

Present: (* Via WebEx)

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Presenters

Mike Leao, CEC
 Ken Rider, CEC
 Gary Flamm, CEC
 Ayat Osman, CPUC
 Suzanne Foster-Porter, Ecos Consulting
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1 P R O C E E D I N G S

2 MARCH 3, 2011

10:10 A.M.

3 MR. LEAON: Okay, good morning everyone. Welcome to
4 the staff workshop on Battery Chargers and Lighting
5 Controls. I think everybody is about settled, so I think we
6 should go ahead and - let me start over for the benefit of
7 those that were on the phone that I had muted. Welcome to
8 the Staff Workshop for Battery Chargers and Lighting
9 Controls.

10 I have a few housekeeping announcements I'd like to
11 make. First, in case of an emergency, the alarm will sound
12 and we'll evacuate the building through the main entrance on
13 Ninth Street. You can follow Energy Commission staff out,
14 we'll evacuate to Roosevelt Park, which is across the street
15 from Ninth and P., and so it's kind of kitty-corner on the
16 southeast side from us. Restrooms are located directly
17 across the atrium from Hearing Room A here. There is a
18 snack bar on the second floor if you go up the main stairs
19 to the second floor, it's under the white awning and, also,
20 we do have a Court Reporter here today, so if you do want to
21 make some comments, I'd ask that you provide a business card
22 to the Court Reporter and also make sure you introduce
23 yourself with name and organization. And before you get up
24 to speak, if you could provide a blue card, fill out a blue
25 card, and provide that to either CEC staff in the room - if

1 you can raise your hand - or bring it directly to me and
2 I'll call on speakers to come up and speak.

3 We may have later in the workshop today --
4 Commissioner Karen Douglas might be attending later, as well
5 as her Advisor, and Karen is the new Presiding Member over
6 the Efficiency Committee; this proceeding is being run
7 through the Efficiency Committee. At the moment, we don't
8 have a second Commissioner on that particular committee and
9 we are hoping that Commissioner Anthony Eggert will be
10 reappointed, he was a previous Presiding Member for the
11 Efficiency Committee and I would, well, this is my
12 speculation, but I believe if he were reappointed, he would
13 be back on the Efficiency Committee.

14 Okay, let me begin by quickly going over the agenda
15 for today. We'll have a couple of background presentations,
16 one from myself and one from the CPUC, and she'll be
17 speaking over the phone, Ayat Osman. Later, we'll hear from
18 Gary Flamm and he'll be addressing moving Title 24 lighting
19 controls into Title 20 and the reasons behind that move.
20 We'll follow that up with a staff presentation from Ken
21 Rider. The staff report will be the subject of Ken's
22 presentation. We'll have a lunch break following that and,
23 when we come back from lunch, we'll have a presentation from
24 Suzanne Foster-Porter with Ecos Consulting, and she'll be
25 making that presentation on behalf of the IOUs, and she'll

1 be getting into some of the technical analysis that was done
2 in support of this proceeding. Then, we'll have some time
3 for open discussion and we hope to have you out of here by
4 no later than 3:00. So, that is our agenda for today.

5 So, I had to pull out my presentation, for the folks
6 who are on the phone. I would like to begin with some
7 background and history, I need to adjust the slides here,
8 bear with me. All right, so let's get started. This is a
9 little background and history that I'll be covering in my
10 presentation this morning, and I'd like to begin with a
11 little preamble: The California Energy Commission is the
12 State's primary energy policy and planning agency. One of
13 its primary responsibilities is promoting energy efficiency
14 by setting statewide Appliance and Building Efficiency
15 Standards. The Appliance Program ensures that regulated
16 appliances sold or offered for sale in the state meet
17 efficiency standards through outreach, education,
18 certification, and enforcement.

19 Since the Energy Efficiency Appliance Regulations
20 first went into effect in 1978, Appliance Standards have
21 played an important role in reducing demand for electricity
22 in California. Energy Commission staff estimate that, by
23 2010, Appliance Efficiency Standards have reduced electrical
24 demand by over 18,000 gigawatt hours. This represents 6.7
25 percent of California's electric load in 2010, approximately

1 the amount of energy produced by two of California's largest
2 power plants. At full compliance, the proposed Battery
3 Charger Standards would add another 2,000 gigawatt hours per
4 year. To adopt these standards, the Energy Commission must
5 first determine that the standards are both cost-effective
6 and feasible. Based on this analysis of the best available
7 data, staff has found that the Battery Charger Standards, as
8 proposed, do meet these requirements. Later today, I will
9 be discussing in detail how staff reached those conclusions,
10 as well as discussing the efficacy of moving Title 24 to
11 Title 20.

12 In regard to our enabling authority, under the
13 Warren-Alquist Act, the Energy Commission is responsible for
14 ensuring that a reliable supply of electricity in
15 California, and for addressing concerns over growing
16 electrical energy consumption through the use of wasteful
17 and inefficient appliances, the Act establishes the
18 authority for the Energy Commission to set Appliance
19 Efficiency Standards, or maximum usage levels, to reduce the
20 demand for electricity from appliances and to collect data
21 on and verify the compliance of regulated appliances.
22 Efficiency standards adopted under this authority must
23 target devices that represent significant statewide energy
24 use and be cost-effective and feasible.

25 In regard to some of our driving policy here at the

1 Energy Commission, in addition to the Warren-Alquist Act,
2 the Energy Commission's biennial Integrated Energy Policy
3 Report, or IEPR, also shapes California's policy approach to
4 energy efficiency and standards. Since 2008, California's
5 energy policy has defined a loading order of resource
6 additions to meet the state's growing electricity needs,
7 first, energy efficiency and demand response; second,
8 renewable energy and distributed generation; and third,
9 clean fossil fuel sources and infrastructure improvements.
10 This loading order reflects the fact that the cheapest way
11 to meet energy demand is through efficiency. Appliance
12 Efficiency Standards is a key strategy for reducing overall
13 electrical demand. Key benefits of the strategy include:
14 reduced need for new power plants and transmission systems
15 and increases in electrical system reliability. Similarly,
16 reducing demand will help to achieve renewable energy goals
17 by reducing the need for new renewable energy generation.
18 California's energy agencies are working toward achieving 33
19 percent Renewable Energy by 2020. This translates into
20 about 100,000 gigawatt hours. Reducing the amount of
21 renewable generation needed to meet that goal will only make
22 attaining that goal more feasible. And, finally, the IEPR
23 has established clear policy direction for staff to adopt
24 all cost-effective efficiency standards.

25 Some other policy drivers. In regard to climate

1 change, the Global Warming Solutions Act, AB 32, established
2 the goal of reducing greenhouse gas emissions to 1990 levels
3 by 2020. Reducing demand for electricity will be key for
4 meeting those GHG reduction goals. This was reflecting the
5 ARB's - the Air Resources Boards' - Climate Change Scoping
6 Plan, which identifies efficiency standards as a key measure
7 for reducing GHG's; specifically, it calls for reducing
8 demand by 32,000 gigawatt hours. Again, Appliance
9 Efficiency Standards must play a key role if that goal is to
10 be met.

11 Another important policy document related to energy
12 efficiency is the Energy Action Plan. The CPUC and CEC
13 coordinate implementation of this plan. The key part of the
14 plan is to reach zero net energy residential and commercial
15 buildings by 2020 and 2030, respectively. The plan
16 recognizes that addressing the growing plug load in
17 California is necessary for attaining these goals. So,
18 these are some of the important policy drivers that
19 Appliance Efficiency Standards are going to play a key role
20 in if we're going to meet those goals.

21 In regard to the history of the Battery Charger
22 Standards development, the Energy Commission recognized back
23 in 2003 that external power supplies and battery chargers
24 represented a significant statewide load, and that
25 significant energy savings could be achieved through

1 development of an efficiency standard for these types of
2 devices. Consequently, the Commission opened a rulemaking
3 in 2004 for external power supplies, but determined that a
4 new test procedure was needed for battery chargers before
5 starting a proceeding for that device.

6 In 2005, efforts got underway to develop a test
7 procedure for battery chargers. A draft test procedure was
8 released in 2007, and the Energy Commission subsequently
9 adopted the test procedure in 2008. Ecos Consulting, on
10 behalf of the IOUs, and that's Investor-Owned Utilities,
11 began testing devices with new test methods to generate
12 data, to help decide what levels a battery charger
13 efficiency standard should be set at. The Energy Commission
14 also asked industry to submit test data for consideration in
15 the development of the case report that Ecos was developing.
16 At that time, however, neither Ecos nor Energy Commission
17 staff received industry test data. Ecos subsequently
18 released the case report in 2009 based on the test results
19 that it had conducted, "Proposing Efficiency Standard for
20 Battery Chargers."

21 In regard to the process that we're engaged in now,
22 we are currently in the pre-rulemaking phase of adopting
23 Proposed Efficiency Standards for Battery Chargers. After
24 reviewing the Battery Charger case report prepared by Ecos,
25 in August 2010, Energy Commission staff sought direction

1 from the Efficiency Committee in regard to whether staff
2 should begin a proceeding for adopting efficiency standards
3 for battery chargers. The Committee directed staff to start
4 the pre-rulemaking phase of the proceeding and to solicit
5 stakeholder feedback regarding the proposed standard in the
6 case report. Staff held a workshop in October 2010 to take
7 comments on the case report and ask for written comments by
8 early November. At that time, staff asked for alternative
9 input assumptions that stakeholders thought better
10 represented some key input assumptions in the case report.
11 Staff did receive a significant amount of questions
12 regarding the data used by Ecos, but no alternative input
13 assumptions were provided. Staff reviewed the written
14 comments and conducted a thorough review of both the source
15 material for the Ecos study and the data being considered
16 under a DOE proceeding for battery chargers, and determined
17 that the data in the case report was based on reasonable
18 assumptions and represented the best available data to the
19 Energy Commission. Based on that conclusion, in January
20 2010, staff developed a spreadsheet model to generate an
21 input to output analysis, based on the standard proposed in
22 the case report. Running these input assumptions through
23 the model showed that the proposed standard was both
24 feasible, cost-effective, and saved energy. In early
25 February, staff sent a letter to stakeholders, again

1 requesting alternative input assumptions for such inputs as
2 duty cycles and incremental costs. We wanted to run these
3 numbers through the model to see if different assumptions
4 would change the results. Staff has not received any
5 alternative data at this time, but will consider such data
6 in preparing the final staff report, and there still is time
7 to submit that data. The draft staff report and model were
8 posted to the Commission's website prior to this workshop
9 and are available on the Commission's website.

10 I'd like to spend a couple minutes talking about the
11 energy savings potential from battery chargers. The Warren-
12 Alquist Act requires that the Energy Commission adopt
13 standards for devices that represent a significant statewide
14 energy use. Battery chargers consume up to 8,000 gigawatt
15 hours of electricity per year, and do represent such a
16 significant statewide energy use. Furthermore, because of
17 current battery charger design, a significant amount of
18 energy is wasted as heat by overcharging batteries once
19 they're full.

20 In addition, the proliferation of hand-held devices
21 and other household appliances make clear that products
22 using battery chargers represent a growing plug load. This
23 analysis clearly indicates that the growing load from
24 battery charges should be addressed in order to meet
25 statewide policy objectives.

1 This graph illustrates the amount of energy wasted
2 as heat after a battery is fully charged. The standard aims
3 to reduce the amount of energy wasted by up to 40 percent,
4 that's the amount of energy that is being wasted as heat and
5 that's the dark blue portion of the graph here. And this is
6 a fairly conservative approach to setting the standard and
7 we believe it is fully supported by the analysis in the
8 staff report. So, in essence what we're saying is that, in
9 the graph that says "current," or the bar that says "current
10 energy usage," that's about 5,100 gigawatt hours and we're
11 aiming to reduce that by 40 percent, which is about 2,100
12 gigawatt hours. As that previous line illustrates, there's
13 a significant energy savings realized through the standard
14 and battery charges do represent the second largest
15 potential relative to other devices that standards are being
16 contemplated for, and we'll take a look at a graph that
17 illustrates that point, or a table, I should say.

18 So, we see that the potential energy savings from
19 battery charges is the second largest potential for energy
20 savings of any other device that is currently being
21 considered for standards. And it should be noted that the
22 first year energy savings for battery charges - and these
23 particular numbers are not in this table - the first year
24 savings from battery chargers for consumer products amounts
25 to 320 gigawatt hours, and that is still a significant

1 number when you look at these other devices. And the first
2 year savings for non-consumer battery chargers is 400
3 gigawatt hours. Again, even if we parse it that way, those
4 numbers are significant.

5 To take advantage of this energy savings potential,
6 the approach that staff took is to set standards that target
7 the battery charger circuitry, not the chemistry of the
8 battery that is being charged, nor the design of the product
9 that the battery provides energy to. The compliance
10 strategy is fairly straightforward, the objective being to
11 stop wasting energy as heat after the battery is fully
12 charged. So, this simple schematic illustrates that point.
13 To accomplish that objective, the Standard revolves around
14 the concept of including a switch in the battery charger
15 that shuts off the flow of electricity after the battery is
16 fully charged. There are several devices in the marketplace
17 that already employ this strategy and are currently
18 compliant with the proposed standards. The incremental cost
19 of complying with this approach for consumer products is in
20 the range of \$.40 to a dollar. Based on that incremental
21 cost, the standards are very cost-effective. The necessary
22 components are also available off the shelf and are
23 compatible with existing housings.

24 In regard to the benefits that would accrue to
25 California by adopting this standard, California will

1 benefit from the adoption of the proposed standards by
2 saving over 2000 gigawatt hours after full compliance.
3 First year's savings prior to any potential preemption by
4 DOE are estimated to be 720 gigawatt hours. The first year
5 savings from consumer battery chargers will be 320 gigawatt
6 hours and, again, for non-consumer, 400 gigawatt hours. And
7 for the consumer, the energy savings from consumer devices,
8 those 320 gigawatt hours, translates into a savings to
9 ratepayers of \$50 million.

10 So, in summary, energy consumption from inefficient
11 wasteful battery chargers represents a growing plug load.
12 Addressing this problem is key for achieving zero net energy
13 buildings and other critical policy goals, including RPS,
14 and GHG reduction goals under the ARB Scoping Plan. A
15 significant amount of energy can be saved by adopting
16 efficiency standards for battery chargers. Based on staff's
17 analysis of the case report and other information, the
18 approach of inserting a switch in the battery charger
19 circuitry is feasible, cost-effective, and achievable with
20 off-the-shelf components. The Standards, if adopted, will
21 help to reduce the demand for electricity in the state and
22 save millions of dollars for ratepayers. This concludes my
23 presentation and, at this point, if there are any questions
24 or comments from the audience, if you could fill out a blue
25 card and bring those up, I would be happy to hear your

1 remarks. And, again, for the benefit of the Court Reporter,
2 please provide a business card and state your name and
3 organization.

4 And first up is Kevin Messner with AHAM.

5 MR. MESSNER: Is this microphone the best one? I'm
6 talking to the esteemed audience, here. Thank you for the
7 opportunity to comment and thanks for holding this workshop.
8 My name is Kevin Messner from AHAM, the Association Home
9 Appliance Manufacturers. We represent home appliance
10 manufacturers, obviously, from major appliances, portable
11 appliances, and floor care appliances. I want to start off
12 by stating that AHAM and CEC do have times when they can
13 cooperate on issues, and thank you for your support and
14 involvement in the recent Appliance Standards Agreement that
15 the industry reached on major appliances with the consumers
16 groups, energy efficiency advocates, and we're pushing that
17 through, and so that's a good positive development, I think,
18 and show of cooperation. And also, smart appliance is
19 coming down the pike is another area of good cooperation
20 that potentially we can team up on.

21 Today, the battery chargers, not so positive, we
22 have some serious comments, serious issues of this whole
23 standard. We just wanted to highlight a few high levels and
24 then, I'm hoping, the agenda looks fairly - not real open,
25 but maybe I'm just misreading it, where we have don't really

1 - we have people of companies that have come in, and flown
2 in, or hope that it will be a give and take throughout the
3 day, and not just a half hour opportunity at the end to
4 really discuss these issues, we hope that throughout the day
5 there can be a real discussion and not us just sitting here
6 watching presentations, although that will be helpful
7 sometimes.

8 MR. LEAON: Yeah, absolutely. We definitely have
9 time for questions and back and forth, and we're flexible on
10 the agenda, so if we need to take more time, we can.

11 MR. MESSNER: Okay, appreciate that. Some of the
12 higher level issues I just wanted to raise in the opening
13 were, this is hard to conceptualize for a lot of us on why
14 CEC is doing this for products that DOE is covering and they
15 are statutorily mandated to cover by July 2011. So, why is
16 CEC pursuing this when it will be preempted in a matter of
17 months, or somewhere in that timeframe? So we, CEC,
18 industry, everyone is expending a lot of resources for very
19 insignificant, if any, energy savings net of what DOE is
20 going to do. So, this is a very difficult initial hurdle
21 for us to overcome, is why this is even happening when
22 there's going to be a federal standard, which is going to
23 create large energy savings throughout the country. So, if
24 we look beyond California and look at the country, the
25 energy savings of the country, maybe there are areas of

1 cooperation where, together, we can work to ensure that DOE
2 standards are done quickly and properly and we would welcome
3 that help. We feel that DOE is on the right track, we are
4 meeting with them, meeting with OMB, to get that rule done
5 quickly and properly. We're not 100 percent enamored with
6 the DOE proposal, but we can work together to get that done
7 quickly, to have a statutory mandate, and also we have
8 agreed and it is in the law, we are used to a three-year
9 lead-in time period for a standard to become effective in
10 the Federal Government, and we have agreed and got the law
11 changed to reduce that down to two years, so we can see
12 these energy savings even quicker. So, that's a big hurdle
13 for us to overcome both conceptually and just in reality on
14 why this is moving forward in a bad economy and tight
15 resources in State Budgets, etc.

16 The other issue is the process has really not been
17 open, hasn't been transparent, it has not been fair, and in
18 many respects, just one example, the last October workshop,
19 there were a number of questions that we had that could not
20 be answered. We responded - they responded with, "I don't
21 know, we don't know, send us your questions in writing."
22 So, we responded with our questions in writing in November,
23 in January, and then we got a data request and we have
24 received zero responses from that, so it's hard to have an
25 open process and transparent process when you ask questions

1 and you get, "I don't know," send me written questions, and
2 they aren't answered. Then, we get a request for a February
3 18th deadline for information for the staff report and the
4 staff reports comes out on the 22nd, that's four days, that's
5 included in a weekend, so February 18th is a Friday, I guess
6 you are all able to glean the information from the comments
7 on Saturday and Sunday, and then write the staff report on
8 Monday, and then have it done by Tuesday, assuming you are
9 taking these comments into account. Or, the staff report
10 was already written and it was pre-judged. That is not -
11 it's hard to, again, conceptualize how that is a fair and
12 open process where you are actually taking comments into
13 account when you have a data request and then a matter of
14 one business day later, you're able to draft the 60-page
15 staff report based on, supposedly, inputs from our comments.
16 Another example is this workshop. We were given six days to
17 prepare, six business days to prepare, and review the staff
18 report. This workshop is great, we're glad you're having
19 it, there's not a whole lot of time that's given to folks to
20 actually review it if you would really like some substantive
21 input. Now, we hope that maybe this isn't the last
22 workshop, maybe we'll have continual discussion, so we can
23 find common ground and try to work through some of these
24 issues, and that this is not just a perfunctory workshop,
25 check it off the list, and move on to the next item. So,

1 we'd like to resolve some of these issues if CEC chooses to
2 go forward, even though DOE is going to preempt them in very
3 short order.

4 The other matter that's very concerning, you talked
5 about it in your presentation, the Warren-Alquist Act, there
6 are a number of things that the Warren Alquist Act requires,
7 one is, "the regulation needs to be based on a reasonable
8 use pattern," but yet you guys are not considering duty
9 cycles and don't appear to have any intention to consider
10 duty cycles, and DOE's analysis has a significant amount of
11 information on duty cycles, so there's not as if this
12 information does not exist. So, the Warren-Alquist Act
13 seems fairly clear that it will have to be considered and
14 needs to be based on this, and it's not. And if there's
15 something I'm missing there, then I'd love to hear it. A
16 significant amount of energy needs to be as part of the
17 Warren-Alquist Act, but DOES is implementing the standard,
18 so what's the significant amount of energy to a razor for a
19 matter of months or maximum of a year that's hardly even
20 plugged into the wall, only plugged in to charge the razor a
21 few times a year, for one year before the DOE's standard -
22 or a few months before the DOE's standard? That's a
23 significant amount of energy? I think that would be hard to
24 justify.

25 It also requires a reduced energy or water

1 consumption growth rate. What growth rate is being
2 addressed when you have a DOE standard coming out shortly
3 after your standard? There's not much growth there. If
4 you're putting a standard in, and then, in a matter of
5 months or whatever later, you have a DOE standard, where is
6 the growth? It does not result in any added total cost for
7 consumer over the design life; that's certainly not the case
8 for our products and you've lumped into three categories all
9 the battery chargers in the Universe, DOE has lumped them
10 into 10. Battery chargers are very complicated, each one is
11 different. Lumping them into these categories, especially
12 three, is not even close to an acceptable way to handle
13 this. And the cost for consumers for our products is
14 significantly different than the cost and life and use of
15 other products. A hair trimmer is certainly - I think we
16 can all agree - a different use than a cell phone or a
17 computer. So, just bring that to your attention that it
18 does not seem to be consistent with the Warren-Alquist Act.

19 With that, we have a number of other comments, I
20 won't dwell into them at length now, but we're very
21 disappointed in how this has been going and we hope that we
22 can resolve some of these issues today and then have future
23 workshops to resolve them. And we would like to work with
24 CEC on addressing the battery charge issues together and get
25 DOE, and let's look at the country as a whole and the energy

1 savings that could be accomplished there. And with that,
2 again, thank you for letting me speak and I'll look forward
3 to today's workshop and hopefully a very significant amount
4 of exchange between everyone that is interested in this
5 subject. Thank you.

6 MR. LEAON: Thank you, Kevin. And we will be
7 getting into quite a bit of detail in regard to the staff
8 report and we'll have the presentation from Ecos. We'll
9 also get into some of the technical background, as well.
10 So, I think we'll address some of those technical issues.
11 On the process sign, I recognize there's a lot of
12 frustration on the part of industry with the short review
13 times, and justifiably so. But, we are in a rather unique
14 situation with this proceeding. As you mentioned, DOE is
15 scheduled to adopt a standard in July, so that means we're
16 preempted unless we adopt our own standard before that time.
17 So, we are pushing a very aggressive schedule in that
18 regard. Regarding our process after this workshop, it will
19 be a policy call on the part of the efficiency committee on
20 whether to proceed to the formal rulemaking, but that would
21 be the next step, and we would have to initiate that process
22 probably by the end of this month, and we would have a
23 formal 45-day public hearing probably in the late April
24 timeframe.

25 MR. MESSNER: Okay, thank you for that. I would

1 just maybe try to - rushing to push a regulation through
2 because DOE is statutorily mandated to hit July 2011, I
3 don't think, is good reason to rush a bad and inaccurate, in
4 many ways, regulation just to try to beat the clock. I
5 mean, this affects many companies, the consumers, and
6 everything, so we need to do it right, and if DOE has a
7 standard that is going to preempt CEC, it's just a question
8 of whether it's a month later, or a year later, max, or some
9 time in between, rushing to just beat that clock to get a
10 month or two months is not a proper way for a regulation to
11 be pursued. So, I just don't think that's a - that's what
12 we're having a really tough time struggling with.

13 MR. LEAON: Okay, yes, I appreciate that comment,
14 though I would point out that proceedings relating to the
15 battery chargers, as I indicated in my presentation, go back
16 several years now. There have been past opportunities to
17 participate in the development of the case report, and the
18 standard that we're proposing in the staff report has been
19 based on a very thorough and careful analysis of the data in
20 the case report and also a very careful review of the DOE
21 data. So, while we're pushing the schedule to meet the - to
22 adopt before the DOE preempts, by no means is the analysis,
23 in my view, faulty or not based on sound research.

