargers including auto
5 chargers, RV battery chargers and all the way down
6 to the small cell chargers.

7 Just taking a quick peek at the
8 development of markets here. We're showing some
9 of the highest growth products here in this graph.
10 You can see that things are going in different
11 directions, product category. Portable CDs not
12 surprisingly are dropping market share, as MP3s
13 pick up dramatically.

14 Again, cordless phones similarly being
15 replaced by cellphones. Things like PDAs,
16 Bluetooth headsets for cellphones. And laptops
17 are all on the rise in a significant way. And
18 these large growth trends are what make the
19 relevance of test methods and then standards even
20 more significant than they might appear today
21 because the situation's increasing in terms of
22 market saturation and energy use.

23 This is a quick slide showing the
24 estimated market share. We calculate there to be
25 about 126 million battery charging products in

1 California. That translates to about nine per
2 household. So these products are ubiquitous.

3 You can see home electronics,
4 cellphones, cordless phones and information
5 appliances together constitute three-quarters of
6 the market.

7 Going into a little bit more history on
8 the test method that was completed in September of
9 this year and posted on the site you see on the
10 screen, efficientproducts.org. Over the years
11 this site has been used to explain and post the
12 various different versions of the test method.

13 And again I apologize for the
14 redundancy, I just want to emphasize the sort of
15 transparency of the process, the vetting process
16 that's occurred over the last four years in this
17 test method. Originally NRDC funded ECOS to start
18 researching the opportunity in battery chargers.
19 And then starting in 2004, ECOS came out with its
20 first draft. Got a slide later showing who funded
21 what, but a combination of PG&E as well as you see
22 PIER funds behind this.

23 And there have been four different
24 versions of the test method since 2004. Again,
25 the final version being in the fall of 2007. And

1 at each step of the way there's been a workshop to
2 discuss the drafts, public comment.

3 The last draft alone received over 100
4 comments for which the ECOS Staff, with assistance
5 from industry, I'm sure, resolved on the order of
6 100 questions and issues raised in that fourth
7 draft.

8 And so the ECOS team considers the test
9 method to be essentially done now. Again, I think
10 Larry made some great comments moments ago. It's
11 very important that your test method be generic in
12 its approach so that it's not focused on a
13 particular product cycle.

14 You don't want to show bias or
15 favoritism in how you structure the test method.
16 And the team believes they've come up with a test
17 method that best is able to characterize the key
18 data inputs that would be needed for development of
19 a sound standard.

20 Larry mentioned there might be other
21 considerations. I personally don't know offhand
22 what those might be, but I know the team has
23 worked very hard to make sure that the test method
24 is sufficiently comprehensive to enable the
25 development of test methods.

1 And we also totally agree with PTI that
2 it would be best if the CEC worked together with
3 other standards bodies or codes bodies around the
4 country, North America and internationally to try
5 and harmonize on the test method. And then that
6 allows, to the extent jurisdictions need to have
7 different standards, efficiency standards, at
8 least they're using the same test method providing
9 the same information.

10 MR. PENNINGTON: Ted, could I ask you a
11 question --

12 MR. POPE: Yeah.

13 MR. PENNINGTON: -- about the process on
14 the test procedure review? To what extent was the
15 Department of Energy --

16 ASSOCIATE MEMBER ROSENFELD: Bill, I
17 can't hear you.

18 MR. PENNINGTON: To what extent was the
19 Department of Energy and EPA involved in sort of
20 the vetting process, or the review process of the
21 test procedure?

22 MR. POPE: My understanding is certainly
23 EPA was quite involved. Paul, can you handle that
24 question? How much was DOE involved?

25 DR. BENDT: We did receive extensive

1 comments from DOE and DOE's consultants; and have
2 incorporated a lot of them in the final version of
3 the test procedure.

4 MR. POPE: And I think, as may have been
5 mentioned in previous conversation, DOE
6 established a test method, and they left a gap in
7 their test method which did not address active
8 mode charging efficiency. They left kind of a
9 placeholder for that, pending development of the
10 active mode test method components in the ECOS
11 activity, or perhaps others.

12 MR. PENNINGTON: I'm wondering, another
13 question -- does that interaction with those
14 agencies indicate in your mind an openness on the
15 part of DOE to consider ECOS' test method as an
16 improvement. And, you know, would be open to
17 considering that for readoption of the test
18 procedure?

19 MR. POPE: The answer is yes.
20 Personally I'm not totally in control of the
21 details of how that would be executed, but the
22 sense we get, you know, unofficially, is there's
23 interest in that.

24 MR. CALWELL: This is Chris Calwell
25 still on the line. I think that's probably right.

1 Both organizations have made public comment
2 about -- by both organizations I mean DOE and EPA,
3 they've both made public comment about their own
4 procedures moving forward to include active mode.

5 And so this would be the sort of default
6 place to start from as both agencies decide if and
7 when and how to do that.

8 MR. PENNINGTON: Thank you.

9 MR. POPE: Okay, just another slide or
10 two on the test method. This slide here is
11 letting you know that the ECOS team has conducted
12 tests on 60 products, in fact, as we speak that
13 number's probably going up, since the completion
14 of the test method.

15 However, there's a grand total of about
16 250 products for which folks, including EPRI, ECOS
17 and Cadmus have tested, again, 250 products with
18 the foreknowledge of how the test method was
19 working out. And those datapoints were collected
20 in a way that allows them to extrapolate the
21 results. To, you know, convert them as if they
22 were tested under the current test method.

23 So, we're looking at about 250
24 datapoints, growing every day. And the dataset
25 includes a 24-hour charge and maintenance

1 discharge efficiency, maintenance mode power, no
2 battery mode power. We'll get into that in a bit
3 here.

4 Okay, here's just a snapshot of the
5 datapoints collected so far. Chris, you're going
6 to have to remind me how many datapoints, but I
7 think we expect quite a few more by the end of
8 April. Are we doubling the number of datapoints
9 or is there more than that, Chris?

10 MR. CALWELL: Paul is probably sitting
11 next to the pile of products yet to be tested.
12 What's your sense, Paul?

13 DR. BENDT: I think there are going to
14 be quite a few more as we keep going. And we're
15 trying to make sure that we get products in all
16 the major product categories to make sure that we
17 really have a good spectrum of products tested.

18 MR. CALWELL: Yeah. What I should say,
19 Ted, is this is, of course, just the early data
20 collection phase from the products, we, ourselves,
21 have purchased and tested.

22 But normally the process is an
23 invitation goes out to industry to say that to
24 have procedures done, we encourage everyone to
25 measure their own products according to it and

1 bring their data to the table for an even larger
2 analysis.

3 MR. POPE: Yeah, great point. I want to
4 emphasize that the ECOS team does not feel that
5 the dataset they have is sufficiently
6 representative of the shipping weighted or
7 saturation weighted products in California. And
8 so these additional datapoints are important to
9 get.

10 This graph here shows a good portion of
11 them. There are additional points off to the
12 right for higher amp hour systems. But you can
13 see quite a few here. Four different battery
14 chemistries, nickel metal hydride and NiCad,
15 lithium ion and lead acid. That's just to give
16 you a sense of where the efficiency falls out as a
17 function of battery energy capacity.

18 Okay, this, I think, perhaps is the most
19 important slide in this presentation. On the left
20 side here you see five bars, each with two
21 sections.

22 The green is what we call the overhead
23 or the inefficiency associated with the charging
24 and overall energy use of the battery charger
25 system.

1 The blue represents the actual energy
2 being delivered by the battery system. So the
3 combined, under the current scenario, we're
4 estimating California battery charger energy use
5 to be about 4000 gigawatt hours a year. Again, of
6 which 3600, you know, in some sense, is wasted.

7 Because of the external power supply
8 standard adopted by California recently one would
9 expect about a 5 percent reduction in that total
10 energy use due to the efficiencies there.

11 In a moment we'll be shifting into our
12 standards discussion. And we're in the draft
13 stages of playing around with ways of setting
14 standards, and kind of coming to one possibility
15 that shows a savings of 42 percent relative to the
16 current probably 37 or 38 percent savings relative
17 to things once the external power supply standard
18 takes full effect.

19 Thinking about a two tier approach with
20 the second tier savings 77 or 72 percent of the
21 energy, depending on what your baseline is.

22 Again, just to give a point of
23 reference, the practical limit, based on some
24 existing products, I understand these are probably
25 slightly larger battery systems that benefit in

1 terms of efficiency from their size, but without
2 going to the time machine you're looking at a
3 possibility of a very small amount of wasted
4 energy relative to energy delivered by the battery
5 system.

6 Just looking at the top five biggest
7 energy consuming categories, cordless phones in
8 the lead with universal battery chargers, marine,
9 auto, residential chargers at 245.

10 Information technology. Commercial
11 laptops are big, down to cellphones. Not shown
12 here, because we don't have sufficient data yet,
13 the ECOS team is collecting it and be happy to get
14 more from industry -- it appears that the large
15 battery chargers, forklifts, vehicles that sort of
16 thing, represent about 30 or 40 percent of the
17 total battery charger energy use, which again was
18 about 4000 gigawatt hours a year.