24 Okay, next speaker, Alan Mears with Motorola
25 Solutions, Inc.

1 MR. MEARS: I just have a quick technical question
2 about the supposedly simple solution of inserting a switch
3 into a battery charger. It's unclear whether that's like a
4 power on/off switch for the user, or a battery detection
5 switch? What is that?

6 MR. LEAON: For those on the phone, staff will be
7 addressing that question in the presentation on the staff
8 report. Do you have any other questions you want to -

9 MR. MEARS: As long as they will be able to address
10 the question, then.

11 MR. LEAON: Yes, okay. All right, next blue card,
12 Larry Albert, and I can't quite read that - Power Tool
13 Institute.

14 MR. ALBERT: Larry Albert for Stanley Black &
15 Decker, representing the Power Tool Institute. Thanks for
16 offering me the opportunity to make comments today. Just a
17 few items now, and hopefully later on we'll be able to
18 follow-up with some more in-depth technical comments on the
19 staff report. Firstly, I just want to state that Power Tool
20 Institute is in agreement with all the comments that Kevin
21 made earlier regarding the procedural issues around the
22 workshops, the timing, the effort it takes on the part of
23 member companies. One additional point that should be made
24 is that the Power Tool Institute, all the advocacy is
25 provided by member companies, engineers, and other

1 personnel, and so, in addition to having to respond to
2 comments from jurisdictions such as California on potential
3 rulemaking, and so on, we also have the daily tasks that we
4 have to do to sort of keep the company running, right? And
5 recognize that, when California can take a full court effort
6 to kind of move forward with a proposed rule, or a case
7 report, or a staff report, or something like that, it's
8 going to take much more calendar time for that report to be
9 reviewed by industry because the individuals that are doing
10 it have other responsibilities that affect - certainly in my
11 case, personally, product safety and so on. So, we would
12 hope that the Commission and the Commission staff would be
13 mindful of the fact that industry, in order to provide
14 meaningful and responsible comment, needs additional time
15 than perhaps the time that Commission staff has already
16 allocated themselves, right?

17 In addition, a couple of questions here. The first
18 question is, with respect to the energy savings that you
19 have calculated, is that based upon the one year of
20 anticipated time that you will not have preemption by
21 Federal Rule?

22 MR. LEAON: Which number? The 2,100 gigawatt hours?

23 MR. ALBERT: I think it was your previous slide.

24 All right, so I think your second bullet down there is the
25 720 gigawatt hours per year. That figure, then, represents

1 the one-year period where the California regulation would be
2 in force without DOE preemption?

3 MR. LEAON: That's correct.

4 MR. ALBERT: Does that represent both the combined,
5 so-called large chargers, the industrial chargers, as well
6 as the consumer chargers?

7 MR. LEAON: Yes.

8 MR. ALBERT: What proportion of that, then, are just
9 the consumer chargers?

10 MR. LEAON: About 320 gigawatt hours.

11 MR. ALBERT: Is that, I assume, a full term of
12 stock?

13 MR. LEAON: Why don't you come up?

14 MR. RIDER: Again, I'll go into more detail in my
15 presentation, but that's just the first year of sales, so it
16 would assume 100 percent compliance for one year of sales,
17 and the sales data is available in the model that we put on
18 the Web.

19 MR. ALBERT: Okay, thank you. And then, with
20 respect to the solution that's being offered, right? A
21 couple questions there, one is the idea of the switch is
22 sort of the terminating process that then eliminates power
23 delivered to the battery, right, has been something that's
24 been discussed over a long period of time. One of the major
25 considerations there with respect to certainly the battery

1 chargers that are used by the power tool industry is that we
2 have, in fact, mixed chemistries that do require ongoing
3 maintenance power, which I think is recognized in the staff
4 report, and so therefore a switch that completely eliminates
5 power to the battery and after full charge is achieved, is
6 not a practical solution with respect to the utility of
7 these products. This maintenance power is not something
8 that represents irresponsibility on the part of these
9 manufacturers, it's a necessary requirement to deliver the
10 essential utility of having non- or nickel-based batteries
11 available to power tool users. There are only a limited
12 number of chemistries that are truly available to power tool
13 manufacturers for use currently that are actually viable,
14 right, and this is certainly one of them. And we don't
15 anticipate any time in the near future there will be an
16 elimination of nickel-based chemistry. It is the Commission
17 staff's contention that their proposal is not chemistry
18 dependent, right? And they provide some evidence to that,
19 but certainly a solution that says there shall be no
20 maintenance power after a certain time does not support that
21 contention. So, the other question was, is if that's the
22 essential solution that's being offered by the Commission
23 staff, it seems to be inconsistent with the general approach
24 that the Commission staff has taken with respect to
25 incorporating active mode power, which was one of the

1 primary criticisms of earlier types of, particularly Energy
2 Star, right, their methodology that didn't take into account
3 active mode losses, and looking at purely the maintenance
4 mode as the primary means of addressing inefficiency of
5 battery charging, you know, argues why would it be
6 necessary, then, to invoke active mode, right? Our
7 contention in the past and now is that we look at the
8 comprehensive energy use of the battery charger, both in
9 terms of the combined contributions of active mode
10 maintenance and no-load and, in addition, that we consider
11 that the realizable benefit to the consumer is that it takes
12 into account the actual usage factors that are associated
13 with that battery charger. And so, again, I think we have a
14 disagreement with the Commission staff philosophically and
15 the approach of establishing for separate metrics, each of
16 which will have to be independently met.

17 Lastly - not lastly, second to the last, there was a
18 comment in the case report that I think our entire industry
19 would probably take objection to, that this maintenance
20 power that's consumed represents a threat to product safety.
21 Right? The power tool institute and all its members take
22 product safety extremely seriously. A great deal of our
23 effort is focused on that. We are frequent contributors and
24 initiators of safety standards and are involved in all
25 significant safety standard development associated with

1 power tools and Allied Products; in fact, we were one of the
2 leading advocates to bring forth the most recently released
3 Standard UL 2575, which addresses the safety of lithium ion
4 based battery charging systems. So, for the Commission
5 staff to claim that battery chargers that are in use by
6 power tool member companies, right, are because of the fact
7 that they provide maintenance power, represent a threat to
8 product safety, we take objection to that. We would
9 appreciate if the staff could review that comment, right,
10 and provide public retraction. And lastly, we have a
11 fundamental issue with the approach that the staff has taken
12 with respect to establishing a single constant limit for
13 maintenance power, it seems to be contrary with not only the
14 practical nature of battery chargers and how they work, but
15 also the discussion that takes place in the staff report
16 itself, which recognizes that there is a need to compensate
17 for self-discharge of those chemistries that have self-
18 discharge, such as nickel-based chemistries, and that that
19 power that's associated with that self discharge is, in
20 fact, a function of the size of the battery that's needed to
21 be maintained. And so, it seems to be inconsistent with the
22 technical discussion that takes place in the report and the
23 recommendation to have a single value for maintenance power.
24 Right? Thank you so much.

25 MR. LEAON: All right, thank you. Just a very brief

1 response. You know, our intent was not to specify how
2 manufacturers would comply with the standard, our intent was
3 to be technologically neutral. I think there are other
4 options in terms of how to address the efficiency goal as
5 set forth in the standard, and I think probably during Ken
6 or Suzanne's presentation we'll be able to get into that a
7 little bit more. Okay, I've got two more blue cards, a
8 Pierre Delforge with NRDC.

9 MR. DELFORGE: Thank you for the opportunity to
10 discuss this important issue in this workshop. I'd like to
11 make two comments, the first one starting with the big
12 picture, looking at the numbers you outlined in your
13 presentation. Battery charger systems today are
14 responsible, or waste over 60 percent, actually 64 percent
15 based on your numbers, which are nearly two-thirds of the
16 energy that they use, which basically means, you know, that
17 energy is not used in a useful manner to power the products.
18 In a context where we have, you know, climate change, which
19 is a severe issue, and where air pollution is causing
20 illnesses and premature death to people in the U.S., I think
21 this is unacceptable to us and to our members that we would
22 let that continue and that calls for urgent and vigorous
23 action. So, with this, I would also like to comment on the
24 issue of the DOE rulemaking in parallel. I'd like to point
25 out that the DOE process has a lot of uncertainties attached

1 to it, first, that the metrics that are being proposed by
2 DOE have been the subject of many comments by stakeholders,
3 and there's no certainty which metrics are going to be used,
4 and they may be different from the ones that are being
5 proposed by CEC. We actually favor the CEC metrics at this
6 time, we think they will be more effective in harnessing the
7 energy savings. The second uncertainty we see is in the
8 product categorization. Stakeholder comments, including
9 IOUs, NGOs, and also industry, as evidenced by the notes
10 from the December 6th meeting of AHAM and PTI with DOE shows
11 that there are questions about this categorization and that
12 there's no evidence that we would be able to meet the
13 schedule that is currently being pursued by DOE. The last
14 and maybe most important uncertainty with the DOE process is
15 in the stringency of the standard that will be implement,
16 though clearly DOE has a different constituency from
17 California, from CEC, it's much broader, does not
18 necessarily share the same goals that California is pursuing
19 goals with AB 32 and zero net energy, and has the strong
20 leadership around climate protection which is not
21 necessarily shared to the same level by DOE and its
22 political constituency. So, for us, it is critical that we
23 continue to pursue a strong and urgent approach to
24 addressing this 60 plus percent energy waste into our
25 systems in California. Thank you.

1 MR. LEAON: All right, yes, thank you for those
2 comments. You know, getting back to the DOE issue, we're
3 not certain what DOE is going to adopt, we're not certain
4 what efficiency levels are going to be attained through
5 whatever DOE promulgates. We have had some discussions at
6 the staff level with DOE and one of the things we would like
7 to see them do in their Notice of Proposed Rulemaking is at
8 least include an option in that NOPR to have a similar
9 standard as to what is being proposed in California; whether
10 that happens or not, we don't know. But if that were to
11 occur, it would at least provide an opportunity for
12 harmonization and, I think, address some of the concerns out
13 there about what's DOE going to do and what's California
14 going to do. But from our perspective here in California,
15 we want to continue with our proceeding. We think, even
16 with DOE preemption, there's still going to be energy
17 savings that can be attained through the standards that we
18 adopt, and therefore moving forward with this proceeding.

19 Okay, next blue card, Ric Erdman [sic] with Philips
20 Electronics.

21 MR. ERDHEIM: I was going to say good morning, but I
22 just looked at my watch which is still set in East Coast
23 time, so it's "good afternoon." Ric Erdheim with Philips
24 Electronics. Good morning or afternoon is appropriate. I
25 have two points. First, I want to get back to the

1 procedural question that Kevin started to raise. Your
2 slides indicate that in October 2010 the staff held a
3 workshop to take comments on the case report, but of course,
4 as you remember, the case report was not released before the
5 hearing, so we really didn't have a workshop on the case
6 report. So, to your credit, you scheduled a - I can't
7 remember if it was a conference call or a Webinar - where we
8 went over that. We asked numerous questions for which we
9 were not provided any answers, and someone - I think it was
10 you, Mike, but I'm not 100 percent sure and, so, if I'm
11 wrong, I apologize, said, "Well, would you please send us
12 your questions," which we did on November 1st. To the best
13 of our knowledge, no one has responded to those questions,
14 making it, in our view, impossible to evaluate the staff
15 report, or the case report. And, so, question 1 is, do you
16 think you have responded to the questions? And if not, are
17 you planning to respond, and if so, when? If I could make
18 one additional -

19 MR. LEAON: Yes.

20 MR. ERDHEIM: -- we also made - all of the companies
21 made - extensive comments that you have on your website, you
22 have addressed some of those comments, or you've categorized
23 some of the comments, but I can tell you that, from our
24 point of view, we feel that you have not responded to the
25 overwhelming majority of comments that we've, at least,

1 raised. And so, my question again is, do you plan to
2 respond to those comments? If so, when? And I would just
3 say that we're put in the position - I know you want to
4 proceed, but we can't provide meaningful input if we can't
5 get responses to questions to understand what exactly is
6 being proposed.

7 MR. LEAON: Okay. Fair enough, Ric. We did look at
8 all the written comments and one of the comments that we saw
9 on numerous occasions was "use the DOE data." And then we
10 had a lot of technical questions on the Ecos report and
11 their data. We spent a lot of time looking at the DOE data
12 to see if that was a better dataset for us to use, and what
13 we found was that there was some manufacturer data provided
14 that we hadn't looked at before, but that a lot of the data
15 that DOE was relying on actually tied back to the Ecos
16 report and data developed through that process. So, in a
17 sense, you know, we were thinking this is kind of a circular
18 thing here where a lot of the information being relied on by
19 DOE is the same information that we're relying on in the
20 case report with the exception of some of the manufacturer
21 data. So, that figured heavily in how we proceeded. Given
22 that we looked at the Ecos data, we looked at the source
23 documents, and there are a lot of technical questions that
24 have been raised by industry, and we didn't respond to those
25 directly, granted, but we did consider them in looking at

1 the Ecos data and our conclusion was that the Ecos data, the
2 data that they relied on, was the best available data, and
3 that the assumptions were reasonable. And once we had
4 reached that conclusion, our next step was to develop the
5 spreadsheet model and run the numbers. And after running
6 the numbers, it showed that it was going to be cost-
7 effective and we were going to achieve energy savings. And
8 we were still in the pre-rulemaking phase and the rules
9 under the formal rulemaking phase, if we go to that, under
10 the 45-day comment period, will require us to do point by
11 point response to each comment. But in this proceeding, we
12 did include responses to some of the comments in the staff
13 report, we had grouped comments together and, understand, it
14 wasn't a specific response, point by point, to the issues
15 that had been raised in the letters, but we felt that our
16 analysis showed that the data that had been developed
17 through the case report was appropriate for us to proceed.

18 MR. ERDHEIM: So, I take it from that that the
19 answer to your question is, no, you're not going to respond
20 to the November 1st list of questions?

21 MR. LEAON: Well, what I think we had hoped today
22 was that the presentations that we're going to see from
23 staff and Ecos will, in large part, address many of those
24 concerns. I'll wait to hear your feedback later today if
25 that's not the case.

1 MR. ERDHEIM: Okay, and if it's not the case, are
2 you going to respond, then, before? Here's the problem, if
3 it's not the case, your next step is to go to 45-day
4 rulemaking, so we've gone through this entire process, and I
5 realize that there have been opportunity for comments, but
6 if we don't have the data to make comments, then the whole
7 process has been a charade. So, how do we get to a point
8 where we can have a discussion? Again, this is what Kevin
9 was mentioning about sitting down and working through these
10 issues, and right now, you put out stuff that we say we
11 respond and then you just put out more stuff and we don't
12 ever have a dialogue. So, how do we get to a point where
13 you can respond to the questions that we have so that we can
14 make more informed comments on what you're proposing?

15 MR. LEAON: Well, let me say this first. I think,
16 in some respects, we've been talking across purposes. A lot
17 of the manufacturer comments that we've received have been
18 focused on the assumptions and the data sources behind the
19 Ecos data, and we did look at that. So, while it wasn't a
20 point by point response, we did consider the comments that
21 have been raised in looking at the data that's been provided
22 and, again, we thought it was reasonable. And what we're
23 looking for from industry at this point, if you have data
24 that you think is better than what Ecos has, you know, give
25 us those assumptions and we'll run them through the

1 spreadsheet model, and we'll see if it changes the outcome
2 of the analysis. But, to spend weeks and back and forth
3 over - there were questions over the data that we've already
4 determined that we think is reasonable, I don't think, is a
5 productive use of the time in this process.

6 MR. ERDHEIM: I would agree that it would be better
7 to, if we were sitting down talking together, that's not
8 happening. So, let me just give you one example -

9 MR. LEAON: Well, let me speak to that point, Ric.
10 We are always available. If you want a meeting with us, we
11 are more than happy to meet with you individually. Pick up
12 the phone and we'll be happy to schedule a time to meet
13 individually, have one-on-one discussions.

14 MR. ERDHEIM: Okay, I appreciate that, thank you.
15 So, let me just use - I wasn't going to get into this now,
16 but since you raised this, in the report on page 42, you
17 have for duty cycles, you say that personal care products
18 are never unplugged. Just trust me, it says that. The DOE
19 report evaluated 57 different products, 18 of which they
20 found, are almost never plugged, and that includes grooming
21 products. Now, I've been before this committee for five
22 years, I went back and checked and it was January of 2006,
23 where I waived around my beard trimmer and I brought my
24 beard trimmer, I won't go back and get it, but I trim my
25 beard once a week, it gets 13-15 trims per charge, which

1 means I charge the thing four times a year, the charge is
2 three hours a day, three hours at a time, assuming I let it
3 go too long, maybe it charges one day a year. And yet, the
4 duty cycle that you're using says personal care products are
5 never unplugged. I mean, that defies logic. You don't have
6 to respond to that particular issue now, I realize that's a
7 specific example, but that's the sort of thing when you say
8 we evaluated the information and we thought that was better,
9 and the DOE has much more detailed information, information
10 that is supported by common sense. I mean, why would anyone
11 leave a beard trimmer plugged in 365 days a year? That
12 simply defies common sense, and yet that's the assumption
13 that you're using. So, let me get onto my second point
14 because I don't want to belabor this, I know you've got a
15 lot to do today. In the report on page 9, you contrast -
16 and this gets to the point about the categorization - the
17 reports says, well, we've got three categories compared to
18 the Department of Energy's 10 categories. I think that's
19 actually a misleading statement because one of your
20 categories is something that the Department of Energy didn't
21 include in its evaluation, the larger industrial products,
22 so, really, you have two categories of comparable products,
23 and one of them is inductive charge, and we thank you for a
24 separate category, so the Department of Energy has one
25 category of inductive charge. So, really, what we have is

1 you got one category for all non-inductively charged
2 consumer products whereas the Department of Energy had nine,
3 and we argued before the Department of Energy that's not
4 enough because you've lumped products with different
5 functions and different uses and different factors together.
6 So, I would just make the point that that statement about
7 categorization is very misleading and when you merge
8 products together which are completely different, and
9 average them out, well, yeah, the average may look good, but
10 if someone said, you know, you can drown in a stream that's
11 on average only six-inches deep because you might be in the
12 part that's 20 feet deep. So, I think the process - and I
13 don't mean to belittle this, I told the DOE this also, I
14 think what you're trying to do is extremely difficult
15 because the scope of products are so different, but at the
16 same time, just lumping them altogether is definitely going
17 to give you results that don't make any sense. That's what
18 you're hearing frustration from, from many of us. Thanks.

19 MR. LEAON: Thank you, Ric. Do we have any other
20 comments at this time? Oh, we're going to open up the phone
21 lines. All right, the phones are unmuted, if there is
22 someone who would like to make a comment, if you could
23 introduce yourself, name and organization? Any comments
24 from the phone? Was that a yes?

25 MR. DENKENBERGER: This is Dave Denkenberger at Ecos
 California Reporting, LLC
 52 Longwood Drive, San Rafael, California 94901 (415) 457-4417

1 Consulting.

2 MR. LEAON: Can you state your name one more time?

3 MR. DENKENBERGER: Dave Denkenberger at Ecos

4 Consulting.

5 MR. LEAON: Okay, go ahead.

6 MR. DENKENBERGER: So, just a point of clarification
7 of the number of product categories. There are actually
8 three consumer categories because the third one is exit
9 signs, and furthermore, the DOE has only eight categories
10 that correspond to the consumer chargers because the CEC is
11 not covering the DC chargers, which compose two of the
12 categories that DOE covers. Though the third comparison is
13 three from CEC and eight categories from DOE.

14 MR. LEAON: Would you say that last part one more
15 time? You were breaking up. Okay, the person from Ecos,
16 could you say that part one more time, that last part? We
17 didn't really catch it? David?

18 MR. DENKENBERGER: The last part was that there are
19 three consumer charger categories for the CEC that
20 correspond to eight DOE categories.

21 MR. LEAON: Okay, thank you. And for the folks that
22 are on the phone, if you don't want to speak, if you could
23 mute your phone? We're picking up a lot of background
24 noise. Thank you.

25 MR. ERDHEIM: Mike, a clarifying question. I

1 understanding you may have difficulty because of the phone
2 lines. Is he saying that exit signs are a consumer
3 category?

4 MR. LEAON: Let's bring up the phone lines again.
5 David, did you get that question? David?

6 MR. DENKENBERGER: Yes, I did get that question.
7 That's true, the DOE is not covering exit signs. So, I
8 guess that would be two to eight, then.

9 MR. ERDHEIM: Two, one of which is inductive charge
10 for both, so for non-inductively charged consumer products,
11 California has one and DOE has eight, I won't even argue
12 about eight or nine.

13 MR. LEAON: Thanks. I think we need to move the
14 agenda, we're way behind.

15 MR. MESSNER: Could I - just one quick because this
16 guy is the technical Ecos guy on -

17 MR. LEAON: Briefly. And state your name, please.

18 MR. MESSNER: Kevin Messner with AHAM. This data
19 that was on the website said that you looked at one - I
20 think it was razor - one razor - out of the whole product
21 category for razors, and that certainly is not a statistical
22 sampling by any stretch of any statistician's mind. Could
23 you please explain why you only looked at one product and
24 whether or not it's in what category or not, that would be
25 helpful.

1 MR. LEAON: David, did you get that question?

2 MR. DENKENBERGER: Well, basically we tested other
3 products and we felt they were representative samples. I
4 mean, it's difficult to get a representative sample from all
5 different types of products.

6 MR. MESSNER: Well, I understand it's difficult, but
7 that doesn't mean you shouldn't do it. I mean, battery
8 chargers are tough, you don't lump everything together,
9 that's what's so frustrating - this is tough. It's going to
10 take some time. You're going to have to put your arm to the
11 whatever, the elbow to the grindstone, or whatever the
12 saying is, and get it done. It's tough. You can't lump one
13 razor with a bunch of products and say this, a regulation
14 makes. I mean, that's what's - it's hard to conceptualize
15 how this is being done.

16 MR. LEAON: Okay, I think we need to cut off comment
17 at this time and we need to move the agenda, we're more than
18 an hour behind, I believe, or almost an hour behind.

19 So, let's move on to Lighting Controls and I'd like
20 to introduce Gary Flamm.

21 MR. FLAMM: Well, good morning. I'm going to change
22 gears for a few minutes here. This is a project that I've
23 been shepherding through the Title 24 effort for a couple of
24 years. My name is Gary, I'm a supervisor with the Building
25 Standards Development Unit. So, at the same time, this, a

1 Title 20 pre-rulemaking effort is going on, we also have the
2 2013 Title 24 pre-rulemaking effort going on, and so this is
3 an effort that crosses both of these Codes. So, there are
4 existing lighting control requirements in Title 24. As a
5 matter of fact, we've had lighting controls requirements
6 from the beginning of Title 24 and, along with the
7 requirements for controls, both manual and automatic
8 controls, we've also developed specifications for those
9 controls. And those controls already need to be certified,
10 according to Title 24, so the database that the Energy
11 Commission administers has both Title 20 products, as well
12 as Title 24 products. So, Title 24 products that need to be
13 installed apply to building projects that are regulated
14 under Title 24. And under these products that we currently
15 regulate and have regulated for many years, there are
16 devices that we've recently classified as self-contained
17 devices and as field assembled components such as an energy
18 management control system. So, the Appliance Efficiency
19 Regulations are different than the Building Standards. The
20 Building Standards apply to products that can be installed
21 in a building that's under Title 24 construction, while the
22 Appliance Efficiency Regulations apply to products that can
23 be sold or offered for sale in California. So, this
24 proposal is to move existing requirements from the Title 24
25 Building Standards to the Appliance Efficiency Regulations,

1 and the changes are going to be proposed also in Section 119
2 of Title 24 in the current pre-rulemaking efforts for what
3 we're calling the 2013 Title 24 Rulemaking Proceeding. And
4 in the end, the intent is that the Title 20 and the Title 24
5 regulations will complement each other.