19 ASSOCIATE MEMBER ROSENFELD: Ted, let me
20 ask you a question. I feel stupid about this, but
21 you said that slide 9 was very important. And I
22 was looking around for the four different colors
23 of sorts of batteries. And this doesn't seem to
24 be labeled for any sort of battery. Why am I so
25 confused?

1 MR. POPE: I apologize, Art. I may have
2 misspoken. What we're showing here are different
3 scenarios assuming different product efficiencies.
4 The left side is the current situation. And,
5 again, the green, the top part, so from here up
6 is, you know, quote-unquote, wasted energy.

7 This is the amount of energy that's
8 actually coming out of the battery and serving the
9 consumer.

10 When the EPS standard is fully deployed
11 in products in California, you'd expect to save
12 about this much energy. Again, the amount of
13 energy that ends up as unusable heat for the most
14 part, is this large bar.

15 We're going to be talking in a second
16 about a standards approach that delivers savings
17 of this difference here, on the order of, you
18 know, almost 40 percent, depending on whether you
19 consider your baseline to be this level here or
20 this level here.

21 Does that make sense?

22 ASSOCIATE MEMBER ROSENFELD: But I'm
23 sorry, the intrinsic properties of the battery
24 enter here. Lead acid isn't the same as NiCads
25 and so on.

1 MR. POPE: I see. That other slide may
2 have been confusing. We were just showing the
3 different datapoints. It is true that battery
4 chemistry does have some effect on the efficiency
5 of your battery charging system.

6 I think --

7 ASSOCIATE MEMBER ROSENFELD: But mainly
8 you say it's the charger.

9 MR. POPE: Yeah, well, battery chemistry
10 is definitely a factor, but I think how you manage
11 that battery chemistry is a big factor.

12 ASSOCIATE MEMBER ROSENFELD: Okay.

13 MR. FERNSTROM: So, Ted, could we ask
14 Chris and Paul to chime in and help us understand
15 how this slide relates to the different battery
16 chemistries?

17 DR. BENDT: Yes, --

18 MR. CALWELL: Do you want to take that
19 one?

20 DR. BENDT: -- this is Dr. Bendt. There
21 are some differences in battery chemistry, but the
22 differences from an efficiency perspective are
23 rather small. The most efficient batteries are
24 the lithium ion and they have a round-trip
25 efficiency in the battery that's about 97 percent;

1 so about 3 percent of the energy is wasted in the
2 battery chemistry.

3 Lead acid, nickel metal hydride and
4 NiCad batteries are all in the vicinity of 85
5 percent. So again there's about 15 percent of the
6 energy is lost in the battery.

7 That very far, right-hand column that
8 shows the energy consumed by the charging process,
9 at just 100 gigawatt hours, assumes a mix of
10 battery chemistry that is typical of the mix
11 that's out there right now. So that practical
12 limit, in fact, can be achieved even using a
13 NiCad, the lead acid and nickel metal hydride
14 batteries.

15 All the waste that is above that, the
16 other 3500 gigawatt hours, is all being wasted in
17 the charger, not in the battery chemistry.

18 ASSOCIATE MEMBER ROSENFELD: Very good.
19 Thank you. You've answered my question.

20 MR. POPE: And just a quick comment.
21 Obviously in heating climates there are some
22 interactive effects with indoor battery chargers.

23 Okay, so again the slide is just to try
24 and clarify the magnitude of savings opportunities
25 here, particularly if you're looking at a two tier

1 or more approach over time.

2 Here just what is the difference in
3 energy use from one mode to another? You know,
4 obviously it depends on the duty cycle and the
5 equipment and a lot of things, but on average,
6 this is the estimated summary of what amount of
7 energy is going into active charging versus
8 maintenance mode versus no battery mode.

9 And you can see that the active mode
10 represents on the order of 50 percent of the
11 energy use. This slide also shows approximately,
12 in our first round of analysis, how much energy
13 could be saved in each of those modes. And as you
14 can see, it's something on the order of a third of
15 the active mode. It's a large part of the no
16 battery mode, and about half of the maintenance
17 mode. So, big opportunities without doing huge
18 backflips.

19 The efficient design strategies to meet
20 a potential efficiency standard involve don't
21 overcharge the batteries; more intelligently
22 reduce the standby power when not actively
23 charging; and insure an efficient power conversion
24 process eliminating excess heat.

25 Part of this includes the efficiency of

1 the power supply, as we've talked about. And
2 we've already gotten those benefits to a large
3 extent in California through the EPS standard,
4 although the federal government did not include
5 EPS as part of battery chargers -- or, excuse me,
6 exempted EPS associated with battery chargers.

7 MR. CALWELL: Ted, probably the one
8 point here, of course, is that so many battery
9 charging systems use internal power supplies for
10 which no regulation has yet been adopted.

11 MR. POPE: Excellent point. Is that on
12 the order of half, Chris, or do you have a number
13 for that?

14 MR. CALWELL: Paul, I think your team
15 was looking at it, and it's incredibly difficult
16 to estimate on the energy weighted basis. So I
17 don't know if you have any more to add there.

18 DR. BENDT: I'd say of the products
19 we've tested in the lab, at least half of them are
20 internal power supplies. So it probably is about
21 a 50/50 mix.

22 MR. CALWELL: It's just that those tend
23 to be the larger, higher wattage products, so it
24 throws the energy weighting a little bit.

25 MR. POPE: Okay. All right, thank you.

1 Just moving along here, economic considerations
2 for a standard. And, again, I'm going to get
3 into, in a minute, how we'd approach actually
4 estaBlishing a standard.

5 Just some slides here from the ECOS lab
6 showing three different products. I want to
7 emphasize at the bottom of the screen we imply
8 there's a minimal cost associated with a more
9 efficient approach, yet when you look at the
10 purchase price you see 95, which is three times
11 that, and almost four times that.

12 I want to emphasize that the prices you
13 see reflected are extremely different, not because
14 of the efficiency involved, but because of the
15 features and the actual product in question. I
16 believe ECOS has done some of a little bit of a
17 teardown analysis. And my understanding is to get
18 to at least the first tier and perhaps close to
19 the second on battery chargers, they think you're
20 looking at about 60 cents manufacturer cost;
21 something I think over \$2 incremental cost to the
22 customer.

23 Another slide here again showing
24 efficiencies. You've got two very similar
25 products, one at 13 percent efficient, the other

1 at 27.5. So, one's twice as efficient as the
2 other. You can see the difference between
3 maintenance mode and no-battery mode. And, again,
4 purchase price on the more efficient product is
5 lower here, but that's in part because the
6 inefficient one comes with an extra feature, the
7 car charger.

8 Another example here, cordless phones.
9 Almost a factor of two difference in the
10 efficiency; and price being fairly similar. And,
11 again, the incremental cost associated with
12 efficiency is minimal.

13 Another couple products here. Getting
14 to how do you approach the standards process.
15 Again, there are three key factors. There's
16 active charging efficiency, maintenance efficiency
17 and no-battery mode efficiency.

18 If you're looking at the active
19 component, you can think of it in two ways. An
20 efficiency ratio of the energy coming out of the
21 battery that does usable work divided by energy
22 going in over a 24 hour period to charge and
23 maintain that charge during that 24 hour period.

24 You can also look at it as a battery has
25 to have a total energy -- excuse me, the energy

1 consumed in charging the battery during a 24 hour
2 period has to be less than or equal to a formula
3 which has a constant reflecting the maintenance
4 mode. And then a coefficient for the active
5 efficiency, active charging efficiency times the
6 battery capacity.

7 The strategy here is, again we're
8 thinking now of maybe the best way is a two tier
9 strategy. Maybe some tie-ins with EnergyStar or
10 other voluntary standards to ramp this in on the
11 voluntary side to give industry a chance to scale
12 up to this.

13 Again, we emphasize the benefits of
14 coordinating with industry and efficiency
15 advocates and code agencies around the country and
16 the world. And maybe, you know, something more on
17 the order of how power supplies worked out.

18 Here's a hypothetical curve ECOS drew
19 through the datapoints. Get caught up here.

20 And that is the active mode efficiency
21 there. We're showing that probably an intelligent
22 standard would have the efficiency start low for
23 very low capacity battery systems, and then
24 increase. And then, you know, continue to slope
25 up and flatten out a little bit once you get above

1 10 or 20 watt hour battery size.

2 The two other components, the
3 maintenance power and the no-battery power we're
4 showing potential levels here. Noting on the
5 first chart here, this is a flat line. If you
6 look at the data one might draw the conclusion
7 that there should be some slope to the line there.
8 Depending on as more data comes in, maybe a tier
9 one approach might have a slight slope to this
10 maintenance battery energy curve; and a tier two
11 might be flat as far as measured battery energy.
12 And then no-battery mode, doesn't seem to be much
13 reason at all to have the sloped line. That would
14 probably just be flat.

15 Taking a look now at the overall process
16 for developing standards and what the timeframe
17 is. Everyone is aware that the DOE is pursuing,
18 has developed a test method and is pursuing an
19 efficiency standard.