6 So, the proposed language that we have now for both
7 Title 24 and for Title 20 has gone through a significant
8 collaborative effort with the National Electrical
9 Manufacturer's Association. We've been working with their
10 Controls Committee and stakeholders in a Title 24 process
11 and Energy Commission staff. We basically have taken an
12 existing language and we've separated it into two different
13 bins. So, where we've ended is, the language that we're
14 proposing to retract from Title 24 are going to be what
15 we're now classifying as self-contained lighting controls.
16 Those are individual modular's that are unitary lighting
17 controls, which require no additional components to make
18 them work, such as something like a wall box dimmer, or a
19 wall box occupant sensor, or a timer switch box. Then, in
20 Title 24, we will leave what we're going to call lighting
21 control systems, and those are where you have two or more
22 components that are installed to comply with the Title 24
23 requirements. Currently, it's a little clumsy in Title 24
24 because we require both unitary lighting controls, as well
25 as lighting control systems to be certified to the Energy

1 Commission database. And if you can imagine, when you have
2 a very complex system and you have to certify that as a
3 device, the building industry is finding that a little
4 clumsy, so we intend to propose a different construct for
5 the Title 24 lighting control systems. So these lighting
6 control regulations, the devices, have been developed over
7 many years. Title 24 has been around, I believe, about 30
8 years, and so, in addition to the requirements for lighting
9 controls to be installed, we've also had lighting control
10 requirements. The Title 24 requirements are already
11 accepted by the industry as a standard for reliably
12 delivering the energy savings that were predicted in the
13 analyses. This move will improve the quality, reliability
14 and consumer satisfaction with those lighting controls
15 available through retail and, as I said, this is going to
16 simplify the Title 24 requirement, which will lead to
17 improved compliance. And that's the end of my presentation.
18 The proposed language is available in this process, this
19 workshop, so you're welcome to go over that. Are there any
20 questions? Yes, sir?

21 MR. ERDHEIM: Hi, Gary. Ric Erdheim with Philips
22 Electronics. We're, of course, a member of NEMA. You
23 mentioned that you sat down with NEMA and worked this out?

24 MR. FLAMM: Yes, I've been working through - it was
25 coordinated by Justin Newmann through the Lighting Controls

1 Committee, headed by Doreen Manisha - we say her name
2 wrongly, I apologize. And we've had a number of conference
3 calls, yes.

4 MR. ERDHEIM: So, the point is, you were able to sit
5 down with NEMA and work this out?

6 MR. FLAMM: That is correct.

7 MR. ERDHEIM: So, Mike, I just would wonder, NEMA
8 also represents the emergency lighting section and I don't
9 understand why we can't have a process similar to the one
10 that Gary did to address emergency lighting.

11 MR. LEAON: Well, I think we are engaged in a
12 collaborative process.

13 MR. ERDHEIM: No, Mike. Gary sat down with the
14 industry and there were back and forth discussions. This is
15 - we're shooting past each other in the night. We don't
16 think you've responded to our questions on emergency
17 lighting, maybe you don't think we've provided fair
18 comments, that's fine, but we should be sitting down outside
19 of this regulatory process and do what Gary did with similar
20 people at NEMA, it would be a different section, and working
21 through this. We're talking about life safety equipment.
22 We can't afford to make a mistake. This is not being done
23 by the DOE, so we don't have the same time constraints, and
24 we would urge you to sit down with the section. Now, you
25 may find that you can't come to an agreement and that's

1 fine, but I can tell you, our members think that there's a
2 fundamental misunderstanding that the Commission has and
3 that Ecos has in terms of how emergency lighting works. And
4 I don't mean to berate Gary, who we've had a long
5 relationship with, but the point is, is that you can't sit
6 down with NEMA, and that's not happening in this process,
7 and we'd urge you for emergency lighting to adopt a
8 different approach.

9 MR. FLAMM: Okay, we can certainly have that
10 conversation. Okay, we're going to open up the phone. Any
11 comments from anybody on the phone, please? Well, hearing
12 none, I guess we'll close the phone, then. So, we will
13 continue to receive comments on this proposed language. I
14 have already been in dialogue, continued dialogue, with the
15 NEMA Controls Committee, and there's a little more tweaking
16 that we're going to do to the proposed language. We need to
17 make sure that definitely, the Title 20 and the Title 24
18 language complement each other, so just a little bit more
19 tweaking, I anticipate. And if you have any comments,
20 please send them to myself or to Ken Rider and we will
21 continue to work on this. Thank you.

22 MR. RIDER: Our next presenter is on the phone line,
23 so let me see if I can pull her up, specifically. Ayat, are
24 you on the line?

25 MS. OSMAN: Hi.

1 MR. RIDER: Okay, I'm going to pull up your
2 presentation. Can you see your presentation? And as soon
3 as you start talking, I'll mute everyone else.

4 MS. OSMAN: Hello.

5 MR. RIDER: Hello.

6 MS. OSMAN: Can you mute the lines?

7 MR. RIDER: Are you there?

8 MS. OSMAN: Yeah, I'm here.

9 MR. RIDER: Everyone else is muted now.

10 MS. OSMAN: Okay, thank you. This is Ayat Osman
11 from the California Public Utilities Commission, I work in
12 the Energy Division, Energy Efficiency, specifically. I'll
13 be giving a brief presentation on current State Energy
14 Policy and the important role that energy efficiency plays
15 in the energy sector to meet aggressive state energy
16 efficiency targets and decrease the greenhouse gas
17 emissions, and therefore the impact of climate change. Next
18 slide, please.

19 In 2003, the first formal energy policy that was
20 adopted by the State agencies, the CEC and the California
21 Public Utilities Commission, was put in place to address the
22 energy crisis in California, and that was the Energy Action
23 Plan. The Energy Action Plan established energy efficiency
24 first in the loading order, to meet energy needs. The
25 second update to the Energy Action Plan put together,

1 coordinated implementation of the plan that captured the
2 various Governor Orders, IEPR and CPUC and CEC Proceedings,
3 and legislation. The most recent 2000 update of the Energy
4 Action Plan highlighted the most important development of
5 California energy policy in the last decade, or two decades,
6 and that was the Greenhouse Gas Emission Solution Act of
7 2006, AB 32, which sets and economy-wide cap on greenhouse
8 gas emissions at 1990, no later than 2020. The update of
9 the plan calls for the need for coordination and integration
10 between agencies and across all targets, resources, areas
11 such as Energy Efficiency and Demand Response, as well as
12 energy efficiency and distributed generation programs with
13 the focus on consumer decision-making regarding energy use.
14 The update also calls for the need of integration with local
15 governments, developers, and builders in the private sector
16 to produce the impact of land use, transportation, and
17 electric infrastructure and greenhouse gas emissions that
18 are not typically governed by the State's agencies. Next
19 slide, please.

20 Energy efficiency was recognized as the tool for
21 addressing greenhouse gas emissions in the energy sectors
22 and meeting AB 32 goals. Assembly Bill 21 required the CEC
23 and the CPUC, and also the publicly-owned utilities to set
24 statewide energy efficiency targets for 2017. The agencies
25 concluded that the goal of the state should be to achieve

1 all cost-effective energy efficiencies. Three of the most
2 powerful strategies that are in use are Building Codes,
3 Appliance Standards, and Utility Energy Efficiency Programs.

4 Next slide, please.

5 Given that both appliance and building standards
6 have continued to grow in size in their adoption, and
7 cumulative conservation phasing, some other utility energy
8 efficiency programs have remained about the same. This
9 called for the states to employ a new innovative approach
10 not yet tried. In response, the California Public Utilities
11 Commission has launched a strategic planning process to
12 develop a comprehensive long-term strategy for sustainable
13 energy efficiency savings. These strategies are called "Big
14 Bold" Programmatic Initiatives and were adopted by the CPUC
15 in 2010 through 2012. When the strategic plan was
16 established in 2006, there was a recent update in 2011. The
17 Big Bold Programmatic Initiatives are only residential new
18 construction should meet zero net energy by 2020, commercial
19 construction by 2030, and HVAC will be transformed to ensure
20 that its energy performance is optimal for California
21 climate. Also, another goal was to allow all eligible low-
22 income customers to be given the opportunity to participate
23 in low-income energy efficiency programs by 2020. Next
24 slide, please.

25 The Energy Action Plan update has established some

1 of the accomplishments, as well as the next steps. The
2 accomplishments were - one of the accomplishments was that
3 both the CEC and the CPUC, as well as other agency
4 endorsement of the zero net energy goals, as well as the
5 aggressive energy efficiency goals. The next steps are for
6 the statewide strategic plan to serve as a roadmap for
7 actions needed to achieve cost-effective energy efficiency
8 potential in California. Some of the highlights of the next
9 steps are the need to improve Code Enforcement Building
10 Codes and additional and more stringent Codes for buildings,
11 as well as Appliance Standards. And also, the partnership
12 with the local government and other market players. Next
13 slide, please.

14 The strategic plan calls to expand Title 20 and
15 Title 24 to address all significant energy end uses needed
16 to reach the goals of ZNE. There is also a need to address
17 the time sensitive opportunities to inform the next Title
18 24. As we all know, the post-Title 24 and Title 20 have a
19 formal rulemaking process, as well as opportunity to propose
20 innovative Code changes that can enable zero net energy;
21 however, one of the hurdles to ZNE is the strong divide
22 between the regulated and non-regulated loads, which are
23 plug loads. The non-regulated plug loads could reach 70
24 percent or more of energy consumption, and these plug loads
25 are expected to grow. Maybe one message that was clear in

1 one recent publication by David Kaneda and co-authors in the
2 2010 ACEEE Summer Study was - the study was called "Plug
3 Load Reduction: The Next Big Hurdle for Net Zero Energy
4 Buildings Design." And there was a subtle, but very strong
5 message that highlights how energy compliance and modeling
6 programs separate regulated from unregulated loads. In the
7 study, the authors chose a case study of how the design team
8 was able to adjust lighting and HVAC loads to less than 50
9 percent of traditional buildings. However, the unregulated
10 plug loads in high efficiency net zero energy buildings have
11 been estimated at around 40 percent of the remaining plug
12 loads. This calls for the need for coordinated approach
13 across the design teams between architects and engineers,
14 and the high performance design practice. That should truly
15 account for both regulated loads and unregulated loads. One
16 of the particular ways is simple. If you look at the plug
17 loads, reducing plug loads will in turn reduce the remaining
18 plug loads needs for HVAC, and therefore energy consumption
19 in a building. Next slide, please.

20 This is a slide that was originated from a study
21 named "Assessment of Technical Potential to Achieving Net
22 Zero Energy Buildings in the Commercial Sector," and the
23 study showed that ZNE is actually easier to achieve in a
24 refrigerated warehouses, for example; however, when you look
25 at hospitals and labs, they are very difficult to achieve

1 ZNE. On average, a two-thirds reduction in energy use is
2 the required approach of ZNE. There is a lot of untapped
3 energy savings that could be harnessed, however, we need to
4 be creative and think in different terms to achieve market
5 transformation. Next slide, please.

6 These are just two slides showing - sorry - two
7 graphs showing energy consumption in an office building on
8 the left, top, and in a residential building on the lower
9 right. And the key point to take away is that the
10 miscellaneous use dominates the growth in electric demand in
11 the residential sector, according to the American Energy
12 Outlook of 2010. Another takeaway is that we see that
13 office equipment and plug load is the third largest end use
14 behind HVAC and lighting in California businesses. Next
15 slide, please.

16 Again, this slide just shows the energy use by
17 product category. If you look at the plug loads, they have
18 about 28 percent share of all the other plug loads in that
19 category. Next slide, please.

20 The CPUC Energy Efficiency Strategic Plan has been
21 using what we call an Action Plan to articulate how to
22 implement the Strategic Plan and one of the most recent
23 published action plans is the Commercial ZNE Action Plan and
24 it is designed to achieve the milestones identified in the
25 strategic plan and continue working with the broader

1 stakeholders from the community, such as the State agency,
2 Building, Industrial, and Utilities, and Manufacturers.
3 Next slide, please.

4 The ZNE Action Plan has examples of how - one of the
5 strategies that was called out in the Strategic Plan in the
6 Codes and Standards chapter calls for expanding Title 20 and
7 Title 24 to address all significant energy use. And this
8 example shows some of the key actions that need to be
9 achieved to get to the milestone. And plug loads have been
10 identified as one of the major areas that need to be
11 addressed. Next slide, please.

12 This is another example from the ZNE Action Plan and
13 it calls for utilizing plug load technologies within the
14 commercial sector. And, I mean, you can read this later,
15 but the basic message is that we need to pay attention to
16 this area as it relates to the Strategic Plan goals and the
17 Energy Efficiency goals of California. Next slide, please.

18 Finally, the study that was done by Ecos had some
19 brief recommendations to address the plug load questions,
20 and some of the recommendation is the consideration of
21 office electronics in Title 20 and consideration of switch
22 outlets in Title 24. Title 20 could address some commercial
23 plug loads that are increasingly ready for Standards
24 consideration, and Title 24 could consider a requirement for
25 switched outlets. For example, private offices and

1 conference rooms could be required to have a certain
2 percentage of their wall outlets controlled by a single
3 switch located near the room's entrance. Automatic controls
4 already effectively used with hard wiring could be required
5 to operate some more outlets, as well.

6 While the programs and mandated regulation have had
7 a vital role of improving the energy efficiency of office
8 plug loads, the increased reliance on office electronics,
9 coupled with the growing need for faster, higher power,
10 higher quality equipment, and has resulted overall in
11 increasing plug load energy consumption. This area needs to
12 be researched and innovative approaches need to be employed
13 both through voluntary programs, as well as regulations to
14 ensure that California meets its energy efficiency goals, as
15 well as greenhouse gas reduction goals. Thank you.

16 MR. LEAON: All right, thank you, Ayat. Do we have
17 any questions in the room? Okay, thank you very much for
18 your presentations. We don't have any questions for you in
19 the room. Once again, I think Ayat's presentation helps to
20 highlight some of the policy challenges that we're facing in
21 the state. At this point, I think we have an option here of
22 breaking for lunch now and maybe taking a short lunch, maybe
23 a 45-minute lunch, before we get into the staff report
24 because I'm sure, you know, there will be a lot of questions
25 on that presentation. So, if I can see if there are any

1 objections to doing that, or if we have any other - yes, go
2 ahead, Kevin.

3 MR. MESSNER: Yeah, I mean, if I'm the only one, I'd
4 prefer to move forward just because it's - I'd prefer to
5 keep moving forward and get the staff report and try to
6 knock out some on that and then go into it, but if I'm the
7 only one, then I'll defer to everyone else. But I'd like to
8 keep it going.

9 MR. LEAON: Okay, I think - does anybody have an
10 issue with continuing? Why don't we do this, why don't we
11 take a 10-minute break, and let's come back and we'll get
12 into the staff report. So let's resume no later than five
13 until.

14 (Off the record at 11:42 a.m.)

15 (Reconvene at 11:55 a.m.)

16 MR. LEAON: Okay, if everybody could take their
17 seats, let's get started. Okay, our next presentation will
18 be from Ken Rider of the Appliance and Process Energy
19 Office. Ken will be talking about the review of the staff
20 report and the analysis that went into it, and Ken, whenever
21 you're ready.

22 MR. RIDER: Yeah, thanks for the introduction, Mike.
23 I'll just tear into it. So, I want to start by stating what
24 has been considered in the staff report that was published
25 online and what has yet to be considered, but will be

1 considered through the course of this pre-rulemaking and
2 rulemaking process.

3 So, we have considered so far the IOU case study, we
4 have looked at the U.S. DOE preliminary analysis. We have
5 looked at the stakeholder comments up to this point. What
6 we have not considered in the staff report, which gets to, I
7 believe, AHAM's comment about timing, is we have not yet
8 incorporated any data that we've received into that analysis
9 from the data requests, and we obviously haven't covered any
10 comments in this workshop comment period, as of yet.

11 So, as Mike mentioned, we looked at the DOE
12 preliminary analysis, to the smallest of details as far as
13 it was publicly available, we found that the majority of
14 sources, or at least a large portion of the sources, were
15 from PG&E. We also found that a lot of the information was
16 NCI estimates, and I believe that stands for Navigant
17 Consulting, and the exact assumptions going into that were
18 unclear in the public documents. Two areas we really
19 focused in on, because they're really the core of this
20 rulemaking, are the duty cycles and the costs, and we really
21 looked closely at those in the DOE information. I also
22 wanted to say that, although we looked for industry
23 information per comments, we didn't find any information
24 directly from industry. What we did find is information
25 that had been altered by Navigant in some fashion. So, this

1 is one of the reasons why we had the data requests is to get
2 specific information, rather than aggregated or less
3 specific information that was available in the public DOE
4 analysis. And I was trying to figure out a good way to
5 express exactly, you know, where the information was coming
6 from, at least in terms of duty cycle, and so I just made a
7 bar graph of the number of citations for the Navigant
8 conclusions, so they have available the list of their
9 consensus information, and the consensus information is
10 primarily based on PG&E information, which obviously was
11 available to develop the case report with. Also, a large
12 part is what is called NCI's generic, which is a Navigant
13 Consulting estimate, and there were a few sources where they
14 cited industry interviews. And, again, we didn't have any
15 idea what those interviews entailed or what information you
16 had provided. The industry inputs were related to power
17 tools and hedge and weed trimmers, at least in terms of duty
18 cycle of battery chargers. We also looked into cost. The
19 case study estimates cost based on the cost of necessary
20 circuit changes. The DOE cost is based from two sources,
21 one they paid iSuppli to actually tear down various levels
22 of efficiency products, and the other source was
23 Manufacturer interviews. The costs that we found in the DOE
24 preliminary analysis were extremely high; we compared the
25 Energy Commission proposed levels to similar levels in the

1 DOE preliminary analysis and found, for Class 2, and to
2 clarify, since we don't have that in the staff report, Class
3 2 contains products such as cordless phones, shavers, and
4 MP3 players, that incremental cost was a little bit under
5 \$17.00 to improve, let's say, a cordless phone charger from
6 baseline level to a compliant level. And for Class 4, which
7 is power tools, laptops, and universal chargers, it was a
8 little bit better, but it was still really high, about
9 \$12.50, and we found that these costs were inconsistent with
10 the expected design changes that are detailed in the staff
11 report. So, then, we decided that the cost information and
12 the duty cycle information were not superior to the case
13 assumptions, and we also found that - let me go back to the
14 duty cycle for a minute - we also found that many of the
15 duty cycles assumed in the DOE analysis were either
16 identical, or very similar to the case duty cycle
17 assumptions, and there were a few exceptions, but for many
18 cases, they were very similar.

19 So, we decided to go continue the rulemaking process
20 based on the Ecos information and, to do that, we created a
21 battery charger model so, that way, we could provide all
22 stakeholders with a view of exactly what the assumptions are
23 that the rulemaking is based upon, and how those
24 calculations are carried out. The model provides
25 information on statewide energy use, so the estimate of the

1 current consumption of battery chargers on the market today,
2 the unit and statewide energy savings, the cost of benefit
3 ratio, which is really important in determining cost-
4 effectiveness, and also the sensitivity in the analysis and,
5 again, the source data was the case report. So, the energy
6 savings were calculated using the duty cycle and the
7 baseline power consumptions, and the assumed compliant power
8 consumptions, and the statewide energy savings, pulled in
9 sales information and estimated compliance rates, so we
10 discounted savings by - we didn't count savings for products
11 that are already meeting the standard.

12 We provided the model in two locations, one is in
13 Appendix B of the Staff Report, and another is an Excel
14 sheet that has been provided on the Energy Commission
15 website. The results from the model - and I would be happy
16 to answer any questions about those Appendices at the end of
17 the presentation - the results were that the statewide
18 energy consumption of battery chargers is estimated to be
19 approximately 7,000 gigawatt hours per year, and that the
20 energy savings for a completely compliant stock, just to be
21 clear, would be - so, that is if all chargers on the market
22 today complied with the standard - we would be consuming
23 2,000 gigawatt hours less per year. The cost benefit ratios
24 were all positive, meaning that the consumers are estimated
25 to actually come out with a net positive benefit financially

1 from the energy efficiency, and they were all greater than
2 3, which mean that, even if we are off by a factor of 2 or 3
3 on assumptions, we would still be cost-effective for the
4 proposed standard. And when I say "are all positive," I
5 mean for each product type that we considered.

6 I'm going to go into a little bit more detail about
7 what we meant by implementing a switch to enter maintenance
8 mode, and how that can bring products into compliance. I am
9 going to echo what Mike said, which is this is not, by all
10 means, the only way that Manufacturers can comply with the
11 proposed standard, it's just a simple way that they could.
12 For large battery chargers, it's a little more complicated
13 than just implementing a switch, but that is also still a
14 viable improvement, but for large battery chargers it takes
15 a little bit more than just a switch. So, I'm going to go
16 through the switch concept.

17 Here is an example of a battery charger scheme that
18 does not incorporate any switch, and the significance here,
19 you notice the watt draw of this battery charger remains
20 fairly constant during this 24-hour test, which means that,
21 whether it was charging the battery, when the battery was
22 full, I don't know, but no matter what, over this 24-hour
23 period, the power draw never varied, so this type of
24 circuitry does not react to the concept that the battery is
25 charged in any way. With implementation of a switch - oh,

1 and I would like to give credit, this graph is pulled from
2 the DOE TSD Technical Report, and when you implement the
3 switch, essentially it detects when the battery has been
4 charged, and then enters a lower power maintenance mode.
5 And to implement that kind of switch that we're talking
6 about, it would be post the power supply, to answer the
7 question asked earlier, and it is essentially a transistor.
8 A transistor is a type of switch, for those who aren't
9 electrical engineers, and you need a control circuit that
10 tells the switch when to turn on and when to turn off. And
11 that control circuit would vary - it could range from a
12 timer, which would just say six hours you would turn this
13 off, or it could be more sophisticated and measure whether
14 the battery was actually full or not by methods that would
15 be appropriate. Different methods are appropriate for
16 different battery chemistries. So, to demonstrate how this
17 leads to compliance, I've included this graph, and I'm going
18 to take a minute to go through it.

19 These are two different battery chargers that are
20 identified here. I believe the source of this graph,
21 initially, was from an Ecos presentation. They're both
22 similar capacity batteries, but as you see, this Nickel
23 Metal Hydride -- that is what NIMH stands for -- battery is
24 one of those ones we discussed earlier that has just a
25 constant power draw, whereas the lithium ion, for reasons

1 that may not be related to efficiency, has a switch, and it
2 goes to low power mode. Well, if you were to implement this
3 switch and turn the power off - not the power off, but to a
4 low maintenance mode level, you would save 46 watt hours and
5 that would be enough to comply with the standards. So, it's
6 not to say that we're going to go to zero, but to provide -
7 I think the standard says .5 watts, so to go to that level
8 you would meet compliance for these by implementing that in
9 the Nickel Metal Hydride charger.

10 I want to take a second to talk about power factor.
11 The standards are proposing the two different levels of
12 power factor correction occur for small chargers and for
13 just one level for large chargers, one is a passive approach
14 which would not require necessarily any kind of active chip
15 to adjust the power factor, and another one - and that is
16 the 0.6 level that's suggested, or the 0.55, the level
17 that's suggested in the case report, and then there's the
18 active level, which would require a chip and would be at a
19 .9 or greater level. The savings and benefit of this do not
20 occur within the product, it doesn't really reduce the power
21 draw of the product, instead it draws energy from the wiring
22 and house of the commercial building, or wherever this
23 product is plugged into. It draws that energy more
24 efficiently and reduces the losses on the line, or in the
25 building wiring. And that's how the benefits were

1 calculated for the incremental costs that would be incurred
2 by incorporating power factor. And that approach is
3 outlined in the case report, I believe, in appendices to the
4 case report.