20 Again, we had initial research funded by
21 NRDC. In the timeline -- you can look at this
22 offline, but it basically showed how the thing
23 unfolded in terms of development of test method.
24 I think the important part when you look at is
25 what's going on here. You can see that the DOE is

1 expected to begin a determination analysis in I
2 believe the third quarter of 2008. And so they
3 will be working on that until the end of 2011.

4 And basically the Energy Commission has
5 this timeframe to get out in front and establish a
6 test method -- excuse me, a standard. And that
7 would be helpful in developing a DOE standard, as
8 well.

9 So we need to get moving on a CEC
10 rulemaking, which we're obviously starting now.
11 The expectation is we'd have a final standard the
12 beginning of next year for effect in 2010, which
13 gives about a year, year and a half for California
14 to deploy that standard before DOE finalizes its
15 rulemaking.

16 Regulatory considerations. Ten states
17 have pending legislation on external power
18 supplies. Federal energy bill which passed in
19 2007 defines class -- external power supplies
20 which do not have EPS associated. So there is no
21 preemption, as we understand, at this time.

22 And, again, I mentioned the timing on
23 the determination. I failed to mention that the
24 federal standard would take effect in 2014. And,
25 again, we want to consider coordinating with the

1 Canadians, Europeans and others.

2 And that's pretty much it. Paul or
3 Chris, any key points I miss there?

4 MR. CALWELL: The only one I would add,
5 Ted, is that the three-year date. This one is an
6 interesting question. The federal legislation
7 that was just adopted is actually silent on the
8 time period between final publication of decision
9 and effective date.

10 So three years might be typical, but
11 it's only a guess; that DOE would actually decide
12 the time between adoption and effectiveness.

13 PRESIDING MEMBER PFANNENSTIEL: John.

14 MR. WILSON: So going back to your
15 standards concepts, slides 18 and 19, I understand
16 this is early in the thinking process, but on the
17 other hand we have to move pretty quickly. So I
18 want to make sure I understand this.

19 Are you suggesting that we would have a
20 standard with three metrics?

21 MR. POPE: Yeah, and the one thing we'd
22 like to see the Commission avoid is trying to
23 create a whole plethora of different standards for
24 slightly different products. And I think that
25 will be probably a big part of the discussion with

1 industry over the next year.

2 But we would propose to set the three
3 factors, you know, active mode, maintenance mode,
4 and no-battery mode, and set it sort of a level
5 for each.

6 And perhaps products divided into two
7 categories somewhat conveniently. For example,
8 frequently charged might be one category;
9 infrequently charged might be another. And you
10 might emphasize differently the three
11 characteristics, depending on which product
12 category you're regulating.

13 That make sense, John? So, for a
14 product that spends very little time charging, is
15 mostly maintenance mode, you might emphasize the
16 efficiency in maintenance mode. For a product
17 that gets a lot of heavy charging like a
18 cellphone, for example, it's spending more time in
19 charge mode. You might, you know, emphasize
20 efficiency there, to insure savings.

21 MR. WILSON: I do follow that. If we
22 were to do battery chargers in 2008 we would need
23 a proposed standard pretty quickly. Is PG&E going
24 to make a proposal? There's some important
25 details left hanging here.

1 MR. POPE: Yeah, John, the reason -- we
2 need a little more in the way of data to feel
3 highly comfortable setting a specific level for
4 each of those three things.

5 And our expectation is that we'll have
6 what we consider a reasonably sufficient dataset
7 within a couple months.

8 MR. FERNSTROM: So, John, the answer is
9 yes, PG&E is prepared to make a proposal, but as
10 Black and Decker pointed out, the devil is in the
11 details here.

12 So I expect there's going to be a need
13 for a lot of discussion and vetting with industry
14 over where the proposal actually winds up, and
15 what a consensus may or may not be on it.

16 MR. POPE: And one of the ways to insure
17 this moves quickly is for industry to be
18 encouraged to do their own testing and contribute
19 the test results on their products to the overall
20 pot. And then we can work to make sure we balance
21 the test results be representative of the
22 California market so that the standard we're
23 developing is consistent with the reality out
24 there in the street.

25 MR. FERNSTROM: So the bottomline, we

1 need to move quickly; we'll have a proposal; it's
2 probably going to merit considerable discussion.

3 MR. WILSON: So, I'd note in your backup
4 slides, and I don't know if people in the audience
5 have copies of the slides, but you do have slides
6 that talk about categories of infrequently used
7 and frequently used.

8 Now, in the EPS standard a few years
9 ago, of course, we wrestled with this question of
10 how do you define infrequently used. And so I
11 hope that you'll think really hard and specific
12 about how that would be defined.

13 And I'm sure Larry Albert would be more
14 than happy to help you think about that.

15 (Laughter.)

16 MR. CALWELL: Yeah, and, John, I
17 should -- this is Chris -- I should probably add
18 that it's not an infrequently used product would
19 ignore active mode efficiency. So, Ted's point, I
20 think, was that you could give relatively more
21 emphasis to one or the other, and therefore insure
22 the Commission's still getting savings in all
23 modes from all three products. But putting the
24 most emphasis in the place where you're likely to
25 get the most savings in that category.

1 MR. WILSON: No, I understand that. But
2 there's also this interesting slide 23 in the
3 backup slides; it talks about different scenarios.
4 And I assume this -- I don't know if you want to
5 try to explain this, but it talks about how the
6 EPS standard would relate to the battery charger
7 standard.

8 MR. POPE: Chris, do you want to take
9 that?

10 MR. CALWELL: Actually I don't want to
11 take that, but I might have -- I don't have the
12 final slide sitting in front of me because of the
13 web link. So, Paul, can you comment on that?

14 DR. BENDT: We would propose that the
15 EPS standard actually does not have any direct
16 relevance to the battery charger standard. But
17 there is a question about what should be
18 considered the basecase of what's the energy
19 consumption before a battery charger standard goes
20 into effect.

21 And we acknowledge that there can be two
22 different assumptions about what the basecase is.
23 One assumption would be that the basecase with the
24 chargers that we're seeing in the marketplace
25 right now, and the second assumption would be that

1 would be a basecase in which the products are the
2 same as what we're seeing now, but they are all
3 shipped with efficiency level four, you know,
4 California tier two compliance -- power supplies.

5 But that would affect only sort of the
6 basecase assumption. It wouldn't affect the final
7 battery charger standards for the energy that
8 would be consumed in the final situation of --
9 replacement with the battery charger standards in
10 place.

11 MR. WILSON: Okay, that's a different
12 issue than I thought you were maybe getting at,
13 which there is this question we had talked about a
14 few years ago of if you do have a battery charging
15 system with an external power supply, are they
16 subject to both standards or just one standard.
17 Have you guys thought about that?

18 DR. BENDT: Again, this is Dr. Bendt.
19 We have certainly kicked that around. And whether
20 a battery charger that also has an external power
21 supply could be subject to both standards, I think
22 ultimately is really up to the Commission.

23 But what we were looking at was probably
24 a standard in which in order to meet the battery
25 charger standard, one of the cheapest means of

1 meeting it would be to have an efficient EPS, an
2 efficient power supply, that that would be one of
3 the cheapest things to substitute.

4 In practice, the strategy a lot of
5 manufacturers would use to meet the battery
6 charger standard would be to use an efficient
7 power supply whether they were required to or not.

8 MR. WILSON: Okay, one last question.
9 Going back to slide 10 when you had the gigawatt
10 hour of savings and you had the footnote in
11 percentage terms, but that actually means that the
12 large battery systems, if they're 30 to 40 percent
13 of the total, I take that to mean 1200 to 1600
14 gigawatt hours.

15 So that's really the big category. I'm
16 just sort of noting that. I don't know if there's
17 anything other interesting to say about that,
18 but --

19 MR. CALWELL: And, John, I should say
20 with that category it's by far the hardest for us
21 to get data because the devices are expensive,
22 difficult to get into our lab, and there aren't
23 that many different varieties out there.

24 So you can imagine sort of a data
25 collection effort where it looks like there's that

1 much energy use, we try to spend some extra time
2 with those out in the field and measuring them
3 with instrument-grade portable meters instead of
4 trying to get them into our labs.

5 And EPRI is assisting us with that under
6 a subcontract. But, it's the hardest data to
7 gather in our experience.

8 MR. WILSON: Now, Edison's been obsessed
9 about forklifts, haven't they? Do they have data?

10 MR. CALWELL: You know, we have talked
11 to them and here it's worth clarifying that the
12 scope in our case is single-phase devices below --
13 Paul, is it the 2000 mark?

14 DR. BENDT: That's correct.

15 MR. CALWELL: Yeah, so what we're really
16 looking for, John, is a category of large battery
17 chargers that sit above consumer rating, equipment
18 like the graphs have shown you, but below the
19 scale that Edison specifically has analyzed, which
20 I believe are mostly three-phase, really large
21 scale industrial forklift.

22 So it's a little bit of a nuance, but
23 that category hasn't gotten a lot of attention so
24 far.

25 MR. WILSON: Okay, thank you.

1 MR. FERNSTROM: So, John, just an
2 observation about battery chargers. We've looked
3 at external power supplies and battery chargers
4 because Commissioner Rosenfeld, about six years
5 ago, expressed an interest in them.