5 I'd like to take a minute to talk about the test
6 procedure that we're proposing - well, actually, we've
7 already adopted this test procedure, but I'd like to talk
8 about this test procedure for a moment and it yields three
9 main metrics, 24-hour energy consumption, so the battery
10 charger's measure is tested for a 24-hour period, and the
11 energy that it consumes over that period is one key output;
12 another is maintenance mode power, which measures the
13 average power of the battery charger over the last four
14 hours of the test; and the last is no battery mode power,
15 which measures the draw without any battery in the system,
16 and the test also outputs power factors so that we can
17 measure that. The test procedure measures what is called
18 battery charger system, and the battery charger system
19 includes the power supply, the charger, and the battery, so
20 all three components are measured in the test. And this is
21 also consistent with the DOE test method approach. They
22 still haven't issued a final rule on it, but at least their
23 initial proposal is consistent with what California has
24 adopted in 2008. One issue that has been brought up by
25 stakeholders is whether EPSS are measured or not, and they

1 certainly are measured as a part of the test procedure,
2 there are several reasons for that, first, this doesn't buy
3 us internal vs. external power supplies, the second is that
4 many of the external power supplies have been exempted and
5 not regulated as part of the external power supply standards
6 that were adopted several years ago, I guess five years ago
7 now, and those standards have a specific exemption for
8 battery charger external power supplies.

9 The battery charger test procedure describes how
10 batteries are selected, which is an important part of
11 measuring the battery charger system. It requires that
12 external functions not related to battery charging be turned
13 off, so, for instance, a laptop, you wouldn't measure it
14 with the laptop on, you would turn off the computer part and
15 just try to get to the battery charger energy. The
16 methodology covers all battery chemistry and has some
17 specifics that address certain needs for particular
18 chemistries. And it also covers all configurations, so
19 whether the battery is inside of the product, whether it
20 gets taken out of the product and put in the cradle, the
21 configurations are all covered in the test procedure, as
22 well, so it was very comprehensive.

23 So, I'd like to talk about the standard that we're
24 proposing in the staff report. I'm going to start by
25 talking about small battery chargers. There is, right along

1 with the measurements that the test procedure makes, we have
2 proposed standards. So, for the 24-hour energy, the staff
3 report is proposing that the amount of energy consumed in a
4 24-hour test period be less than 1.6 times the battery
5 capacity plus 12 watt hours. For the maintenance mode,
6 which again is the measured average power of the last four
7 hours of test method, that that be less than .5 watts, less
8 than or equal to .5 watts. And for no battery mode, which
9 again, there is no battery in the charger, connected to the
10 charger that must be less than 0.3 watts. Now, we also are
11 proposing that power factor standard that I mentioned
12 earlier, and whether it's 0.55 or 0.9 depends on the input
13 power drawn from the circuit. The current proposal is
14 related to amperage of - I believe the line is drawn at 1
15 amp, but we certainly look for feedback on where the best
16 location, where the line should be drawn.

17 I would also like to present an alternative
18 maintenance approach which gets to PTI's comment that this
19 alternative approach, that maybe we consider scaling the
20 maintenance mode standard by battery capacity, and given
21 some of the information we've got in the recent - in the
22 last month - this may be a more appropriate approach, it is
23 not outlined in the staff report, but we are presenting it
24 today for feedback from industry. There is some basis
25 behind at least this initial proposal. The idea here is

1 that we allow batteries to counteract self-discharge and
2 with some assumptions, a calculation could be made about
3 appropriate level. Assuming a 3 percent loss of battery
4 capacity per day from self-discharge, and assuming that the
5 battery charger can replace that self-discharge at 60
6 percent efficiency, we've developed this equation which, as
7 you can see, .03 is tied to this loss per day, and 60
8 percent is the efficiency that shows up right here, and we
9 believe that this would be perhaps a more appropriate
10 approach. Just to give you an idea of what that would look
11 like in the graph that - this graph is from the case report
12 and it was presented at the October workshop, and that green
13 line there is the 0.5 watt currently proposed standard; the
14 blue line is my best attempt at overlaying this new approach
15 using those assumptions on the last page, so it would
16 actually scale with the battery capacity, but would really
17 start to provide more meaningful additional capacity at the
18 higher capacity chargers that would be looking to charge 100
19 watt hours or more.

20 I'd like to talk about the large battery charger
21 standards, so they're a little more complex than the small
22 battery charger standards, there are two tiers. So,
23 initially we would go to a less stringent level and
24 eventually move to a more stringent level. We are proposing
25 to regulate charge return factor at different depths of

1 discharge at these levels. We're looking to improve the
2 power conversion efficiency, again, power factor. And the
3 maintenance mode, this is a very large change between Tier 1
4 and Tier 2, we are looking again at maintenance mode and no
5 battery. We have a few separate special product categories,
6 one of them is inductive chargers, as the gentleman from
7 Philips mentioned. This has an alternative compliance
8 option, the concept of this compliance option is that the
9 battery charger really never draws more than 1 watt. And if
10 they cannot meet that, they can also still attempt to comply
11 using the general small charger proposal, which would be
12 more appropriate probably for larger inductive chargers.

13 Not mentioned in the staff report, but I wanted to
14 bring it up again for stakeholder feedback, is an
15 alternative proposal that was mentioned in the case report
16 for exit signs. Right now in the staff report, we are not
17 treating exit signs separately, but the case suggested we
18 should do so, and we got feedback from NEMA that this is a
19 special case, so I wanted to bring it up in this workshop.
20 The alternative proposal is still in line in approach with
21 the small battery charger standards, but has a little bit
22 greater allowance in the maintenance mode and the 24-hour
23 test, and since these products are always connected to the
24 power supply, that they do not get tested for no battery
25 mode.

1 I want to discuss the effective dates, so for small
2 chargers, the current proposal is that the standards become
3 effective July 1st, 2012; for large chargers, we're looking
4 at July 1st, 2012, the same date for Tier 1, and a year later
5 for Tier 2. We have proposed in the staff report a later
6 date for replacement parts and repair parts, so that
7 Manufacturers can continue to provide compatible parts for
8 old products that they will not be able to address in
9 redesign. And again, just to be clear, this is by date of
10 manufacture, so when July 1st, 2012 comes, any products that
11 are in stock prior to that may still be sold without many of
12 the regulations. So it's not by the date of sale, but it's
13 by the date of manufacture.

14 The staff report also proposes a few exceptions, the
15 first is for medical devices that require FDA certification.
16 Staff received several comments that this is a lengthy
17 process and that it's a very special product type, so we've
18 propose to exempt them, again, replacement parts would have
19 a longer time to comply, and both of these exceptions are
20 consistent with the way that external power supply
21 regulations were approached. And, again, we're not talking
22 about on-road vehicles, so the plug-in, hybrid, on-road
23 vehicles made by big auto Manufacturers, we are not
24 proposing any charger standards for those.

25 So, when it comes to enforcing this and gathering

1 information related to this standard, the staff report is
2 proposing that we do this through labeling and not through a
3 certification process. There are just such a large number
4 of battery charger systems, and there are so many new ones
5 each year, that certification is difficult from both the
6 industry standpoint and from the Energy Commission
7 standpoint, and we believe that labeling will reduce
8 certification cost and time for, again, both Manufacturers
9 and the Energy Commission. The proposal is that a marking
10 of some type should be placed on the product. Right now, an
11 S-II mark for small chargers, and an L-II mark for large
12 chargers and, again, we really welcome any feedback on these
13 markings. A big issue that has been brought up in the past
14 is the label location. The battery charger test method
15 identifies three product categories and we believe those
16 three product categories are a good way to divide labeling
17 locations, so, for some products, the battery is actually
18 removed from the product and then placed in the charger, and
19 for that type of product, we propose that the label go on
20 the charger, or on the cradle. For products that
21 incorporate the charge circuitry and the battery is held in
22 that product during charging, we propose that the label go
23 on the product, itself. So, for example, a laptop, the
24 batteries are removed, the charging circuitry is inside the
25 laptop, at least in many cases, so in that case it would go

1 on the laptop. If there is no charge circuitry or, for more
2 simplistic chargers that use what we call a battery charging
3 external power supply, then that label would go on the
4 external charger. So, this would be the case that the
5 product has a battery, doesn't contain any charging
6 circuitry, the battery doesn't get removed from the product,
7 but the charger circuitry is in an external box of some
8 kind.

9 I wanted to address a few of the comments, and I
10 think Mike has already made these points, stakeholders --
11 we've been looking for feedback for several years on battery
12 charger standards, and we don't believe that the information
13 that is used as a basis for these standards are flawed. In
14 terms of transparency, we're always open to discussion. If
15 industry has questions, those questions don't necessarily
16 have to come in a letter form, and we'd be happy to work
17 with you and sit down with you and discuss your issues.

18 So, to summarize the process that formed the staff
19 report, we analyzed the case information, we analyzed the
20 DOE information, and we analyzed the stakeholder comments,
21 and the result of that analysis shows that what we're
22 proposing in the staff report will save a significant amount
23 of energy, are technically feasible, and that the standards
24 would be cost-effective. And, again, the basis for these
25 assumptions is available and the calculations are available

1 in Appendix B and in the online Excel model. And, oh, very
2 important, written comments, I want to reiterate that most
3 of this stuff is in the Notice for the Workshop, but please
4 to be sure to include a hard copy with a digital copy if you
5 are trying to docket your comments. We had a few issues
6 with that in the past and I just want to reiterate that we
7 need both the paper hard copy and a digital copy to docket.

8 And we can open it up for questions at this point.
9 I'll start with people in the room and then move on to
10 people on the phone line.

11 MR. LEAON: And, again, if you could fill out a blue
12 card, thank you.

13 MR. SINGH: You know, I have received two questions
14 from - this is Harinder Singh - Alan Mears and Dan Jakl. I
15 think those two questions, we would like to respond to after
16 Ecos' presentation because Ecos may be answering those
17 questions, so it would be better to wait for that
18 presentation to finish before we start responding to
19 technical questions if there are any left out there. So, my
20 request is that, after Ecos' presentation, we would respond
21 to all the questions. So, please submit your questions or
22 blue cards to us at this time, and we will respond to all
23 those questions. Thank you.

24 MR. LEAON: All right, we have a couple other blue
25 cards. The first is from Rick Habben with Wahl Clipper. I

1 hope I got your name right, Rick.

2 MR. HABBEN: Good afternoon. Yeah, I do have
3 several comments regarding the presentation that was just
4 presented. The first of the comments is regarding the usage
5 factors. And I want to make sure that I do have my
6 information correct. The usage factor that was used, and by
7 the way, I want to specify that my comments today are mainly
8 in respect to personal care appliances, I don't know the
9 other categories that well, so my comments are mainly in
10 response to those. In the usage factor in your case study,
11 the personal care appliances, it was determined that they
12 were left plugged in all the time. When I went back to look
13 at what I call your source data on the document that was
14 referenced, it was by Ecos, in there, there was one product
15 that was listed in that category. Is that one product what
16 the case study usage pattern was determined?

17 MR. RIDER: So - and I would really leave it to
18 Ecos, but my understanding of it is that those graphs - let
19 me see if I can pull back the graph - so there's some basic
20 usage assumptions and then also the shape of these types
21 occurs were used, as well, to determine not so much
22 unplugged or plugged, but the difference in duty cycles
23 between charge and maintenance mode powers. So, in figuring
24 out charge and maintenance mode power, these graphs were
25 used - no battery and unplugged assumptions are not really

1 based on - you can't measure that in a lab, that has to be
2 an assumption on people's behavior, so I think that is just
3 - so, yes, partially it is based on that test information,
4 partially not based on that test information.

5 MR. HABBEN: Okay, we have two different things
6 going, then, because our usage pattern is not what you would
7 - you cannot roll that into what you are using for charge
8 and maintenance. Usage pattern is a habit of how someone is
9 using the particular product. So, in our research that we
10 have, we did a survey of over 450 men in California, a
11 little less than half those men had beard trimmers, and the
12 percentage of people that left it plugged in all the time
13 was approximately 15 percent. So, you know, with that type
14 of data that we have done, you know, the usage and the
15 calculation of your energy savings is going to be
16 drastically off when you only have 15 percent of the people
17 and we question whether the 15 percent actually, we feel
18 it's actually a little bit less, but I could show you the
19 actual survey and show you that in greater detail, but you
20 know, your savings for that particular product category are
21 going to be greatly skewed. The other question that I have
22 is, in the case report regarding duty cycle, on page 40 -
23 I'm sorry, at the top of page 9 in the case report,
24 basically it states that, "In addition, staff have concluded
25 that the duty cycles closely tied to consumer behavior are

1 likely to evolve with time, and that the standards based on
2 the specific duty cycles are not appropriate." Could you
3 explain that to me?

4 MR. RIDER: Yeah, so that's talking about the DOE
5 approach, so the DOE approach, as Ric Erdheim mentioned, was
6 that that causes eight product categories, or 10 product
7 categories in the DOE rulemaking. The standards here are in
8 no way tied to the duty cycles of the products; the savings
9 are. The savings we calculate in the cost-effectiveness are
10 tied to the duty cycle. But whether someone uses a shaver
11 one way or another, the standard is indifferent to that. It
12 says "you will use .5 watts in maintenance mode," no matter
13 how much your product is in maintenance mode. And given the
14 duty cycle assumption, we did look at duty cycles of each
15 product, and even with something that seems like it should
16 vary, or maybe could vary by duty cycle, we found that it
17 was still cost-effective for all duty cycles that were - and
18 for all products that were considered in this rulemaking.
19 So, the issue with the DOE approach that we were trying to
20 point out at that point was that, if you make a standard
21 that is tied to duty cycle, and your product, the personal
22 care product, gets lumped in with a cordless phone, which
23 are very different usages, and we come up with an average
24 duty cycle, then we won't be appropriately addressing your
25 product or the cordless phone. And so we wanted to avoid a

1 standard approach that would do that, which would lump your
2 product with inappropriate duty cycle, and make you design
3 something that isn't appropriate to the way that your shaver
4 is used.

5 MR. HABBEN: I guess, in doing that, what you're
6 doing is your discounting any type of duty cycle whatsoever.
7 So, instead of being a little bit off, you're completely off
8 because you're not addressing duty cycle at all. So,
9 there's a huge issue where, if a person isn't leaving the
10 product plugged in, you can't attain anymore energy savings
11 no matter what you do to the product. If it's not plugged
12 in, it's not using any energy at all.

13 MR. RIDER: Right -

14 MR. HABBEN: So, if you don't accommodate any duty
15 cycle, then you've really skewed your numbers if you have a
16 product category such as ours, where the vast majority are
17 unplugged.

18 MR. RIDER: Well, it's my understanding that, and
19 maybe it's displayed in your own surveys, that people use
20 your product differently, some use 15 percent - I think you
21 said do leave them plugged in -

22 MR. HABBEN: Right.

23 MR. RIDER: -- and I guess the remainder, 85 percent
24 don't. And so, because there's a huge variation in how
25 these are used, no matter what you pick for an average duty

1 cycle, the way that - no assumption you're going to make for
2 a duty cycle is going to work for everybody, and so that's a
3 dangerous approach from a standards development process
4 because you can't - everybody uses them differently, there's
5 such a huge variation in how - you can come up with an
6 average, but the distribution is wide, you've got people on
7 the extreme that are leaving them plugged in, and people in
8 the other extreme that are really good about unplugging
9 them.

10 MR. HABBEN: So, the other issue, and you've already
11 admitted this, that you did calculate the energy savings
12 based on all products being plugged in all the time,
13 correct?

14 MR. RIDER: No. Different duty cycles for different
15 products.

16 MR. HABBEN: But for personal care, it was 100
17 percent.

18 MR. RIDER: It could be, yes, okay, if it's on that
19 page, yes. Plugged in, but not necessarily with a battery
20 put into it.

21 MR. HABBEN: All right, the next issue that I want
22 to raise is regarding the cost of components. Since the
23 majority of our units that we have only have one battery, in
24 order to keep the costs down, our voltage is 1.2 volts
25 because these products that I'm specifying are either a

1 Nickel Metal Hydride or a NiCad, so they would be
2 approximately 1.35 volts fully charged and, as stated in our
3 comments during the fall workshop, the control circuitry
4 needs 1.8 volts minimum to function correctly. Your
5 response was that the ICs do not run off the battery, which
6 is true, but the chargers are still only putting out 1.5
7 volts to charge the batteries, which would power the ICs.
8 Therefore, to put charge control in these units, we need to
9 increase the voltage level over power adapters to control
10 the circuitry, then reduce it to preferably charge the
11 battery. And we believe that this is going in the wrong
12 direction for energy savings to actually increase your
13 charger to put your control circuitry in. We haven't, I
14 guess, explored all potential options for control circuitry
15 and maybe there is something else out there, but right now,
16 my electrical engineers that I've been working with told me
17 that the lowest that they can find for control circuitry is
18 1.8 volts.

19 MR. RIDER: Is this a question - to clarify your
20 comment - so, the external power supply both charges the
21 battery and runs the - the shaver, let's say -

22 MR. HABBEN: No, it doesn't. And I have both cases,
23 I have units that will run the trimmer and charge the
24 battery, and I have units that are rechargeable, only. What
25 I'm specifically talking about right now, well, in our

1 particular case, it could be for both, but the one I was
2 specifically mentioning is for recharging the unit only.
3 And I actually have a sample that I can bring up and show
4 you, you know, what's all in the smallness and the
5 compactness of it, and that's another issue that I have, is
6 that we don't have room in our products to add this
7 circuitry that you're talking about, so that's where, again,
8 in the fall meeting I was talking about, tool changes and
9 mold designs to our products, to potentially include these
10 type of controls. In addition, you know, one of your
11 answers to my question regarding this was, you know, to add
12 a current limiter in the active mode on off switch, you
13 know, and as I just said, we just don't have room to add
14 those particular components. And so that's going to be a
15 very difficult issue for us.

16 MR. SINGH: I think Ecos is going to respond to your
17 question on the molding part, or they have the tiered
18 analyses of these personal care products, so we'll present
19 that information and I think it will be good if you ask the
20 question if you have other questions on that particular
21 issue after the Ecos presentation. Thank you.

22 MR. RIDER: We're - I guess we're investigating
23 those issues.

24 MR. HABBEN: So then, the third thing that I have
25 here is that, you know, I disagree with the payback for your

1 customer. In your cost savings analysis, you use the raw
2 material costs to calculate your customer payback. You
3 cannot use this number as it does not take into account
4 manufacturing overheads and retail mark-ups, as an
5 approximate number to use is four times the raw materials
6 cost for your end customer, therefore, if you use a more
7 realistic number of raw material increase, which we're
8 estimating, as I'm saying, we're still looking at it, but if
9 you use the estimating number of \$1.50 to \$2.00 for
10 incremental costs to bring these products into compliance,
11 you're looking at a \$6.00 to \$8.00 increase to your customer
12 at the retail. And in today's struggling economy, your
13 customers do not need this unnecessary cost increase. In
14 addition, with these realistic numbers, you know, as I just
15 said, there's no payback for the customer over the life of
16 the product, and if you look in your proposal on page 11,
17 you guys were using a cost improvement incremental cost of
18 \$.30, and then you said the average savings per year was
19 \$.78. This, again, is for small battery chargers. So, over
20 the lifecycle of 3.3 years, you guys were giving a cost
21 benefit of \$2.27. And what I'm saying is that I'm going to
22 start out with probably \$1.50 to \$2.00 incremental increase,
23 and then your customer is going to be paying four times that
24 amount, which is \$6.00 to \$8.00 increase, so your payback is
25 no longer - you're in the hole by over \$4.00 to \$6.00.

1 MR. RIDER: Um, yeah, well, we'd like to see the
2 assumptions going into this \$1.50-\$2.00 cost, and for the
3 four times mark-up, I don't think we've received any basis
4 for - I mean, we've looked at the mark-ups in the DOE
5 analysis, we've talked to Ecos about mark-ups in their
6 analysis, and you bring up a third source of mark-ups and
7 costs, and we would love to see what the assumptions are
8 behind that.

9 MR. HABBEN: I guess, and then the fourth point,
10 because of the issues I've just raised, you know, it seems
11 to me that this proposal, when you dive into this and you
12 look more closely at the data, you'll see that this does no
13 longer meet the requirements of the Warren-Alquist Act, you
14 know, it is not going to be cost-effective, and that is one
15 of the requirements of the Act. The final point that I have
16 at this point, you know, if you do regulate the product that
17 is going to be regulated by the DOE, the time in which
18 compliance is required is way too short. I have - at
19 present time, I have 16 separate models that would need
20 implemented design changes in order to comply with the
21 proposed regulations. I have six models which already
22 comply with existing regulation, so I'm not saying it's not
23 technically feasible, I'm just saying I have a lot of other
24 models and different price points and price categories that
25 do not comply. And to give you an example, the ones that do

1 comply sell for approximately \$40.00 at retail. The ones
2 that don't comply sell for \$17.00 to \$24.00 retail. And
3 there's a reason the ones that do comply now obviously had
4 more control circuitry in them, and they are more expensive.
5 So, you know, in the case report, even in your own case
6 report, it was recommended that a two-year timeframe to give
7 Manufacturers to comply, and that was in your own case
8 report, now you're coming out and saying that you want to
9 have this implemented and, basically, if I take from today's
10 date, approximately a year and four months, that is way too
11 short for us to try and make design changes on 16 different
12 models. So, I have additional comments, but I'll save the
13 rest for later.