6 Indeed, they're a large opportunity.
7 But battery chargers in particular are very
8 complicated. So last time in the last appliance
9 standards go-around, we decided to defer and study
10 that opportunity some more.

11 So we're like three years into the
12 process now and we're close. But, as your
13 questions would indicate, it's a pretty
14 complicated opportunity.

15 MR. WILSON: Well, we'll look forward to
16 you working on it quickly.

17 (Laughter.)

18 MR. POPE: Thank you.

19 PRESIDING MEMBER PFANNENSTIEL: Anything
20 else, Ted?

21 MR. POPE: No. Thanks for the
22 opportunity.

23 PRESIDING MEMBER PFANNENSTIEL: Any
24 other questions for Ted or Chris or ECOS? Yes, go
25 ahead.

1 MR. ERDHEIM: I don't have a question --
2 Commissioner, I don't have a question for him. I
3 just wanted to make two additional comments. Ric
4 Erdheim with Philips Electronics.

5 We're interested in the battery charger
6 issue because of our Norelco shaver products and
7 our SoniCare toothbrush products. And I'm just
8 going to make two points.

9 First, in terms of the Norelco shaver
10 products we saw a slide that talked about
11 infrequently used products. Well, the shaver
12 products are infrequently plugged in products. We
13 raised this two years ago at the hearing. The
14 Commission made a number of changes in the
15 external power supply standard which we
16 appreciate. But unfortunately, didn't address
17 that issue.

18 And as a result the battery -- the beard
19 trimmer that I use once a week, which lasts about
20 13 charges, so that means once every 13 weeks I
21 plug it in for a few hours, which would be four
22 times a year. Even if I forget, we're talking
23 about four days that it's plugged in.

24 So we've gone back and, to comply with
25 the standards, we've put in a more efficient

1 external power supply. And I don't think you
2 could measure the savings that you're going to get
3 out of that product.

4 So as you deal with energy as battery
5 chargers, we would urge you this time not to get
6 into the infrequently charged products, or
7 infrequently plugged in products, which we really
8 don't think there's any energy savings.

9 In terms of the SoniCare product, we all
10 know that that's not a particularly efficient
11 charger. I wouldn't stand up here and tell you it
12 is. But it's used. The inductively charged
13 toothbrush is used for a simple reason, and it's
14 got to do with safety. I don't think we want to
15 have an exposed plug on a sink where you're using
16 a product with water.

17 So, if you're going to do something in
18 terms of battery chargers you either have to
19 exclude toothbrushes or inductively charged
20 products, or separate it out and deal with it
21 separately.

22 And I want to make sure that we get that
23 on the record early, because I don't think we want
24 to be banning electronic toothbrushes.

25 Thank you.

1 PRESIDING MEMBER PFANNENSTIEL: Thank
2 you, good points.

3 Other questions?

4 MR. CALWELL: Commissioner, this is
5 Chris Calwell. I wondered if, Paul Bendt, I know
6 you've looked at this inductively charged issue a
7 little bit. Is there anything you want to put in
8 the record on that?

9 DR. BENDT: We have looked at the
10 inductively charged toothbrushes. And Philips is
11 correct, that they are rather low in efficiency,
12 but they are also at that very low end of the
13 battery energy capacity; and they are at a level
14 where the efficiency standard would allow rather
15 inefficient products to pass.

16 Based on what I've seen in the lab, I
17 think there are electric toothbrushes that would
18 already pass the particular standards like we're
19 looking at.

20 So I don't think there was an issue
21 there. There may be some particularly inefficient
22 toothbrushes that don't pass. There are certainly
23 ones out there that will pass the standards we
24 propose.

25 PRESIDING MEMBER PFANNENSTIEL: Thank

1 you. Go ahead. We have a question.

2 MR. STRAIT: I don't have a question so
3 much as a comment if I'm allowed to speak. I tend
4 to agree with the previous speaker -- oh, this is
5 Peter Strait, I work for the CEC, I'm speaking
6 again -- but I reach a very different conclusion.

7 Honestly, I do not think that making a
8 distinction between frequently charged and
9 infrequently charged items really would do much,
10 would have much value for us because so much of it
11 is going to come down to personal use preferences.

12 I know that I recently purchased a
13 cordless mouse for my computer that has a charging
14 station, and most of the time it's going to sit
15 there, even though I use it on a daily basis --
16 it's frequently used. But most of the time it's
17 still going to sit there eight hours a day I'm
18 asleep, eight hours a day I'm at work. And also,
19 sometimes I forget to put it back on the station;
20 it'll sit next to the computer and not be charged.