14 MR. RIDER: Thank you.

15 MR. LEAON: Thank you, Rick. Okay, our next blue
16 card is from Larry Albert, Power Tool Institute.

17 MR. ALBERT: Thank you, again. A couple things I
18 want to point out that sort of follow on to the previous
19 discussion with respect to the importance of including duty
20 cycles in the standard level, and I understand what your
21 comment was about the variability of duty cycles. It's been
22 PTI's long position with respect to regulations regarding
23 battery charger energy efficiency that we are supportive of
24 these efforts, providing that the standard is structured in
25 such a way that it provides meaningful benefit to the

1 consumers, and also that manufacturers will have flexibility
2 in achieving a value of comprehensive energy efficiency.
3 And to that end is why we supported the combination of
4 having a comprehensive standard that relates all different
5 modes of operations together under one metric, and in that
6 calculation, of course, you have to include duty cycle. By
7 discounting the duty cycle on the basis of this variability,
8 which we recognize as one of the shortcomings of the
9 approach, right? Then what happens is you also at the same
10 time eliminate the fact that the metric is being used
11 represents a comprehensive value of energy usage, and
12 therefore you can't really ever relate the value of the
13 standard back to comprehensive energy savings. You,
14 yourself, that is, the Commission staff, right, have to use
15 duty cycle assumptions in calculating the overall benefit to
16 the State of California, like with those same assumptions
17 not being used in terms of providing a calculation for the
18 standard, that is, a comprehensive metric. The biggest
19 issue here in not using duty cycles, at least
20 philosophically, is that the numbers you come up with for
21 the metrics that you have are unrelated to each other, and
22 one does not play off the other, it creates a problem where
23 manufacturers, in having to achieve each of the metrics
24 individually, may not be providing the maximum amount of
25 energy savings benefit to the consumer at the lowest

1 possible cost. In providing a comprehensive metric, then
2 you afford manufacturers the ability to use their design
3 resources effectively and being able to meet the
4 requirement, and at the same time provide the lowest
5 possible cost increase to consumers, and therefore
6 maintaining the best value with respect to energy savings,
7 and that's the real issue with respect to duty cycle, all
8 right, just so we understand where we were coming from all
9 these years. In addition, and I'd like to comment on a few
10 other items that came up here, your discussion about the
11 source of data that was used by DOE and their reliance upon
12 Navigant Consulting. Understand, you know, with respect to
13 two sensitive issues here, with respect to cost to the
14 consumer as a result of implementing any sort of energy
15 efficiency standard, right, and also with respect to the
16 duty cycle, certainly the duty cycle is perhaps less of an
17 issue, but certainly issues with respect to consumer costs,
18 are related back to producer costs. And producer cost is a
19 very sensitive subject that Manufacturers certainly do not
20 want to share with public agencies, right, do not want to
21 share with each other. And do the approach that I think was
22 offered, that DOE uses, is they use a consultant, right,
23 that gleans that information from a variety of different
24 Manufacturers as a way of ensuring that they get valid
25 information, and then they combine that information together

1 and provide that to DOE so that individual producer
2 information, then, does not become a part of the public
3 record. And I think comments back from AHAM, and certainly
4 most recently, and I apologize for the lateness of them from
5 PTI, offer to provide that information through our
6 respective trade associations as a way of de-identifying
7 information from individual Manufacturers and providing it
8 in a way that at least is validated with respect to the
9 source as something that Commission staff could use. To
10 follow along with Rick's earlier comment, it's important to
11 recognize that the actual cost to consumers are dependent
12 upon not only the individual component increases associated
13 with compliance with a standard, but also the manufacturing
14 costs associated with that, all of the producer mark-ups in
15 the supply chain, the realities of dealing with a limited
16 set of retailers out there, the impact that has, and also to
17 perhaps a certain extent upon the effective cost -- or price
18 elasticity in the marketplace. So, all of those things were
19 part of a very detailed investigation that was done by DOE
20 consultants, right, and I don't think was necessarily
21 replicated by Commission staff or their consultants in the
22 preparation of the report. And, again, with respect to the
23 question of cost again in terms of achieving certain
24 technical solutions, questioning to what extent that was
25 validated through manufacturers or through the process of

1 evaluating the practicality of the solutions, certainly if
2 you're looking at this in sort of an abstract sense, and you
3 don't actually have any practical design or manufacturing
4 experience, certain solutions may seem to be pretty
5 achievable. In actual fact, those solutions may not be
6 nearly as achievable, they may not be practical, they may
7 not be feasible technically, and they also may be more
8 costly than you anticipated they would be because of these
9 elements that come into play. And tied into that, there is
10 a questions as to whether the costs that were associated
11 with achieving the compliance with the standard took into
12 account both the compliance with the efficiency parts of the
13 standard and the power factor of the parts of the standard
14 at the same time, that is, trying to achieve a certain
15 efficiency at point in our power factor, was that something
16 that you considered in considering what the cost mark-up
17 was?

18 MR. RIDER: Okay, well, you've got a lot of points
19 here, I'm going to try to hit on them as best as I can, or
20 respond to them, rather. I guess, going back to the
21 statements about - I guess, if I understand correctly, you
22 were discussing the flexibility that a comprehensive annual
23 energy consumption approach provides manufacturers so that
24 they can best ensure that consumers get benefit. One of the
25 bases - one of the reasons we chose to do this individual

1 metric approach is that, no matter how a consumer is using
2 their product, they will see energy savings because - unless
3 they never use the product - because we're asking for
4 improvements in charge mode and maintenance mode and no
5 battery mode, you're ensured to get savings, whereas if you
6 - and we are ensured to get statewide savings so long as
7 products are used. Now, if you take a comprehensive
8 approach, then it could be that the duty cycle associated
9 with the product, especially if it's not representative or
10 if behavior changes over time, then your standard may not
11 actually result in any savings in a statewide sense because,
12 if people don't use it the way you assumed, then let's say
13 it really heavily favors maintenance mode, and nobody ever
14 leaves their battery chargers in maintenance mode, then you
15 haven't actually achieved any statewide savings and it's a
16 converse issue and there are tradeoffs there, but that's one
17 of the counter tradeoffs I wanted to bring up.

18 MR. ALBERT: Could I just follow-up on that one
19 point?

20 MR. RIDER: Sure.

21 MR. ALBERT: The issue here is not necessarily
22 whether you're going to save energy or not by implementing
23 across the board improvements in all the metrics, right? I
24 think that's obvious, right? The issue here is whether it's
25 cost-effective to the consumer to do that. If you mandate a

1 requirement in a metric that's not actually used by the
2 consumer, and there is a cost, an incremental cost
3 associated with complying with just that metric, alone, then
4 that consumer is burdened with the cost of the compliance
5 with that metric without seeing a commensurate benefit in
6 energy savings. And that's really what the issue is. By
7 providing a comprehensive model, in that way, all things are
8 weighted in what is believed to be an appropriate manner,
9 right, such that when cost is applied, it's applied in a
10 manner that's reflective of the anticipated energy use, and
11 therefore is going to yield the largest energy savings per
12 dollar to the consumer of incremental cost. That's really
13 what it's about. I can't dispute what you said about if you
14 make everything zero, you're going to save money, right?
15 But it's hard to argue with, right -- you're going to save
16 energy, rather, right? What you are going to do is unfairly
17 burden the consumer with a lot of cost that isn't
18 necessarily realizable in their energy savings.

19 MR. RIDER: And a best attempt at characterizing
20 whether that would happen, we made an attempt to
21 characterize whether that would happen and that is in
22 Appendix B where we calculate the energy savings on various
23 duty cycles of just a flat, across-the-board standard. And
24 so, in this analysis, and you can point out where it's
25 flawed, and many of you brought up good points on that, at

1 least the way it's set up now, these metrics applied across
2 the board seem to be cost-effective on an assumed average
3 duty cycle. So, I think we've at least in the staff report,
4 if the numbers are correct, we've kind of established that
5 it's going to have benefit, whatever kind of product that is
6 being covered.

7 MR. ALBERT: Again, it depends upon your assumptions
8 about the cost of compliance.

9 MR. RIDER: Right. And we are, of course, open to
10 reviewing those. So, the next point is looking into the
11 Navigant and the industry data. One of the issues,
12 especially looking at cost, is that the - well, they did
13 release the manufacturer interview questions, and in several
14 of the places, they asked what the costs were at levels that
15 were not close to the CEC level, or that were not even the
16 same as their proposed CSO levels, and so there's a great
17 deal of extrapolation where they've gone away, at least it
18 appears that they've gone and extrapolated quite a bit from
19 where they actually sat down and spoke to manufacturers, so
20 that's another reason why we sort of stepped back from those
21 Manufacturer interview costs, because they are actually not
22 the Manufacturer interview costs, they are extrapolated
23 costs.

24 MR. ALBERT: And your validation method was what?

25 MR. RIDER: Our validation method? It is based on -

1 so there was a second approach for the DOE, which was not
2 the - and I wanted to bring this up to you, which was not
3 the Manufacturer interview, they hired iSuppli, and iSuppli
4 did tear-downs of these products and found very different
5 costs, costs that are similar, and I believe Ecos will
6 present an updated approach to their costs that I think we
7 see kind of a converging process there, and they do have
8 expertise in manufacturing and they are, I believe, an
9 appropriate third-party entity to evaluate those costs, and
10 those costs are significantly lower than the DOE and the
11 Manufacturer interview costs. And so - and they're
12 designed, and it's evaluating designs like the switch
13 concept, they discuss the design, they discuss why they
14 think that these chargers have met the standard, and that's
15 also another way that we validated these approaches, and
16 unless they're missing unforeseen costs, which you bring
17 out, there could be, depending on the design, unforeseen
18 costs that, because we're not experts, we don't build
19 battery chargers at the Energy Commission, but we believe
20 that their iSuppli teardowns have done a fairly good job of
21 looking at those and that Ecos' analysis also took a look at
22 those, and we've been in contact with them about their
23 assumptions, but we're also looking for assumptions and
24 feedback from industry on these. So, that, I wanted to give
25 a response to the costs and how we went about coming to the

1 fact that Ecos' information is good, and why we didn't take
2 the suggestion to take the DOE information, DOE costs.

3 MR. ALBERT: Would commission staff be interested in
4 getting aggregated data from industry and discussing what
5 format that data should be in, and what kind of thresholds
6 to be looking at for compliance?

7 MR. RIDER: I think, from an industry perspective,
8 you're looking at what points are really important to make
9 in terms of cost, I wouldn't flood us with a cost for every
10 product, especially if they're compliant, or they're
11 reasonably low anyways, I would focus on the problem areas
12 where there's a serious issue with cost and based on the
13 assumptions in our approach, and then, once you've
14 identified those, we can talk and discuss the best way to
15 get that information.

16 MR. ALBERT: So our proposal was to discuss with you
17 the format of the information and the kinds of information
18 you were specifically interested in, and that the trade
19 association would then aggregate information, provide it to
20 CEC staff. I guess this process has been done in the past
21 with some success, right, and then that information would
22 then provide you some validation from a stakeholder, from
23 Manufacturers' perspective, right, that you could then use
24 to evaluate the accuracy of the information you were using
25 in your analysis.

1 MR. RIDER: I think that's the road we were trying
2 to go down with the Request for Information from industry.

3 MR. ALBERT: Right, but we're suggesting that goes
4 through a trade association so that individual Manufacturers
5 are protected against providing this, the sensitive
6 information to a public agency.

7 MR. RIDER: However stakeholders are most
8 comfortable with doing it.

9 MR. ALBERT: Okay.

10 MR. LEAON: We'll definitely look at that
11 information.

12 MR. ALBERT: Okay, so a couple - sorry to take so
13 much time here, but you had a long presentation and I had a
14 whole bunch of comments here. So, your discussion about the
15 switch here, and I was glad to see that you clarified some
16 items about that it's not zero power being delivered to the
17 battery, it's some lower value that provides now maybe a
18 more suitable maintenance power to the battery. It still
19 gets back, however, to the question of whether it should be
20 a constant or a variable amount as a function of the battery
21 power. I'm glad to see that you also have something in the
22 works that's trying to address that. I would still comment
23 on two key issues here, I think one of which is that, when
24 you superimpose that new limit line on your dataset, you
25 still have very little data points that comply, right? And

1 so if you're trying to make the case for feasibility based
2 upon number of units, particularly in that sort of mid-power
3 range of the 50 watts, or 100-watt range, or something like
4 that, right, which represents unfortunately a lot of power
5 tool battery chargers, right? Then, you know, it's hard to
6 make that case because, even with the limit drawn there,
7 then it becomes difficult to justify the feasibility issue.
8 I would suggest if you're going to go that route that you
9 revisit that and make sure that you can at least find that
10 there are cases that comply, and there is a clear pathway to
11 compliance, right, because right now you couldn't make that
12 case based upon your data, right? Secondly, again, your
13 analysis of the power usage and so on is based on 24 hours;
14 again, the argument would be, if you're in maintenance 24
15 hours a day, then you're not ever active, right, and so,
16 again, it's the issue back to the comprehensive nature of
17 how you evaluate these things, so you can't really talk
18 about 24 hours of maintenance power, seven days a week, you
19 know, 52 weeks a year -

20 MR. RIDER: Are you talking about the testing or the
21 duty cycle?

22 MR. ALBERT: Your calculation for - your basis for
23 achieving the value -

24 MR. RIDER: Well, for the uninterruptable power
25 supply, which would be really the case where it's all

1 maintenance, I think our duty cycles assume zero percent
2 charge duty cycle to find if it's cost-effective or not.
3 So, in the duty cycle, we are saying - if that's what you're
4 talking about with the 100 percent maintenance.

5 MR. ALBERT: No, I was talking about in your
6 calculation of how you achieve what that limit line should
7 be, you used the 60 percent charge efficiency - where was
8 that -- .5 watts, 60 percent charge efficiency -

9 MR. RIDER: Yeah.

10 MR. ALBERT: Right?

11 MR. RIDER: Uh huh.

12 MR. ALBERT: So 24 hours at 60 percent charge
13 efficiency, right? But 24 hours at 60 percent charge
14 efficiency assumes it's in maintenance 24 hours, right?

15 MR. RIDER: So, actually, no, that's not what's
16 going on with the 24 hours. The 24 hours is incorporated to
17 pull back from a three percent loss per day, so it's taking
18 the day out of that, you've got three percent watt hours
19 lost per day, so to get that data out of there, because
20 we're talking about power, so in order to get that from that
21 energy level, this is how much energy your battery is going
22 to leak per day, which is that three percent assumption, you
23 have to divide it by 24 hours. So, just to clarify, that's
24 where the 24 hours is coming from, to get it back to power
25 from energy metric.

1 MR. ALBERT: Okay, right. And then, lastly, if we
2 could talk about power factor here.

3 MR. RIDER: Okay.

4 MR. ALBERT: So, there were two comments here in
5 both the case report and the staff report, the threshold is
6 based upon current, right? And in your slide there, I think
7 you said it was based upon power. Are you changing how you
8 determine what the threshold is?

9 MR. RIDER: I think the current proposal in the
10 staff report is related to amps, but we know that if you
11 draw one amp for one second, then you really haven't - why
12 would you need power - if you just touch that one amp level,
13 or whatever, or if you take the average, we're trying to
14 make sure that we - that the product is something that would
15 draw one amp on an ongoing basis, because that's what the
16 savings are tied to is the amount of current that the
17 product is drawing. So you could get to that by wattage
18 because wattage is - I mean the amps on the input power are
19 related to 115 volts, that it's kind of set. So, we could
20 go with the watt approach, too, perhaps, but we're looking
21 for feedback, we would appreciate feedback on, like I
22 mentioned, on what the appropriate level might be for that.

23 MR. ALBERT: You know, I think we provided feedback
24 with respect to this threshold, indirectly perhaps, inasmuch
25 as we say that using the input current that you might be

1 measuring during active mode to evaluate the total losses in
2 the system over its entire lifespan, right, is not
3 appropriate because active mode represents a small
4 percentage of time, right, where you have the high currents,
5 and therefore the presumed effect of the low power factor,
6 right? During maintenance mode and off mode, obviously,
7 these input currents are much lower and so, therefore, any
8 presumed power factor losses in the distributing wiring are
9 less.

10 MR. RIDER: Right, and I leave it - it's based on
11 the appendices of the case report. I can't recall right now
12 the exact details of how they applied duty cycles, how many
13 hours would they assume that this product would be in charge
14 mode, but that assumption is out there, it's in the case
15 report, and the details on that are in the case report.

16 MR. ALBERT: Right, and also in the case report,
17 there's - not the case report, but the staff report, there
18 is a discussion of methodologies to achieve these
19 improvements in power factor. I would argue with you that,
20 to achieve .9 power factor for these cases where you're over
21 an amp, or whatever it happens to be, from many switch mode
22 power supplies, right, which is what we're talking about
23 here, right, for these sort of mid ranges, it's going to
24 require something more than just passive methodology -
25 active methodology and passive methodology, for that matter,

1 both have losses, significant losses, associated with them
2 inside the product, and that those losses associated with
3 those solutions would far exceed any benefit of the power
4 savings that you're going to achieve in distribution wiring,
5 incremental power savings in distributional wiring, due to
6 the power factor improvement, all right? So, I don't know,
7 when you went through this whole calculation, did you
8 consider that? And did you specifically consider the cost
9 of compliance with higher power factor, right? Along with
10 everything else, right? Did you incrementally justify the
11 requirement of having to meet a power factor metric in terms
12 of its incremental savings to the consumer, you know, based
13 upon the incremental cost to the consumer of the
14 improvement. Did you individually justify that? Or, when
15 you did the cost analysis, did you include the cost of power
16 factor improvement in the overall cost of compliance with
17 the standard?

18 MR. RIDER: I think the way that it was approached
19 was that, well, first of all, passive power factor
20 correction, I think there's this one amp line and that,
21 below that line, we're talking about that's where the
22 passive power factor comes into play, and that's achieving a
23 .55 level. And I think that's what we meant to tell you
24 with the passive power factor correction. Okay, and then
25 the .9, the costs we're assuming active power factor

1 correction, and that was done on a basis of - I think the
2 basis was looking at the cost of active power factor
3 correction chip, the minimum amperage required, or that
4 amperage line so the worst case is one amp, anything more,
5 you save additional - it becomes more cost-effective, and
6 that's how the analysis was conducted. Again, I don't know
7 what the efficiency - how the efficiency hit was
8 incorporated. Power factor was done on its own analysis. I
9 would be interested to see what your estimate of that would
10 be.

11 MR. ALBERT: Were you able, then, to validate that
12 there was consumer cost benefit to just doing the power
13 factor, alone?

14 MR. RIDER: I'm saying I would be looking forward to
15 seeing what your estimate of the energy losses are on that
16 and comparing that to the savings and the incremental costs
17 that are assumed.

18 MR. ALBERT: Okay, to be clear, in the energy
19 efficiency cost benefit analysis, right, power factor was
20 not included in there on the cost side.

21 MR. RIDER: Well, what it is, the costs include -
22 the estimated costs are making a compliant battery charger,
23 so your battery charger is going to have to meet the
24 efficiency requirements, so the savings are fixed, you're
25 going to get these savings, power factor or not, because

1 you're going to have to meet the metric. If the power
2 factor worsens your efficiency, you're going to have to do
3 something to counter that in order to meet the standard.
4 Whether that incremental cost of - I think the incremental
5 cost is covered in the approaches that we've discussed here
6 because we're not talking about, you know, most of these
7 approaches take you beyond, like the example of the switch,
8 taking you beyond the standard, and I think we're being
9 conservative, we're trying to be conservative with our
10 approaching, saying, you know, most of these approaches are
11 beyond this line, this line is a loose line that, at best,
12 requires 60 percent efficiencies over the 24-hour period,
13 and that that small difference wouldn't result in a
14 significant change to the incremental cost estimate. But,
15 again, if you have feedback that says otherwise, I mean, I'd
16 be glad to -

17 MR. ALBERT: I'm just trying to find out the basis
18 of -

19 MR. LEAON: Larry, if I can interject here, it's
20 1:15 now and we've got a lot of material to get through in
21 the Ecos presentation, as well, and we still haven't taken a
22 break for lunch, so could you save your questions - well,
23 let me first ask the folks, do we want to take a break at
24 this point for lunch? Yes, okay. Does anybody have any
25 time constraints regarding flights? Four o'clock, okay.

1 Well, it's 1:15, so Rick, you need to probably leave, what,
2 by 3:00? Oh, you have to leave here by 4:00, okay. Okay,
3 all right, thank you. So why don't we take a 45-minute
4 lunch and let's convene back here at 2:00 sharp, and -

5 MR. ALBERT: Just the answer to this one question.
6 Has the cost of power factor been included in your cost
7 estimates for the cost benefit analysis?

8 MR. RIDER: The cost of the power improvement has
9 been, but not necessarily - I don't know that the
10 relationship between the two, how intricate, I don't recall
11 the intricacies between that relationship. So, power factor
12 by itself, yes, standard by itself/relationship, I don't
13 know.

14 MR. ALBERT: Okay, thank you.

15 (Off the record at 1:15 p.m.)

16 (Reconvene at 2:05 p.m.)

17 MR. LEAON: Okay, let's reconvene. If everyone can
18 get settled. Okay, let's go ahead and get started. We can
19 take another five to 10 minutes for any additional questions
20 on the staff report, but I would like to move onto the
21 presentation from Ecos. As I said, they have quite a bit of
22 information that we need to get through in their
23 presentation, and I'm sure that's going to generate quite a
24 few questions. So, if we can limit additional questions to
25 about 10 minutes, I would appreciate that. Thank you.

1 MR. ERDHEIM: Yes, Mike, and to speed this up, Ken
2 and I have already exchanged questions and answers to most
3 of this already, so let me just go through this very
4 quickly, question 1 dealt with the labeling requirement
5 where we would be - the proposal is we would label the
6 products to certify we were in compliance with the
7 California requirements, and my question is, well,
8 underlying all of this discussion is that, at some point,
9 California requirements are going to be preempted for
10 consumer type of products, so what happens then? I think
11 Ken's initial response was, well, you wouldn't be preempted
12 - the preemption wouldn't apply to labeling, and then I
13 said, "Well, we would then be labeling to certify to a non-
14 standard," and then I think Ken said, "Well, that's a good
15 point," and that's kind of where we left it off. So just a
16 question, knowing that there's going to be preemption, how
17 does the labeling work? Does it make sense to establish a
18 labeling program for products for which the program is going
19 to be eliminated soon? We can leave that up to your
20 opinion, so -

21 MR. RIDER: And I want to clarify one thing and it
22 wasn't - in the preliminary DOE analysis, they don't address
23 - at least I didn't see their enforcement policy for battery
24 chargers, so just to be 100 percent clear, if they did do a
25 label, if they do implement labeling as their enforcement

1 method, we would be preempted from our own label. So, I was
2 only thinking if they required certification, we would not
3 be preempted.

4 MR. ERDHEIM: They have a separate - and, again, I'm
5 not an expert on this - but they've just come out with a
6 rulemaking that applies to certification for all of their
7 requirements, so they're focused on certification as opposed
8 to the labeling.

9 MR. RIDER: But I believe for external power
10 supplies, and maybe you can speak to this because I know you
11 guys probably certify some of them, do they require
12 certification for those products?

13 MR. ERDHEIM: I believe so.

14 MR. RIDER: Okay.

15 MR. ERDHEIM: I believe so. This is a generic
16 requirement that applies to all of the DOE regulations, but
17 I believe there is a protocol now that each company has to
18 comply with to certify. So, I don't need an answer right
19 now, but the point is that labeling a product for maybe a
20 year, and then going out of effect, unless the DOE does its
21 own label, doesn't seem to make a lot of sense. So the
22 second point, which I also talked to Ken about was the
23 effective date. So, Ken made the point that the effective
24 date applies to the date of manufacture, so presumably there
25 would be products manufactured before the effective date

1 that would be sold during the year. Let's just for the sake
2 of argument assume that you go ahead with this process and
3 there's a one-year time period between when your date is
4 effected and the Department of Energy rules come into effect
5 and, then, you're preempted, so, in calculating the energy
6 savings for that year, did you assume a whole year's worth
7 of compliant products?

8 MR. RIDER: Yes, so it's one year of compliant
9 product sales, so presumably July 1, 2012 rolls around --
10 let's talk about small chargers -- the first day, we're not
11 saving anything, are we, one day's worth of sales, right?
12 And then, so the one-year figure is - the rate at which we
13 would be saving energy at July 1st, 2013, and at which point
14 DOE wouldn't have saved any energy with their point, but we
15 would have made one year of sales.

16 MR. ERDHEIM: Well, you would have had one year of
17 sales, but let's say that it takes four months for product
18 to be manufactured, so it's manufactured overseas,
19 transported to the United States through the company's
20 distribution system and to the retailers' distribution
21 system, and the consumer buys it, pick a day, let's say it's
22 four months, so are you calculating for that year a year's
23 worth of savings, or eight months' worth of savings?

24 MR. RIDER: So you're talking about the delay in the
25 manufacture cycle, the sales?

1 MR. ERDHEIM: Yeah.

2 MR. RIDER: I guess I - whether that assumption
3 makes sense or not is whether the Manufacturer would - how
4 the Manufacturer would treat it. If they made a year full
5 of sales, assuming that the California Standard, or the DOE
6 standard was similar, then eventually those sales that were
7 back four months would make it through the pipeline and to
8 the sales floor, so it depends on how the Manufacturer
9 approaches the standard. So, it could be that it's eight
10 months, it could be that it's a year, we're assuming a year.

11 MR. ERDHEIM: Okay, thanks.

12 MR. LEAON: Okay, any other questions for Ken? Do
13 we want to take a quick question from the phone? Oh, a
14 comment for the staff report? I think what we would like to
15 do if you don't mind, I really want to get Ecos'
16 presentation, unless it relates directly to something with
17 the staff report, but I think most of these issues are going
18 to also be covered through Ecos. Okay, since we haven't
19 asked anybody on the phone for questions, let's take one
20 question from the phone on the staff report.