21 So, I think there's so much individual
22 variability in how people even approach the same
23 appliance, much less between the appliances,
24 themselves, that making that kind of a distinction
25 would only serve to make the regulations more

1 confusing when we go to implement them.

2 Having a simple standard that if it's a
3 battery charger it has to meet this threshold in
4 one aspect of it, and this threshold in another
5 aspect of it would probably be the best approach.

6 I also, when he mentioned the example of
7 the cordless toothbrush the thing that popped into
8 my mind is that I do have a hairdryer sitting
9 right next to the sink. And those seem to be
10 acceptable for use in that kind of an environment.
11 So I'm not sure what the distinction would be for
12 an electric toothbrush that would make it
13 something that needs to be excluded.

14 Thank you very much.

15 PRESIDING MEMBER PFANNENSTIEL: Thank
16 you. Other points, other questions?

17 MR. MORRIS: Madam Chairperson, this is
18 Wayne Morris. May I speak?

19 PRESIDING MEMBER PFANNENSTIEL: Yes,
20 please.

21 MR. MORRIS: Thank you very much. This
22 is Wayne Morris with the Association of Home
23 Appliance Manufacturers and we represent
24 manufacturers of portable and floor care
25 appliances, several of which are cordless and

1 rechargeable, and also use battery chargers.

2 Thank you for the opportunity to
3 comment; and especially the webcast and phone
4 access for those of us unable to travel.

5 I want to echo the thoughts that Larry
6 Albert has presented representing the Power Tools
7 Institute. While there are some differences, the
8 applicant type battery chargers are very similar
9 to many of those used in the residential power
10 tools market.

11 We know that the CEC has a Title 20
12 regulation in place that presently includes
13 several types of battery chargers. For that
14 reason it is important that I believe we consider
15 the energy savings potential, the issue that Dr.
16 Bendt brought up, as a baseline or possibly use
17 the July 2, 2008 situation after tier two begins.

18 AHAM has been very involved in the
19 development of test procedures, data collection
20 and development of these regulations over many
21 years. We'd like to continue that with this
22 rulemaking on battery chargers.

23 While appliance battery chargers may not
24 make up a majority of the products under this
25 scope, in fact, according to the slides that we

1 saw from ECOS Consulting, they make up a very
2 small minority of the products, they nevertheless
3 do represent an important segment not only to our
4 industry, but also to consumers.

5 We'd like to build on the work that PG&E
6 and ECOS Consulting has done on the test
7 procedure. And work together with many other
8 stakeholders to develop a regulation that works
9 for California, that works for the industry, and
10 will -- work for the regulatory agencies and other
11 jurisdictions.

12 This is a unique opportunity to have the
13 lead, not only in the United States, but basically
14 to the world, in development of this growing
15 product category.

16 We'd like to thank the CEC, and we would
17 ask that the appliance standards committee allow
18 the staff of the CEC to set up a series of
19 meetings with industry and other stakeholders to
20 review a regulatory mechanism to address the
21 appliance type battery chargers.

22 We will be glad to provide more specific
23 directions in our written communications. Thank
24 you.

25 PRESIDING MEMBER PFANNENSTIEL: Thank

1 you, Mr. Morris.

2 Any further comment on anything covered
3 today, anything on the appliance standards?

4 I want to thank everyone who is here for
5 your participation, your input. At some point
6 Commissioner Rosenfeld and I will need to make
7 some decisions about what goes into the next round
8 of Title 20 standards. But fortunately, that day
9 is somewhat in the future. We're just sort of
10 starting the process.

11 And we're going to call on all of you,
12 all of you here, all of you on the phone and
13 probably others who weren't in the room today for
14 help and guidance and information and insights and
15 analysis as we go forward.

16 So, any further comments from the dais?
17 Art?

18 ASSOCIATE MEMBER ROSENFELD: No, I just
19 say we have a big job and we need lots of help.
20 And, you're right.

21 PRESIDING MEMBER PFANNENSTIEL: Tim?

22 MR. TUTT: I just wanted to once again
23 mention the January 30th date for providing
24 detailed proposals or templates to us.

25 I don't know legally -- I'm pretty sure

1 legally that doesn't mean that we couldn't look at
2 some proposal that came after that date, but we're
3 looking to phase based on the information we get
4 by the end of January at the very least.

5 PRESIDING MEMBER PFANNENSTIEL: Thank
6 you all for being here. We'll be adjourned.

7 (Whereupon, at 4:45 p.m. the Committee
8 Workshop was adjourned.)

9 --o0o--

10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Workshop; that it was thereafter transcribed into typewriting.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 30th day of January, 2008.



PETER PETTY