21 MR. RIDER: All right, it's going to be chaos. All
22 right, I'll open up the line. If anyone on the phone has a
23 question, go ahead. I see Teresa Jordan has raised -

24 MS. JORDAN: Yeah, hi. This is Teresa Jordan from
25 Motorola Solutions, Inc.

1 MR. RIDER: Hi.

2 MS. JORDAN: Hopefully you can hear me.

3 MR. RIDER: Yes.

4 MS. JORDAN: I would reiterate the request that
5 anybody who is on the phone who doesn't have their line on
6 mute, please mute your line. Okay, thanks. My question is,
7 I really would like a clarification of one of the statements
8 that is in the staff report, and I just want to make sure
9 that we're understanding it correctly. So, on page 16,
10 there's a statement that says that "the proposed regulations
11 can be met by replacing the charged current controller and
12 the battery charger circuitry with a comparator, and a
13 transistor uses an on/off switch." So what I would like to
14 know is, is it actually the CEC's contention that all
15 battery charging products can meet the regulation using this
16 approach?

17 MR. RIDER: I don't know who that other person is,
18 but to answer your question, I don't think that is
19 necessarily - and I tried to reiterate that in the
20 conversation of approaches that that is not the only way
21 that you could meet the regulation, and that it may not be
22 the right way for the Manufacturer to do it, we leave that
23 up to the Manufacturer to decide the best approach, just
24 that this is one really simply approach that certainly, no
25 matter how you manufacture - or how the battery is

1 operating, will save energy.

2 MS. JORDAN: Okay, there's actually somebody on the
3 phone who seems to be having another conversation - okay,
4 good.

5 MR. RIDER: Yeah, I don't think he's on the line
6 anymore. So, did that answer your question.

7 MS. JORDAN: Well, yeah, but then the follow-on
8 question is, then, but that seems to be the approach that is
9 used in the calculation of the cost benefit analysis. Is
10 that perception accurate?

11 MR. RIDER: That's one of the approaches. We tried
12 to characterize as many approaches as possible in the staff
13 report, in the technical feasibility section, and, in
14 addition, the case report also characterizes them and their
15 assumed costs. As you note, the costs are different for
16 different product classes, so obviously there are a little
17 bit different assumptions about what the cost will be for
18 different battery capacities and some consideration of
19 different products, so, yeah, I think we have considered the
20 cost of different approaches and this is just one that saves
21 energy across many project classes, so it's an easy talking
22 point, easy concept to demonstrate. A lot of the other
23 approaches are really technically dense and harder to
24 explain; I think this one is the easiest one to explain, so
25 that's why we brought it up in the workshop.

1 MS. JORDAN: Yeah, I would agree, a lot of the other
2 strategies are definitely technically dense.

3 MR. RIDER: Right.

4 MS. JORDAN: But that's why, you know, in reading
5 through the staff report, I was looking at the comments that
6 the agency responded to, and it seems as though every time a
7 stakeholder mentioned a concern, saying, "Well, we're going
8 to have to do a redesign because we have to do something
9 that's more technically complicated than just adding a
10 switch, and it's going to add extra costs, and it's going to
11 add extra time," the response from the agency was, "Well,
12 no, you don't have to do that, you can just add a comparator
13 and a transistor." So that was like comment 3, number 4,
14 number 6, number 9, number 11, number 12, they are all along
15 those same lines, so it seems as though the CEC is asserting
16 over and over that that is really a solution that's going to
17 work in every case and get you to the performance level that
18 you need. But, for instance, with our products, we already
19 use that approach in our product design, and right now we
20 don't have any battery charging systems that will meet the
21 proposed energy efficiency level. So, I'm just wondering,
22 what is the perception at the agency about, you know, what
23 products are already used in this approach? Because it
24 seems like the perception is that the percentage of products
25 used in this approach is really low.

1 MR. RIDER: And I think we're addressing the
2 cheapest - the switch approach is to address the kind of
3 cheapest product design on the market, which is why the
4 graph shows, you know, just a resistor circuit, that's
5 really the point - the point, why we bring that up again and
6 again in the staff report, is that we want to look at the -
7 we want to make sure we're talking about the cheapest
8 approach that maintains product efficacy, and a lot of the
9 comment we got, or information that has been provided to us,
10 are kind of more extravagant approaches, that go way beyond
11 what is necessary to meet the standards. And so we want to
12 avoid that while looking at the approaches and coming up
13 with the correct costs. So, I think in my slide on the
14 large battery chargers, I pointed out that there are some
15 cases where you need to do more than just stampede them at
16 the switch.

17 MS. JORDAN: Right, but the way that the products
18 are categorized by California, our products, even though
19 they're industrial, are still considered small and not
20 large, and to us it seems like, you know, there's a real
21 dichotomy there between the consumer products and the non-
22 consumer products that really should be addressed by
23 different standards because, you know, our products have to
24 be a lot more ruggedized, they have to operate in really
25 extreme conditions as far as temperature goes, and so the

1 cheapest approach really isn't going to work for our type of
2 products. It might work for a product that doesn't get as
3 heavy of use, but you know, that's not really anywhere in
4 the report, they're all lumped together, and I'm wondering
5 what the justification is, you know, for not recognizing the
6 performance differences that are necessary for consumer and
7 non-consumer products.

8 MR. RIDER: Okay, I recognize that there's a
9 difference there. I think I just want to reiterate, that's
10 the easiest one to explain in a public meeting is this one,
11 and I think we did look at other approaches, the efficiency.
12 And we would like to see in comment, you know, your
13 approaches to cost and your difficulties with organization,
14 or whatever other concerns you may have.

15 MS. JORDAN: Okay. Yeah, we would definitely like
16 to give you whatever information you need, but we're
17 wondering what kind of data you want because, you know, we
18 did provide a whole bunch of data to you, or general
19 information to you guys in our previous meeting, which
20 didn't seem to be incorporated at all into the staff report,
21 so can you give us an idea when you say you want some more
22 data of exactly what you're looking for, that would be the
23 most useful thing for you guys?

24 MR. RIDER: Sure, and I think to expedite
25 conversation, maybe we could just have a conversation with

1 you offline, out of this workshop to discuss that.

2 MS. JORDAN: Okay. All right, thank you.

3 MR. RIDER: Okay, no problem.

4 MR. PRICE: Good afternoon, this is Jeff Price.

5 MR. RIDER: Jeff Price? Yeah, I see your hand is
6 raised. Do we have time, Mike?

7 MR. PRICE: I'll lower my hand now. I have a couple
8 of specific questions. For starters, I'm a proponent of
9 helping educate you guys to learn more about fundamental
10 requirements for [inaudible] [00:15:01], but I am trying to
11 work my way through this and rationalize the benefits always
12 with reducing power. My concerns, I guess, are pointed
13 towards the existing Title 20 requirements for the -

14 MR. RIDER: Jeff, can you hold on one second? I'm
15 having trouble hearing you. I'm going to mute everyone and
16 make sure you're the only one talking. Okay, go ahead,
17 continue.

18 MR. PRICE: All right. I have some specific
19 questions related to the existing Title 20 document, which
20 does regulate and allow for certification for exit sign
21 products sold in the State of California.

22 MR. RIDER: Okay.

23 MR. PRICE: Is this proposal required to displace
24 the existing requirements for exit signs found in Title 20?
25 Or is this going to be in addition to?

1 MR. RIDER: I think the approach is that it's in
2 addition to, you have a lighting standard for, and I believe
3 it's each face of the exit sign, which is our current
4 federal standard. We cannot supplant that standard. I
5 think our opinion is that the battery charger is not covered
6 by that standard and, so, I would say that the approach that
7 we're looking at here would be on top of the current -
8 existing requirements for exit signs.

9 MR. PRICE: Okay, because you guys do have
10 restrictive power requirements for the entire sign which
11 includes the normally on illumination of the internally
12 illuminated sign, in addition to any power consumed by the
13 charging circuit. So, if we're going to have that
14 requirement and then you're going to dissect it further and
15 look specifically into the charging mechanism?

16 MR. RIDER: Well, Jeff, I think the idea, what we
17 would like to do in an ideal world is try to separate the
18 lighting consumption from the battery charger consumption.
19 The whole point of this rulemaking is to address battery
20 chargers. One of the difficulties that Ecos has brought in
21 their case report on the IOUs is that it doesn't seem
22 possible to separate, or disconnect, or - the test method
23 say to turn off everything that does not have to do with
24 battery charging, but for the exit signs, it seems that
25 there's just no feasible way of doing that, is my

1 understanding. And so, ideally, we would like to not
2 include the lighting on the exit sign and, so, the solution
3 is to come up with a less stringent approach.

4 MR. PRICE: Yeah, and again, I credit you guys for
5 looking at efficiencies everywhere you can, but for a
6 product that is federally mandated to be illuminated at all
7 times, to disregard the energy consumption of the product in
8 its normal operating state when 99.9 percent of its life is
9 at a float voltage condition, anyway, seems - I'm trying to
10 make sense of all of that. A question regarding the current
11 language in the existing Title 20, it specifically states
12 "emergency lighting," which is illuminated exit signs, is
13 similar language going to be placed into this proposal, as
14 well?

15 MR. RIDER: Are you talking about the existing
16 standard?

17 MR. PRICE: Yes.

18 MR. RIDER: So we're not going to amend any of that.
19 Like I said, the new standards will be on top of those
20 standards. Those standards - the Title 20 document includes
21 Federal standards, we have both Federal and State standards
22 in the Appliance Efficiency Regulations. Those are Federal,
23 we will not be amending those Federal Regulations in any
24 way, nor will we be allowed to, so, no -

25 MR. PRICE: Right. Yeah, I guess the concern come

1 into play that when you get into the characteristics of the
2 re-charge and the idle maintenance charge conditions, though
3 the product may or may not - I'm sorry I couldn't analyze it
4 better for you, but there's just not enough detail in the
5 expectations of the program yet to make a determination of
6 whether or not it's going to meet UL 924 Standards, which is
7 the standard for emergency lighting and power equipment that
8 we are rigorously held to and, by the way, is synchronized
9 with the NFPA 101 Life Safety Code, the National Electrical
10 Code, the International Building Code, and International
11 Fire Code. So, I mean, by tampering with that portion of a
12 product that, in today' market, I can't think of a single
13 product that draws more than five watts per sign, and to
14 critically compromise the performance attributes that are
15 harmonized across all these standards, I hope somebody is
16 investigating what ramification might be taking place there.

17 MR. RIDER: Right, Jeff, and we would appreciate
18 your feedback on whether this is going to jeopardize any of
19 those, but at least from the Energy Commission's standpoint
20 at this point in our analysis, and what we've looked at, we
21 haven't seen anything that suggests a more efficient battery
22 charger would jeopardize the safety of the products, so
23 maybe this standard is too stringent and it may do that,
24 but, you know, as I mentioned earlier, we're not necessarily
25 - we rely on industry to kind of bring up those kinds of

1 points and justify them, and we're glad you're part of this
2 process. Maybe you can identify some of that for us.

3 MR. PRICE: I would hope to think that we have
4 enough time to ratify, you know, once these restrictions are
5 made clear, we're certainly going to have to have time to
6 modify and prove out whether or not we can still meet the
7 performance standards that are in those requirements. But
8 it kind of sounds like the pace at which this thing is
9 moving may not lend itself to that, and then what happens?

10 MR. RIDER: Well, I think we've tested some units.
11 I think we have some information and I don't think we're
12 just going with no information for it. We have tested - I
13 think we have test information for a lot of uninterruptible
14 power supplies, so the real question would be what makes -

15 MR. PRICE: Uninterruptible power supplies -

16 MR. RIDER: -- well right, this is a similar
17 concept, right?

18 MR. PRICE: -- are held to two different criteria.

19 MR. RIDER: Sure, but I mean in terms of efficiency,
20 they're both maintenance mode intensive.

21 MR. PRICE: Well, I agree with that, but the charge
22 rate, see, we're held to - has anybody applied this logic,
23 or this reduction in energy sent to the battery against the
24 requirements that are found in UL 924? That's where you're
25 going to find the embedded performance requirements for

1 public safety that our products are held to, and that all of
2 the other Life Safety Code and Building Code Standards are
3 harmonized against.

4 MR. RIDER: Well, now you mentioned that UL 924, I
5 think we will look to make sure that we're not - I mean, you
6 bring it up, it's a good point, and we'll look into UL 924,
7 and any other issues you bring forward in comment.

8 MR. PRICE: Okay, that's fine. But this is
9 consistent with the - there's going to be no extraneous
10 surprises, this is emergency lighting, which is illuminated
11 exit signs? That is the extent of the scope?

12 MR. RIDER: Oh, for the exception, yes, that one
13 exception standard only would apply to exit signs.

14 MR. PRICE: Okay. Okay, thank you very much.

15 MR. LEAON: Okay, I think we need to move on to the
16 presentation from Ecos and if Suzanne can come on up and,
17 Ken, if you can tee up the presentation for her?

18 MS. FOSTER-PORTER: My name is Suzanne Foster-
19 Porter. I am a consultant to the IOU Statewide Team that
20 focuses on mandatory energy efficiency standard for
21 appliances. I'd like to also introduce, before I get
22 started, my colleague, Phillip Walters.

23 MR. WALTERS: Good afternoon, everyone. Thank you
24 for having us here. I'll introduce myself since I'm a new
25 face to many of you. Prior to my joining Ecos, I've worked

1 in Manufacturing for about 30 years, manufacturing high
2 temperature severe environment lightronic instrumentation
3 operating on batteries and low power, low energy
4 availability sources, primarily for underground oil and gas
5 work, directional drilling, and things like that. And,
6 again, thank you for having us here today.

7 MS. FOSTER-PORTER: This presentation has a number
8 of background - quite a bit of background material at the
9 beginning, targeted for participants of this workshop that
10 have not been participating to date. Given the time
11 constraint, I'm going to move a little more quickly through
12 that background information, given the fact that I think
13 many of you in the room have been here prior. If there are
14 any objections to that, please feel free to raise your hand
15 and I am happy to go through the material, I'm just trying
16 to balance the time that we have available against.
17 Harinder?

18 MR. SINGH: It's not posted, we can do it right now
19 if you want to.

20 MS. FOSTER-PORTER: So, I don't see any objections
21 to moving a little more quickly through the background
22 materials, so I'm going to go ahead and do that to enable us
23 to get to the new material that is targeted for today.

24 I would like to acknowledge the group of
25 organizations that have contributed to the technical work

1 that forms the basis for this proposal, it include Pacific
2 Gas & Electric, Supply Technology Services Group, the
3 California Energy Commission's Public Energy Research
4 Program, and Southern California Edison, and the Electric
5 Power Research Institute. All of these, we had sourced our
6 data very heavily for many of the organizations that have
7 contributed to our findings, and I just want to acknowledge
8 that this is not the work of Ecos or the IOU Statewide Team,
9 alone.

10 As the Energy Commission pointed out a little
11 earlier, the staff, there have been a number of activities
12 going on in battery chargers since as early as 2002. The
13 industrial work has been underway for even longer, since
14 1998. There are three jurisdictions within the United
15 States or policymaking groups within the United States that
16 are currently looking at battery charger systems. We've
17 talked most about U.S. DOE today and the California Energy
18 Commission, of course, but the Energy Star Program, EPA
19 Energy Star Program, is also in the process of revising
20 their specifications, so there are a number of activities
21 going on right now that have been built on a lot of research
22 that has been going on by the IOU technical team for just
23 under a decade. The proposal that we've put forward in the
24 case report is informed by more than 100 products and we've
25 performed multiple tasks of some of these products for both

1 large and small. In addition to the technical research and
2 the specific workshops we've had on the test procedures, and
3 the meetings we've had here at the Commission, we have made
4 a lot of effort to reach out to Manufacturers in the last
5 five of the eight years we presented this research out of
6 one national battery conference that's hosted by the battery
7 power magazine, we've written articles in the trade press
8 for power electronics technology, calling for redesign of
9 chargers and the upcoming standards that would affect the
10 need to do that. In addition, we have a website on which
11 we've posted all of this research and tried to make it as
12 publicly available as possible.

13 The number of consumer chargers is continuing to
14 increase. I think the DOE, EPA, and CEC have recognized the
15 importance of looking at the energy use of battery charges,
16 in part, for this reason. The battery charger standards
17 apply to a wide range of battery sizes, chemistries, a wide
18 range of product applications, they all perform the same
19 fundamental function, which is to recharge a battery so that
20 it can be disconnected from a wall outlet and operate as a
21 alternate power source in the event of a power outage, or to
22 operate a mobile product, either that's a product with
23 wheels like a forklift, where you're driving a vehicle, or
24 whether it's as small as a cell phone. They all have three
25 important elements: you have to convert wall voltage to

1 direct current, you have to ensure that you're putting
2 charge appropriately into the battery, as well as you have
3 to have a battery that stores that energy.

4 The standard touches a wide variety of products.
5 Some of these products, the absolute total energy that they
6 present, is high because there's a large number of units in
7 use; one example of this is the cordless phone. There are a
8 high number of units in use and their annual energy use is
9 relatively low compared to some other battery chargers, but
10 their absolute consumption in the state is high. A three-
11 phrased forklift has sort of the opposite situation where we
12 don't have very many units in use, but the energy use is
13 quite big per unit, so there are a number of major energy
14 use contributors, the savings don't directly fall from the
15 energy use, but they're closely related.

16 The Energy Commission led the way to creating
17 external power supply standards that addressed multiple
18 products, and this is a - it was the first sort of multi-
19 product strategy to - I should say component strategy - to
20 address plug load products. Battery chargers is the second
21 sort of approach that helps to ensure that a number of plug
22 load products are using less energy than before. Many of
23 the products that are addressed by this standard would not
24 make sense to us individually, but by improving this system
25 that's associated with providing portable power, we can

1 improve the efficiency of a wide variety of products
2 simultaneously, helping to meet the energy reduction goals
3 in California.

4 There are a wide variety of form factors for battery
5 chargers. The power supply, the charge control circuitry
6 can be located in different housings, they may be separate
7 from the battery, they may be contained with the battery,
8 the standard is meant to address all of these. The form
9 factor is, you know, how things are packaged is not
10 necessarily a trend, does not trend with efficiency.

11 Battery chargers have three primary modes of
12 operation which we've been talking about today, active, or
13 charge mode, battery maintenance mode, where we ensure that
14 the battery is topped off in counteracting self-discharge
15 that occurs immediately after the charge cycle, and no
16 battery mode, which is when that battery is disconnected
17 from the charger. This is a drawing to represent the
18 various modes, but does not necessarily characterize every
19 battery charger, it's just an example. There are four
20 dominant battery chemistries, they have different self-
21 discharge rates, they have different over-charge tolerances,
22 and so the charge control is treated differently for
23 different chemistries. They also have different prices,
24 which is why some chemistries tend to be incorporated in
25 consumer products that are very sensitive to price point;

1 other chemistries like lithium ion is a more expensive one
2 for consumer products, and tend to be incorporated in value
3 add type products.

4 Efficiencies can vary widely, even within a similar
5 product type with a similar - or I should say identical -
6 battery chemistry. The charger on the left and the charger
7 on the right are both lithium ion battery tool chargers.
8 They have different 24-hour efficiencies, quite different,
9 and different maintenance power, so we see variation even
10 within one product type, and we see opportunities, cost-
11 effective opportunities, to improve designs that are
12 available on the market.

13 Product utility and consumer features don't
14 correlate closely in the dataset, this is an example - the
15 product on the left has a slow charge time and is less
16 efficient, the product on the right has a faster charge time
17 and higher efficiency, in part because, with the faster
18 charge time, you need to do more sophisticated charge
19 termination. There are also examples where the opposite of
20 this is true, where we see high efficiency, slow chargers,
21 and low efficiency fast chargers, so based on the data that
22 we've collected, we don't see a strong trend in utility and
23 consumer feature with efficiency. The standard, as you
24 know, is broken up into two categories, small and large
25 chargers. The small charger category includes both consumer

1 and non-consumer chargers, the large one is focused more on
2 industrial mode of equipment. The rationale for making two
3 different standards is because the markets for these
4 products are significantly different and the technology is
5 significantly different, they have different test
6 procedures, as a result. Small chargers are typically sold
7 with the battery, their usage patterns differ significantly.
8 Price and portability drive this market. I want to mention
9 here that golf carts is the one exception to this particular
10 category, their trends are a little different. The case
11 report moved to include them in the small charger category
12 primarily to harmonize with DOE's approach to group them as
13 a consumer product.

14 Large battery chargers are typically sold separately
15 from their batteries, they are used more heavily, and
16 because of their higher energy use, and because they're sold
17 to more sophisticated buyers in the commercial and
18 industrial sectors, lifecycle cost has already sort of been
19 evaluated and there have been some movement in the market to
20 higher efficiency. What this means is that the cost-
21 effective savings as a percentage is lower than the small
22 battery chargers, but there are still opportunities to
23 improve power conversion efficiency and make more efficient
24 some of the charge return factor, which is indicative of a
25 charge behavior.

1 One of the questions that was raised in stakeholder
2 comments at the October workshop was related to
3 counteracting battery self-discharge. In the process of
4 creating the standards, we looked carefully at self-
5 discharge, knowing that many of the consumer products, even
6 the most price sensitive consumer products do maintain full
7 charge by trickle charging the battery, that's something
8 that consumers would expect. In this table, we have
9 identified the maximum battery since that we have observed
10 in the market, and then to find the upper range of limit of
11 what we have to supply for trickle charge, we modeled the AC
12 power required to counteract self-discharge, taking into
13 account the 24-hour self-discharge rates, which are higher
14 than self-discharge rates after that 24-hour period, so you
15 get the most self-discharge right after the product is
16 charged, and that's just the nature of the chemistry of the
17 batteries. In addition to modeling this, you can see that
18 all the AC power is lower than the .5 watts that is required
19 by the standard, so there is still some room for fixed
20 losses that would occur in this mode, as well. In addition
21 to doing a model, we also have developed two silicon charge
22 prototypes, one for Nickel Metal Hydride, and one for NiCad.
23 These are very early prototypes, but they demonstrate the
24 feasibility associated, you know, not only in the model, but
25 also in the laboratory, that it's possible to maintain

1 charge, as well as meet the proposed standard.

2 UNIDENTIFIED SPEAKER: [Inaudible] [00:38:00].

3 MS. FOSTER-PORTER: Sure. So the question for those
4 on the phone was, "Can you please point out where those
5 prototype values are shown on the graphic?" They're the red
6 values, one is approximately 20 watt hours and the other is
7 a very low battery capacity product, just there around 2.
8 Does that help? Okay.

9 An emerging product that we've seen just very
10 recently that we didn't address in the case report last
11 October when it was produced are pad chargers. This is an
12 emerging form factor that's been for consumer products that
13 enables the consumer to place a phone or another small
14 electronic device directly on a pad without having to
15 connect that device electrically with a wire. These photos
16 are examples of early generations of these products. Right
17 now, these products have an external harness, so the
18 external harness plugs into the existing often USB connector
19 on your phone, and then couples to the product. So, if you
20 look on the far bottom left, that's an example of one
21 solution where the mechanism that enables it to communicate
22 with the pad is on the back of that Blackberry phone, the
23 other harness is shown in the far right photo, well, you can
24 see there is the white square harness with the yellow wire,
25 more sophisticated approach, is the one just below that, the

1 phone on the left that has the black ring around it, that
2 looks like a rubberized ring, that's the harness for that
3 particular product. Future solutions are likely to
4 incorporate into the product. We recommend that these
5 products be included in the Title 20 standard, they are
6 battery chargers, and the form factor is slightly different
7 than what we have seen, but our research suggests that they
8 should be able to meet the standard.

9 In response to Manufacturer comments around mission
10 critical battery charger systems, mission critical battery
11 charger systems are carried by public emergency personnel,
12 police officers, fire fighters, in order to communicate in
13 sometimes hazardous situations. It's important that certain
14 elements of the charger and functionality of the charger are
15 maintained. Some of the concerns that were raised were
16 related to rapid charging, we have tested multiple rapid
17 chargers of similar battery size that are able to meet this
18 proposed standard. The intrinsically safe circuitry that is
19 required to prevent electrical spark generation should not
20 significantly increase consumption for these products. It's
21 important that these products have LED illumination to
22 communicate the status of charge to the emergency personnel
23 in a clear manner. These have to be quite bright in order
24 to communicate in a variety of settings. Due to the
25 advances of energy efficiency LEDs and the continuous

1 improvements that we have for efficacy on those devices,
2 there are a number of very low wattage LEDs that are now
3 available. The research that we conducted suggested that
4 LED's, very high brightness LEDs, are available at 10-15
5 milliwatts per LED for six ports, which is a common
6 configuration, that's between 6/100^{ths} and 3/10ths of a watt
7 contributing to battery maintenance. In addition, it would
8 be possible to incorporate the LCD display with variable
9 backlight control that can respond to ambient room lighting,
10 so when it is dark, the LCD display can be brightened. And
11 because the efficiency test that is specified by the CEC and
12 also by the U.S. DOE is conducted at normal room
13 temperature, little to no energy associated with cooling
14 fans or other things would switch on and then, therefore,
15 the energy would be counted in the test.

16 In addition, to respond to Manufacturer comment, we
17 had prepared in the case report some detailed cost
18 information that indicated BOM cost per product category.
19 At the request of manufacturers, we looked at this in great
20 detail for two products, so we selected these products based
21 on manufacturer input. The first product on the left is a
22 do it yourself - I should say a home do it yourself tool, so
23 it's sort of a price point, low price point entry product,
24 for consumers. It's a 15 watt hour NiCad power tool
25 charger. For the whole unit, it costs about \$60.00 from

1 Home depot this February. The product on the right is a
2 Nickel Metal Hydride beard trimmer, it's also an entry point
3 product at \$18.00 from Target in January of this year. And
4 so I'm going to turn this over to my colleague, Phillip
5 Walters, and he's going to walk us through the teardown
6 analysis we conducted and the BOM estimates that we made for
7 these two products.

8 MR. WALTERS: Excuse me a moment while I change to
9 the right glasses. The first of the products that we looked
10 at was the beard trimmer and, in doing teardown, we
11 basically got an external power supply, which is the small
12 kit to the left side of the trimmer in the photograph, and
13 it plugs directly into the product for charging; inside the
14 product, you've got the battery in series with the charge
15 control resister. The chart here is showing the 24-hour
16 charge profile, which is basically flat, and as you can see,
17 at about four hours drops below half a watt. So the
18 product, as shipped, is compliant with maintenance mode
19 requirement of the proposed Title 20, and it is compliant
20 with 24-hour efficiency, it is just slightly above the no
21 battery requirement. And one of the things that I should
22 mention, the external power supply on this product is Level
23 4 power supply, and we are as close as we are basically
24 replacing the Level 4 with the Level 5 power supply, will
25 bring us into compliance with the proposed Title 20

1 requirements. Based on information in the DOE technical
2 support document, the incremental building material cost for
3 this change is going to be around 10 cents to 15 cents using
4 their mark-up; now, that gives us the benefit of cost ratio
5 of 1:2. I should note that we're probably being pretty
6 generous on how much cost we're attributing to this in that
7 we get other benefits from that EPS, in addition to the
8 compliance, so really only part of that would go to the
9 compliance. These EPSs are available off the shelf from
10 many third-party vendors already UL certified. One thing to
11 consider further in the incremental cost of the Level 5
12 external power supply is an increasing trend on copper
13 prices, level four supplies typically have quite a bit of
14 mass that is copper, and the level five supply is being a
15 switch mode supply, are going to be a lot less sensitive to
16 the price of copper and so, as a result, there may even be
17 with increasing copper costs a negative incremental cost in
18 going from a level four to a level five external power
19 supply.

20 When we looked at the power tool, we got again an
21 external power supply that is charging the battery with
22 resistor for charge control. Here, and again, we've got a
23 pretty flat charge profile over 24 hours, and we can see
24 that our as shipped efficiency, 24 hour efficiency, is
25 around 35 percent and maintenance mode is around 2.2 watts.

1 No battery mode is compliant at 2.5. We, on this product,
2 decided to evaluate a strategy of looking at the charge
3 termination and charge control, and decided to pursue a
4 silicon solution. There's a lot of products that are
5 already using silicon control for lithium ion products and
6 there are a lot of Manufacturer support. With
7 semiconductors, they can perform the function of controlling
8 the switch at a charge control available. You know, we've
9 talked a lot today about comparators, there is a wide number
10 of comparators and also comparators with onboard references.
11 There are also a number of timers that are designed for
12 charge control, there are more sophisticated charge control
13 devices out there for applications where you've got a little
14 more demanding performance requirements where the dT/dt is
15 differential temperature vs. differential time, those
16 usually also have a straight voltage comparator and timer as
17 secondary controls. Then, you get into negative Delta V
18 which is a technique for Nickel where, when the battery has
19 achieved charge, there is a tendency, as you continue to
20 feed charge for the voltage to decrease, and there's one
21 sheet there shown as an example that couples that also with
22 temperature and time control, as well. These are generally
23 surfaced mount parts, they're very small. As you can see,
24 the one that is right there by the word "one" is actually a
25 control transistor that - and then the one that is over by

1 the word "dime" is a combination comparator, and voltage
2 reference all on one chip. The circuit that we tried out
3 and tested in this power tool product, it is - and I want to
4 say, first off, we did not set out here to build the perfect
5 battery charger, we're just doing a circuit here just to
6 evaluate what can be accomplished with the charge control
7 switching from a charge mode to a maintenance mode, using a
8 control IC and a transistor. This one is working as a
9 comparator, we've replaced the original current or charge
10 control resistor with the transistor, you'll notice it does
11 have in parallel with it right above the circle of the
12 transistor, you'll see a resistor there that is for
13 maintaining a maintenance trickle charge when the transistor
14 turns off. We could convert that circuit to a hysteresis
15 charge circuit by removing that resistor, and what it would
16 do would be turn off and, then, as the battery required
17 maintenance, it would turn back on for a short interval.
18 Looking at the parts that we used and looking at them in OEM
19 quantity, the incremental BOM cost including incremental
20 circuit board materials was about 55 cents. And when we put
21 it under test, here we're showing not only the input power
22 in blue, but we're showing the battery voltage in red. The
23 24-hour efficiency improved to 41 percent and maintenance e
24 mode came in at .46 watts, which is compliant, and no
25 battery was right at .3. We had some fixed loss from some

1 of the circuitry, particularly the comparator that I used
2 because it was readily available to me. There are
3 comparators that have as little as 100 nano amp power supply
4 requirement that can improve on that number, and reduce that
5 fixed loss. If we add a level V EPS, the previous slide was
6 done with the existing EPS, which was level IV, we should be
7 able to then meet the Title 20 standards and should bring
8 the 24-hour efficiency to the 54 percent range, and
9 maintenance at .4 watts, the battery still at .3.
10 Incremental cost, again, bringing in the estimate for based
11 on DOE, about 10 cents incremental cost, we looked at a
12 total with markup using the DOE method of about \$1.30, which
13 gives us a payback of .6 year and 14 kilowatt per hour year
14 annual savings. In this change, in this particular circuit,
15 the charge cradle has a circuit board inside that actually
16 has - it is considered to be part of the external power
17 supply in the design in that the rectangle shown on the
18 circuit board on the left-hand side is the full wave bridge
19 rectifier. If we're using off-the-shelf Level V power
20 supply, those would move off the board into the EPS. We're
21 replacing the charge control resistor with the silicon
22 solution, and because of the availability of surface mount
23 for both the transistor, the control, and the resistors and
24 capacitors, we can easily fit the circuitry into the same
25 printed circuit board form factor.

1 Another example of how you can implement silicon
2 charge control in the same space, these are a look at the
3 inside of two different trimmers that the upper one is using
4 nickel metal hydride with the fairly typical resistor charge
5 control element and the charge control and the battery are
6 both mounted on the back side of a circuit board that
7 accommodates the on/off switch. Lithium ion product in the
8 same Manufacturer's line uses the same form factor circuit
9 board where, again, we have the battery, the charge control,
10 and the switch, all accommodated on the same circuit board.
11 Now, these are lithium ion - this is a lithium ion product
12 here with lithium ion control chips, but as far as the
13 number and type of parts, in general, is very similar for
14 both chemistries, and so it is possible to make the change
15 and get it to still fit into the same space, and by keeping
16 printer circuit board form factors the same, we can avoid
17 having to do any tooling changes, model changes, and limit
18 impact on our assembly documentation and things like that.
19 The engineering that you get into on that, obviously, you're
20 going to have to do the circuit design engineering upfront.
21 Once you get into board layout, there are many many contract
22 houses available worldwide for not only doing the layout
23 work, but the assembly work, on surface mount. And I guess
24 I kind of got a little bit ahead into this slide. You know,
25 consumer products do have a regular redesign phrase, or

1 redesign cycle, and so working a circuit board change into
2 the design cycle, or an external power supply change into
3 the design cycle should be relatively easy. These are not
4 huge redesign efforts. Changes like, say, the changes to
5 product molding are not required if we can confine the
6 change to the circuit board. Again, looking at the markup,
7 it should be able to cover these costs. On the issue of
8 safety testing, if we're - most of the - if we're using a UL
9 certified external power supply, and we're staying within
10 the parameters of what the battery manufacturers recommend,
11 the feedback we have from UL is that it may not require any
12 recertification, and if there is, when you're recertifying
13 on that level of change in a product, the estimate we got
14 from UL was \$2,000 to \$3,000. And I'm going to turn the
15 presentation back over to Ms. Suzanne Porter.

16 MS. FOSTER-PORTER: I'm going to take the remaining
17 part of the detailed presentation to focus on some issues
18 that were raised by Manufacturers for the larger products,
19 one of which is golf carts, which is covered by the small
20 standard. There were concerns raised by Manufacturers that,
21 by improving the efficiency and increasing the upfront cost
22 associated with golf cart vehicles, that it would cause a
23 technology transition to gasoline powered vehicles. Our
24 research suggests this is unlikely because there is already
25 a price premium for electric vehicles, largely because of

1 the other advantages of running on electric has, there are
2 no fumes, less noise, the cost to maintain these vehicles is
3 lower than the gasoline powered vehicles, and for those more
4 sophisticated commercial purchasers that look at total
5 lifecycle cost, they also have lower operation costs. So,
6 this standard is meant to lower the lifecycle cost of
7 products to the end user so even more sophisticated
8 purchasers would see a net reduction in total cost of
9 operation, the less sophisticated purchasers, like
10 residential users, are already paying a premium for a lot of
11 the benefits associated with electric, and we don't think
12 that the small cost - the relatively small costs that we're
13 suggesting for the Title 20 standards, would significantly
14 impact that decision.

15 Another concern that was raised, now moving to the
16 large charger standards proposal, the Tier 2 requires a 89
17 percent power conversion efficiency for the largest
18 chargers. Our research from the test data that we've
19 collected, which was collected at Southern California
20 Edison's lab, as well as Pacific Gas and Electric's lab,
21 indicates that high frequency or switch mode chargers can
22 already meet the standard. For purchasers of these products
23 that are concerned with durability, there is an alternate
24 technology available called hybrid, it's a hybrid of the
25 best most efficient elements of ferroresonant and the most

1 efficient elements of Silicon Controlled Rectifier, or SCR
2 technology. And in our tests, we identified one hybrid
3 charger that was very close to meeting the 89 percent power
4 conversion standard, it was 88.3, so we believe small
5 changes to primarily the materials associated with this
6 charger could move it into the range of compliance and,
7 again, this is a Tier 2 level, so there would be more
8 sufficient time to accommodate those design changes,
9 including better core steel and thicker copper conductors in
10 various parts of the charger.

11 We've had a lot of questions today on power factor,
12 I wanted to take an opportunity to provide a little bit more
13 information on power factor, and why the power factor levels
14 were chosen, where they were chosen. This research I just
15 want to site is based on what is now EPRI's lab in
16 Knoxville, Tennessee, they prepared a report to assess the
17 impacts of power factor correction on commercial building
18 line losses, they developed a model and tested the model in
19 the laboratory, and the findings from this report indicate
20 that correcting power factor, it can be a cost-effective
21 strategy to reducing overall energy use by reducing losses
22 in building wiring. For battery chargers, and Ken alluded
23 to this earlier, active power factor correction is only
24 cost-effective to the higher current products, but the
25 specific standard that we're proposing actually has two

1 elements. So, for lower power products, approximately
2 between 10 watts and 60 watts input power, we proposed a .55
3 power factor standard. For illustration, we provided
4 basically the two primary products that would fall within
5 this realm of standard, it's a low power laptop, as well as
6 a residential power tool. The cost associated with reducing
7 - I should say increasing power fact for the residential
8 power tool can be achieved by optimizing the capacitance in
9 the circuit to improve power factor. This has a very small
10 incremental cost, this is possible for products that are
11 dedicated battery chargers and do not provide any other
12 function, other than battery charging, like the residential
13 power tool. Battery chargers that are also power supplies,
14 silicon solutions are required to meet the .55 watts, and so
15 the low power laptop here you can see is a higher
16 incremental cost. Battery chargers that are able to use
17 linear rectification solutions already meet the standard,
18 and I just want to note that the payback periods reflected
19 here do represent a 2X or two times markup on the
20 incremental cost. For higher power products, we've
21 recommended a .9 power factor requirement, this generally
22 means active power factor correction would need to be
23 applied, and it is cost-effective, here are four examples of
24 applications within the small standard, with an incremental
25 BOM cost we've estimated at 90 cents, we've marked that up

1 at 2X, these are independent of the cost and saving
2 associated with improving the efficiencies of the products,
3 so the other metrics that we discussed earlier, and the
4 payback periods are all within the lifetime of the product.
5 The methodology that we used to calculate these BOM cost was
6 to survey the silicon solutions that were available for
7 active power factor correction, as well as interview experts
8 within the industry to give us estimates on what they
9 thought the BOM cost would be; here are some examples of
10 industry components that we surveyed as part of this
11 research, but this is only a small sample of the products
12 that are available to help with power factor correction.

13 In summary, the IOU statewide team encourages the
14 California Energy Commission to move forward with Title 20
15 standards that we've proposed in the case report. For small
16 chargers, the high volume, high tech products that have
17 really made efficiency charging solutions inexpensive and
18 widely available, these efficient charging solutions can be
19 applied to what have historically been very price sensitive
20 products. Our research demonstrates that it is technically
21 feasible to improve these products to an average of about 70
22 percent efficiency. This standard is far below that
23 technical feasible level and our research suggests it's a
24 good compromise between incremental cost and energy savings
25 at 40 percent average active mode efficiency.

1 Approximately two-thirds of the energy use can be
2 saved, so this is an important place where we're losing an
3 opportunity if we don't move forward, and the proposed
4 standard is based on a three-part metric of improving each
5 operation mode, as well as a power factor requirement. For
6 large chargers, this is a more mature market, the metrics
7 are a little bit more complicated because these products are
8 already more efficient. We have power conversion
9 efficiency, charge return factor, and then limits for
10 maintenance in no battery mode power, in addition to power
11 factor requirements. This is a more -- incremental
12 improvements are a little bit smaller in this market because
13 energy efficiency has already been a focus, so we have about
14 10 percent energy savings opportunity against the current
15 usage. And the added costs are significantly higher on the
16 order of hundreds of dollars, but the payback period for
17 these products is quite short relative to their lifetime.

18 In summary, we have a big opportunity in front of us
19 to, in total, when you combined the small and the large
20 battery charger system standard to save 35 percent of
21 current energy usage; it's equivalent to nearly one power
22 plant, and that is with entire stock turnover. The per
23 product incremental cost, if you want to treat it just at a
24 high level with an average, which I'm not implying this
25 applies to every product, but it is useful to think about

1 the total cost per product and the total savings per
2 product, the total incremental cost is on average \$1.80 per
3 product, savings is around \$14.00, which is a benefit of a
4 cost ratio of more than 7:1. That's an average, some are a
5 little higher, and some are a little lower. The net present
6 value of consumer savings from the first year of sales where
7 we take into account the total lifetime associated with
8 those sales, is \$300 million, which is orders of magnitude
9 greater than the cost of regulation. So, we have an
10 opportunity in front of us in this first year to get energy
11 savings in California to help meet the energy needs and
12 policy direction of the state. And our technical research
13 we've covered for the IOU Statewide Team supports that
14 conclusion and direction. Thank you.

15 MR. LEAON: Okay, I want to thank the Ecos team for
16 their presentation. I do have several blue cards here and
17 let's go ahead and get started with some questions. And
18 first up, I believe it's Dan - Dan Jakl.

19 MR. JAKL: Once again, I'm Dan Jakl representing
20 Motorola Solutions, Inc. I believe I submitted a couple
21 blue cards, but I think one goes back, actually, a little
22 bit to the first presentation that Ken was doing. We were
23 looking at external power supplies as being regulated, and I
24 believe there was a note made that said they were actually
25 exempted for battery chargers. I believe, Ken, you made a

1 quick comment that many are exempted, so it may actually be
2 a few, but just a comment on that. So, I was just curious
3 to see how the CEC was maybe going to handle that as far as
4 power supplies for battery chargers, external power
5 supplies, would be regulated under the Power Supply
6 Regulation, or the DOE's, as well as the battery charging
7 system.

8 MR. RIDER: Yeah, the way that it's proposed right
9 now and is consistent with the way the DOE is approaching it
10 is that, whether they were regulated in the past or not,
11 that they're incorporated through the test procedure, and
12 that's part of the strategy, that's why that strategy
13 applies that was just presented in the Ecos report of using
14 a Level V, so it would be included whether they were
15 regulated in the past or not because of the design of the
16 test procedure.

17 MR. JAKL: Okay. And all I can ask is if you would
18 review the response. I think it was in the staff report,
19 number 2 in Appendix C, and it talked about they are not
20 included.

21 MR. RIDER: Okay, well, there were some that were
22 not included and maybe it's not clearly written, I'm sorry.

23 MR. JAKL: All right, continuing on, I just want to
24 mention for our products, Motorola Solutions, for our
25 products, Motorola Solutions, I guess you could say for two-

1 way radio professional use products, as well as bar code
2 scanners and such, we're still a market leader. And right
3 now we have several comments, probably not enough time to go
4 through all of them today. I would prefer, actually,
5 probably to be able to meet again at some point with another
6 workshop, if possible. But I do want to mention, I think
7 Teresa mentioned, we do use the control switch, whether it's
8 a comparator or a microcontroller, to be able to control the
9 current on all of our products. And, to our knowledge,
10 other than maybe a few consumer products that we have, none
11 of ours meet the proposed standard today as far as power
12 factor, or three-tenths of a watt, and no battery mode,
13 things of that nature, so I just want to throw that out
14 there. And I do believe in the case study, they were
15 showing that two-way radio chargers - I think they were
16 showing that about 50 percent of them are compliant today,
17 obviously apparently that's none of our products. So, I
18 don't know if that number is really accurate as far as
19 what's maybe sold in California, so I just wanted to mention
20 that. I don't know if you have any comment on that, or how
21 many were even tested as far as two-way radios, or if they
22 were consumer-based products.

23 MS. FOSTER-PORTER: We did not test a large number
24 of two-way radios to determine that compliance level, so I
25 think it was our best estimate based on the data that we had

1 available.

2 MR. JAKL: Okay, and another comment I have, and it
3 looks like a lot of work has been done since the last report
4 that we saw, and I think even Ken mentioned, as far as
5 looking at the maintenance mode, Nickel batteries, I think
6 we saw - I think the number you used was about three percent
7 loss, I would say somewhere around actually five percent is
8 probably an average. And I think, Suzanne, I think you were
9 just showing something around the 15 percent or 10 percent
10 stan loss over 24 hours for a Nickel-based battery.

11 MS. FOSTER-PORTER: That's right. Ten percent - we
12 tried to use generous assumptions to ensure that the self-
13 discharge was appropriately counteracted, and so we used 10
14 percent for NiCad and 15 percent for Nickel Metal Hydride,
15 which I think is kind of on the - we were trying to be
16 generous in that modeling assumption.

17 MR. JAKL: Okay, and I appreciate that you're
18 looking at that because I do believe -- we're mixed
19 chemistry charges on all of our products, a lot of
20 professional public safety, mission critical customers still
21 want Nickel Cadmium, Nickel Metal Hydride, for their needs,
22 to suit their temperature performance needs, maybe their
23 cycle life needs. So, it's still very important to us. The
24 only problem is, of course, the standard Nickel is not as
25 efficient as lithium, and so for a company making a lithium

1 ion only product, they have a little less work to do. For a
2 company that also has Nickel batteries in the test
3 procedure, of course, you would have to test Nickel and
4 Lithium because we run multiple cycles, whether it's one
5 battery in one pocket, or one port, or a battery as you
6 showed in your picture, six ports are full, and you run the
7 test multiple times. Nickel still has the disadvantage as
8 far as to meet the regulation that's being proposed. I
9 think, in the active mode, it's 1.6. We might lose
10 somewhere in the 10-20 percent for a Nickel battery. So, I
11 don't know if they would be willing to look at maybe moving
12 that up to 1.8, maybe, if it's a Nickel battery, just for
13 the active mode, whether it's doing a Delta T-type
14 termination, or minus Delta V-type termination, which I
15 think you had shown, as well, in your presentation.

16 MS. FOSTER-PORTER: The approach that we've taken is
17 to be technology neutral on batteries, and part of that is
18 to ensure the longevity of the standard as technologies
19 transition over time. I mean, I would encourage you to
20 submit your specific rationale for evaluation by the
21 Commission.

22 MR. JAKL: Okay, thank you.

23 MR. LEAON: Thank you, Dan. The next blue card is
24 from Alan Mears, also with Motorola.

25 MR. MEARS: Thank you. I'd like to address the

1 issue of power factor correction. The Ecos report says that
2 active power factor correction is only cost-effective for
3 higher power battery chargers, is that correct? We've done
4 some analysis and, for lower power supply battery chargers,
5 we did some modeling and we find it's impossible to get
6 above .59 power factor correction. I notice the staff
7 report requires .6, although Ecos mentioned .55. Do they
8 plan to change that back to .55?

9 MR. RIDER: In the presentation I gave today, I
10 mentioned .55 is our proposal.

11 MR. MEARS: Okay, that's different from the staff
12 report.

13 MR. RIDER: Right, and this presentation has a few
14 areas that are different from the staff report.

15 MR. MEARS: Okay, the other issue with the power
16 factor correction is that the .59 is only obtainable at a
17 single load factor with the capacitor. You need the more
18 sophisticated, less cost-effective mode if you want to get
19 it to be that high power factor correction at different load
20 values. And, of course, battery chargers, the load on the
21 power supply varies according to how far you charged, so it
22 really is not possible to maintain that power factor over
23 the entire charge cycle. Also, for multi-slot chargers, you
24 may have one to four, six, or even more batteries in the
25 charger, so the load is going to vary greatly. It's

1 impossible to maintain power factor correction over that
2 range.

3 MS. FOSTER-PORTER: Yeah, I would encourage you to
4 submit that comment and we could take it to our technical
5 team to consider. I don't have a specific response.

6 MR. MEARS: Okay. Another issue is with regards to
7 electromagnetic community impacts of some of the changes
8 suggested, such as moving from a Level IV to a Level V power
9 supply. You did discuss issues like getting the UL
10 approval, but changing a power supply will require FCC
11 evaluation. Also, if your original supply is a linear
12 supply, that has much less EMC issues when you go to a
13 switcher, much higher EMC issues. That was brought up in
14 the staff report, but it was dismissed rather abruptly, it
15 is not a concern. So we'd like to see that addressed
16 better.

17 MS. FOSTER-PORTER: Yeah, I can't speak to the staff
18 report. I do know that a lot of the off-the-shelf external
19 power supplies already to pre-certification, you know, for
20 UL and for FCC, so depending on what solution you're looking
21 at, you may not be required - or, you know, that might be
22 done by a supplier, rather than by -

23 MR. MEARS: Actually, the combination must be
24 tested, it's not sufficient to have a power supply that
25 complies, the whole battery charger system must be tested.

1 So that's not sufficient, even if you buy a power supply
2 that complies, your end system must be tested.

3 MR. RIDER: We responded to that, like you said,
4 rather briefly in the staff report, and I think the concept
5 here is that we're not telling you to go - that's not your
6 only compliance about this, is to use the switch mode power
7 supply; or, maybe it's your evaluation that it is, but it's
8 not how we're approaching the standard in the staff report
9 in our analysis. So, the reason we don't just tell
10 industry, "Use the switch mode power supply," I mean, that
11 would be really easy, we could just write that, right? But
12 it's because of the complex issues that you guys are
13 familiar with, that you can choose the compliance path that
14 is appropriate, and if you have EMC issues, there probably
15 is an appropriate compliance path for you, unless you're
16 telling me that you can't be efficient and meet EMC at the
17 same time.

18 MR. MEARS: It's difficult and it seems like a lot
19 of your evaluation for cost-effectiveness relies on these
20 rather simple approaches, and let me point out that they're
21 often not possible. You simply state, well, you can use
22 another method.

23 MR. RIDER: Well, you were just telling me, you were
24 standing in front of me telling me that it's not possible,
25 but we would need - this is one of the reasons we did that

1 Request for Information because it's just - you're telling
2 me it's not possible, but we need the technical details, and
3 it sounds like you've done a lot of that analysis, it sounds
4 like you did analysis on power factor, and also of the grid
5 analysis, and we would like to see it, and then we'll use
6 that as justification to alter the Standards.

7 MR. MEARS: Okay, well, Motorola did actually come -
8 Motorola Solutions came in January and put a presentation
9 together for the staff for the afternoon, but none of the
10 information we presented appeared in the staff report.

11 MR. RIDER: I have not seen that information, so I'm
12 sorry.

13 MR. LEAON: Well, as I recall, there was not - I was
14 at that meeting - a lot of issues were raised, but I don't
15 think we got into the technical issues that we're discussing
16 today at that particular meeting, though these issues were
17 surfaced through it.

18 MR. MEARS: Okay, well, in conclusion, I'd like to
19 thank you for the opportunity to talk. I think it's pretty
20 clear that a lot of Manufacturers would like more
21 opportunity to discuss this. I was wondering if you'd like
22 to consider the possibility of another workshop as soon as
23 possible, with more time given to Manufacturers to present
24 their positions.

25 MR. LEAON: Well, we'll look at that and see if we

1 can accommodate that through the schedule that we've
2 developed, but certainly, at a minimum, you know, feel free
3 to talk directly to staff, we are happy to set up conference
4 calls, we might be able to set up another WebEx, so we'll
5 look at various approaches, I think. But I think the
6 feedback that we're getting today is very valuable and I
7 would definitely like to continue the dialogue and make sure
8 that we understand the issues that you have, and that we
9 also get the information that we need in order to evaluate
10 those concerns. So, again, one-on-one meetings, phone
11 calls, conference calls, and we will look at the schedule to
12 see if it's feasible for us to include another workshop.
13 Definitely, if we move to the formal rulemaking phase, we're
14 required to have another public hearing through that
15 process, so there will definitely be that, but we'll also
16 look at what else we can do.

17 MR. MEARS: Okay, thank you.

18 MR. LEAON: Okay, Ric, so you don't miss your plane.
19 No more? Okay, thank you. Okay, Stan Rodriguez, Makita.

20 MR. RODRIGUEZ: Yeah, I'd like to [inaudible]
21 [01:22:32].

22 MR. LEAON: Absolutely, okay.

23 MR. ALBERT: Again, thank you for the opportunity to
24 discuss this issue with you all. Nice meeting you, Phil, I
25 mean, it's good to have another double EE around, right? A

1 couple questions regarding the Ecos report. One question
2 was with respect to the self-discharge estimates that you'd
3 come up with, and you considered the amount of energy
4 required to maintain the battery. Did that include the
5 charge acceptance ratios of the cells, Nickel-based cells at
6 those points? Or, was that just the loss of energy of the
7 cells?

8 MS. FOSTER-PORTER: We included the internal --
9 maybe I should ask for clarification because we included the
10 losses associated with the internal resistance of the
11 battery.

12 MR. ALBERT: But be aware that Nickel Metal Hydride,
13 Nickel Cadmium cells have in them a secondary reaction that
14 provides for the cell safety in the case of overcharge. And
15 so, when maintenance is occurring during that time that
16 you're returning that lost capacity to the cell, you're
17 doing it at the point where the cells' charge acceptance is
18 at its lowest point, and I think that was reflected maybe in
19 Ken's analysis where you looked at -- I think it was 60
20 percent charge acceptance at max state of charge?

21 MR. RIDER: Right.

22 MR. ALBERT: Right. So, in your calculations, I
23 didn't see that factored in there, so I wondered whether
24 that was there or not.

25 MS. FOSTER-PORTER: The model that we built was

1 based on the average efficiency, or, excuse me, the
2 efficiency that would be required by the standard in terms
3 of the charge efficiency. It included the internal
4 resistance of the battery. The -

5 MR. ALBERT: It appears it does not include a charge
6 acceptance as part of your analysis. If you look at .35
7 watts, I believe, right? If I remember the slide correctly?

8 MS. FOSTER-PORTER: Right, and then what I'd like to
9 point out is that the prototypes that we built around those,
10 you know, to validate the model, did meet the standard.

11 MR. ALBERT: Okay, but I think you were trying to
12 justify at that point that you provided sufficient power to
13 be able to handle, in the worse case analysis, right, the
14 self-discharge rate, and it appears like you did not include
15 for nickel-based chemistries the charge acceptance.

16 MS. FOSTER-PORTER: Well, my question to you would
17 be what is the effect of the charge acceptance -

18 MR. ALBERT: As far as more power to keep that cell
19 charged, those cells charged, right? And I think that was
20 reflected in Ken's analysis, right, where he factored in the
21 60 percent charge acceptance, right, so you may want to go
22 back and revisit those figures, right -

23 MS. FOSTER-PORTER: Okay.

24 MR. ALBERT: -- and see whether your assumptions are
25 correct. And a couple of other specific questions. It was

1 nice to see that you actually built some models up. With
2 respect to the trimmer example, your benefit ratio there, I
3 had some questions about. Would it be possible to review
4 that slide?

5 MS. FOSTER-PORTER: Of course. And, Ken, would you
6 mind helping me ensure that the slide is properly displayed?

7 MR. ALBERT: Okay, so I think in the previous slide
8 you had the initial no battery power, was it .31? That was
9 the only non-compliance, right?

10 MS. FOSTER-PORTER: That's correct.

11 MR. ALBERT: So, in incurring this \$.15 upper,
12 right, the consumer saw 10 milliwatts of power savings. Is
13 that correct?

14 MS. FOSTER-PORTER: No. So, you can see there are a
15 couple changes associated with that change, .31 watts is
16 lowered, but, in addition, so is the battery maintenance
17 level and the 24-hour efficiency is raised from 13.2 in the
18 case of the Level IV power supply as shipped, up to 18.4
19 percent in the case of the Level V power supply.

20 MR. ALBERT: Yeah, I think I see that. I think the
21 real question in my mind is that the benefit of the
22 compliance of the standard, however, is only 10 milliwatts,
23 and the cost was \$.15, so I'm trying to understand how you
24 came up with a cost benefit ratio with respect to regulation
25 of one to two.

1 MS. FOSTER-PORTER: The savings associated with
2 replacing that Level V power supply is manifested in more
3 than just reducing the no battery mode, and so to -

4 MR. ALBERT: That may be true -

5 MS. FOSTER-PORTER: -- please allow me to finish.
6 So, in order to calculate the benefit to cost ratio, we
7 estimated the total savings associated with those
8 improvements and compared it to the total cost. I
9 acknowledge that this particular improvement goes far beyond
10 what's required by the standard, which demonstrates, I
11 think, that the level that we've proposed for these low
12 capacity products is actually below the cost-effective
13 level. There's a little room to move up, we're not trying
14 to push this product into, you know, higher and higher level
15 efficiencies, but have tried to really balance the cost. In
16 reality, it's probably a fraction of a cent to procure an
17 external power supply that would have less than - would have
18 a lower no battery power that is .3 watts and the savings,
19 although it's small, it's cost-effective. The reason why we
20 did the evaluation this way is because EPSs are available as
21 an off-the-shelf product and can be replaced. So, we get
22 all the benefits and all the costs associated with that
23 change.

24 MR. ALBERT: Thanks for explaining your method.
25 Could we also look at the power tool case?

1 MS. FOSTER-PORTER: Yes.

2 MR. ALBERT: The one where the PCB is shown, I
3 believe.

4 MS. FOSTER-PORTER: The final slide here?

5 MR. ALBERT: No, there's one that has a picture of
6 the revised printed circuit board for the charger.

7 MS. FOSTER-PORTER: Oh, I'm sorry, here?

8 MR. ALBERT: Yes. So, just looking at this, so
9 maybe you can explain, it looks like there's a change,
10 there's no LED on the new PCB and there was one on the old
11 PCB?

12 MR. WALTERS: I didn't address that in the
13 schematic. The LED on the product as shipped does basically
14 indicate when you've got a battery in and in consuming
15 power. If I go back to the schematic, the transistor there
16 -- or between the control IC and the transistor where we've
17 got the base drive there, we could conceivably work the LED
18 in there, and regain that. Actually, when I was doing the
19 testing, I was still running the LED as part of the external
20 power supply, and so I had it on, but we could recover that
21 functionality by having the control IC control the LED, as
22 well, to show that the charge is on, and then it would also
23 have the additional functionality, the LED would extinguish
24 when it went to maintenance mode.

25 MR. ALBERT: Okay, and then you said you went from -

1 those are surface mount components on the new PCB? Is that
2 a double-sided PCB?

3 MR. WALTERS: Actually, that's an example of a
4 similar set of components, it is a single-sided - there are
5 no components on the other side. And those are at roughly
6 the same scale, the surface mount picture may be a little
7 bit larger scale, so -

8 MR. ALBERT: So that was a reflow process that you
9 used for PCB?

10 MR. WALTERS: Yeah, that's basically hot air reflow
11 surface mount.

12 MR. ALBERT: The cost is a little bit higher, right?

13 MR. WALTERS: Yeah, a little bit. The incremental
14 that - basically, the BOM cost that we came up with on
15 incremental cost, I would say, probably about, if I remember
16 right, about 40 percent, 40 or 50 percent of that is the
17 circuit board.

18 MR. ALBERT: Let's say a BOM cost includes the
19 manufacturing cost, as well? Is that -

20 MR. WALTERS: No, that was just the board, the
21 surface mount board itself.

22 MR. ALBERT: And you went from a CEM1 to FR4
23 material, is that what you did?

24 MR. WALTERS: That basically was, yeah, that would
25 have been FR4 on the surface mount.

1 MR. ALBERT: That was a CEM1P4, right?

2 MR. WALTERS: The original board?

3 MR. ALBERT: Yeah, the -

4 MR. WALTERS: Yeah, I believe so.

5 MR. ALBERT: So, did you take that into the BOM
6 cost, to move from CEM1 to FR4?

7 MR. WALTERS: Actually, I was just really looking at
8 what it would cost on about a one square inch of the FR4
9 surface mount, single-sided, without - I didn't even figure
10 a credit for the original board material because of the
11 difference in cost there.

12 MR. ALBERT: And you used minus delta V as your
13 methodology? Is that what that is? Or -

14 MR. WALTERS: In the prototype that we did, that was
15 strictly a comparator to stage voltage comparison, and then
16 dropped down to a maintenance mode, and we kept it at a
17 trickle charge because of wanting to keep it simple, but
18 reliable to where we didn't completely cut off the charge,
19 but we did provide a maintenance charge, so it's basically
20 more - you would call it a voltage comparator control two-
21 stage charger.

22 MR. ALBERT: But not at minus delta V, it was just a
23 V max?

24 MR. WALTERS: Yeah, on that. There are minus delta
25 V controllers out there, but we were, in that particular

1 resolution that we tested, it's V max.

2 MR. ALBERT: Then, did you evaluate the performance
3 of the drill, the battery pack, before and after the change?

4 MR. WALTERS: As far as the charge return?

5 MR. ALBERT: Yeah.

6 MR. WALTERS: Yeah. And it was basically
7 equivalent.

8 MR. ALBERT: Okay, thank you. And then, I have some
9 questions on power factor correction. So, I understand the
10 analysis that you did with the cost benefit ratio; that was
11 based upon the model that the EPRI folks had done, right?
12 Is that what you used for the basis for your how to
13 calculate the losses in the distribution system?

14 MS. FOSTER-PORTER: The model that was used for the
15 case report is described in the appendix to the case report.
16 The methodology that was used to calculate the savings in
17 the EPRI report is slightly different because it's tailored
18 to computer internal power supplies, and the model that we
19 built for battery chargers is tailored to the battery
20 charger. So, it's not identical, but I wanted to reference
21 that that's the platform on which that model was developed.

22 MR. ALBERT: Okay, so you used that one with - I
23 think it was .50 of source resistance, right? In the -

24 MS. FOSTER-PORTER: I can't speak to the specific
25 details of the model for power factor. If you have

1 questions about that, I would - you know, maybe we can talk
2 one-on-one, I can connect you with our power factor expert.

3 MR. ALBERT: Okay, so then, when you calculate the
4 benefit of the power factor improvement, is that assuming
5 that that load is active the whole time, or did you take
6 into account the same sort of usage factors that you used
7 during the efficiency evaluation?

8 MS. FOSTER-PORTER: The total BOM cost associated
9 with power factor includes two elements, it includes the
10 active power factor correction chip, as well as additional
11 components required to shut off that chip to reduce fixed
12 losses in low power modes where power factor correction is
13 not required, and the fixed losses would exceed the value of
14 using that circuit.

15 MR. ALBERT: I guess what I meant was, since the
16 high current draw on the battery charge only occurs during
17 brief periods of time, mostly during active mode, when you
18 factored in the benefit of putting in power factor
19 correction, did you consider the fact that that only
20 represents a small portion of the total time that battery
21 charger is going to be drawing those kinds of currents?

22 MS. FOSTER-PORTER: We did take into account duty
23 cycle for the analysis.

24 MR. ALBERT: Is that available, that more detailed
25 analysis available for the power factor calculations that

1 you presented today?

2 MS. FOSTER-PORTER: What's available today is what
3 is presented in this presentation and the model in the case
4 report. And my understanding is that that's going to go on
5 the Web. In terms of the model and what might be presented
6 as part of the Energy Commission justification, I think that
7 could be directed to Ken in terms of what - I don't want to
8 commit what he's willing to provide.

9 MR. RIDER: I think it would be useful for you to
10 identify the places in the appendix to the case report where
11 you're not finding the level of detail that you want, and
12 then contact me or, if you have Suzanne's contact, and we'll
13 try to make sure you get the detail that you -

14 MR. ALBERT: Yeah, I think just a simpler question
15 which is, when you did the calculation of the energy benefit
16 of the power factor correction, right, did you assume the
17 charger was running at that current the entire time? Or did
18 you assume that it was only running at that current during
19 the times when those currents would be present, but probably
20 active mode?

21 MS. FOSTER-PORTER: We took into account the power
22 differences associated with the various modes.

23 MR. ALBERT: Did you use the same usage factors that
24 you used for the energy efficiency justifications?

25 MS. FOSTER-PORTER: Yes.

1 MR. ALBERT: Okay. And the, lastly, I guess, with
2 respect to energy efficiency justification, or energy
3 efficiency, active power mode conversion provides frequently
4 a loss in overall energy efficiency. Did you account for
5 that, in other words, to maintain the same compliance with
6 respect to the other metrics, did you account for that in
7 your BOM analysis?

8 MS. FOSTER-PORTER: Yes. So, the place where that's
9 the most sensitive is in the battery maintenance and no
10 battery modes. The active metric that we have developed is
11 - there is enough room to incorporate the fixed loss and
12 still meet the active mode efficiency cost effectively,
13 that's why the BOM cost that we show reflected in this
14 presentation include both the power factor correction
15 circuitry and also parts beyond costs associated with
16 shutting that circuitry down when it's not required in lower
17 power mode, so that you reduce the fixed losses
18 significantly, and it's possible to meet the .5 as well as
19 the .3 levels for battery maintenance and no battery,
20 respectively.

21 MR. ALBERT: And when you measure your power factor
22 in all these cases, you used what methodology? What source
23 of data did you use?

24 MS. FOSTER-PORTER: The power factor analysis,
25 although we did a detailed teardown on the efficiency, the

1 power factor analysis is based on, as I mentioned earlier,
2 review of existing silicon and interviews with component
3 Manufacturers and experts.

4 MR. ALBERT: I'm sorry, but I must have misstated my
5 question. What I meant was, when you measured the power
6 factor before and after, the test methods you used involved
7 using an AC source with what output impedance.

8 MS. FOSTER-PORTER: Yeah, I don't know the
9 specification of our AC source. I do know that we have
10 carefully selected it to ensure it can handle both small and
11 large loads, so I - that would be something that we'd have
12 to follow-up with, I can't speak to the output, the
13 impedance of our source, that level of detail here.

14 MR. ALBERT: And I have one sort of unrelated
15 question to the case report - I'm sorry, to the staff
16 report, because it actually showed up in the case report, we
17 provided a question back with respect to a comment that was
18 made about a capacitor being used in lieu of a transformer,
19 and got a reference in the case report, I guess, to a
20 document that was a primer, I guess, on energy efficient
21 battery chargers, and I've scoured that and not been able to
22 find any reference in there to the case where you could take
23 a capacitor and use it in place of a transformer, and I
24 guess presumably improve the efficiency. Do you recall -

25 MS. FOSTER-PORTER: I think I know what you're

1 talking about - do you want to speak to that a little bit?
2 That was a prototype that was developed by one of our staff
3 members and DOE evaluated it and determined it wasn't
4 appropriate for safety reasons. That is not included in the
5 justification and prototype data that you saw here. These
6 are, you know, using the silicon solutions that we
7 presented.

8 MR. ALBERT: Okay, very good. Thank you very much.

9 MR. LEAON: Okay, thank you. Next blue card is from
10 Steven Whittaker with Bose Corporation.

11 MR. WHITTAKER: Thank you. I have the same
12 question, but I would like to direct it at two different
13 groups just to be on the record. Who would speak for the
14 staff of the CEC here?

15 MR. LEAON: Okay, do you want technical details or
16 policy -

17 MR. WHITTAKER: Policy, I guess.

18 MR. LEAON: Okay.

19 MR. WHITTAKER: Could I see my card because the
20 question is on there?

21 MR. LEAON: Oh.

22 MR. WHITTAKER: I'd just like you to state for the
23 record whether it's the official position of the CEC staff
24 that the analyses presented in the staff report are
25 statistically valid and follow proper scientific method for

1 problem-solving?.

2 MR. LEAON: Okay, let me hear that question again.

3 MR. WHITTAKER: Is it the official position of the
4 CEC staff that the analyses presented in the staff report
5 are statistically valid and follow proper scientific method
6 for problem-solving?

7 MR. LEAON: Okay, well, first of all, keep in mind
8 that this is still a draft staff report and I know staff
9 conducted a very thorough analysis of the data. I'm not
10 sure how the question in regard to a statistical analysis is
11 germane. I am confident that the staff report is based on
12 sound technical analysis.

13 MR. WHITTAKER: Was that a yes?

14 MR. LEAON: I'm saying that I am confident that the
15 report is based on sound technical analysis and that -

16 MR. WHITTAKER: Statistically valid analysis?

17 MR. LEAON: Well, I think you have to go into more
18 detail on specifically -

19 MR. WHITTAKER: It's a pretty well understood term,
20 scientific method, statistical analysis.

21 MR. RIDER: Much of the analysis done in the report
22 is not statistical at all. A lot of it is just raw
23 measurements. We're taking measurements of power
24 consumption and putting it into a model, so I mean, there
25 are very few places where we're talking averages, where

1 we're talking, you know, any kind of bell curves, or any
2 type of statistical analysis. Most of it is based on -

3 MR. WHITTAKER: Sampling? Do you think you follow
4 correct sampling procedures, statistically valid sampling
5 procedures?

6 MR. RIDER: I mean, we've collected data for a wide
7 variety of products. I think we've covered the concepts
8 accurately. But we haven't tried to statistically
9 characterize every battery charger on the market. We've
10 looked at - the staff report addresses a few categories of
11 battery chargers as an example of the way the proposed
12 regulations can cover generally battery chargers.

13 MR. WHITTAKER: But you could defend the sample size
14 taken across the industry in order to defend the conclusions
15 you're coming to with regard to the regulations you're
16 planning to move forward on?

17 MR. RIDER: Well, let me say this, that we have
18 looked at all of the data that is available, we've concluded
19 that the data is reasonable. I think we've heard some
20 specific examples today that some of the assumptions were
21 estimations and, if the question is, in regard to those
22 specific samples, whether it was a statistical analysis, the
23 answer to that may be, for that particular process, no; but,
24 in general, we believe that the staff report is based on the
25 best available data. If you have better data, we would like

1 to see it.

2 MR. WHITTAKER: That's a good segue to my final
3 question, which is you mentioned earlier, with regard to
4 having another workshop that you would see how it works out
5 with the schedule. Is this schedule publicly available? Is
6 there a deadline? Is there a reason to be rushing this?

7 MR. RIDER: Yes. As we talked about earlier this
8 morning, DOE is proceeding with its own rulemaking and they
9 are scheduled to adopt it in July. As we realized the
10 benefits to California for the state's Standard, we need to
11 act by June. So, the schedule is being driven by that and
12 it is an aggressive schedule, we acknowledge that. The next
13 phase in this proceeding will be to, I think, finish the
14 discussion on some of the issues that have been raised
15 today, revise the staff report -

16 MR. WHITTAKER: Issues for which you admit you need
17 substantial additional information and data in order to come
18 to a valid conclusion?

19 MR. RIDER: Again, I think the conclusions that
20 we've drawn so far are valid conclusions, based on the data
21 that we've looked at. And we are certainly open to looking
22 at additional information. And should that information
23 change our conclusions, you know, then we'll evaluate the
24 standards as necessary. But, again, given that the schedule
25 is being driven by possible preemption, it is an aggressive

1 schedule, we acknowledge that and we need to look at
2 starting the next phase, which will be the formal
3 rulemaking, we're still in the pre-rulemaking phase right
4 now and we need to initiate that formal rulemaking process
5 probably by the end of March. And that includes a mandatory
6 public hearing during that phase. So, there will definitely
7 be another workshop on this during the formal rulemaking and
8 we'll look at what we can do to most expeditiously get the
9 information that we need from industry, that we've asked for
10 from industry, over the next two to three weeks, and prepare
11 a final staff report. And that staff report will be a part
12 of the record for the formal rulemaking.

13 MR. WHITTAKER: Thank you.

14 MR. LEAON: Okay, the last blue card, Rick Habben,
15 with Wahl Clipper.

16 MR. HABBEN: I'd like to go back, I have a question
17 on one of your slides, Suzanne. It's right before the
18 gentleman took over, it talked about the .3 watt maintenance
19 load that was required, I think.

20 MS. FOSTER-PORTER: This one here?

21 MR. HABBEN: Yeah. So just a question I have, it
22 says AC power required to counteract soft discharge in
23 watts, and for the listing, basically they're all - they
24 went from basically .3 to .36 there, actually .29, but I
25 guess what I'm wondering is, if CEC is looked at setting the

1 maintenance requirement at .5 watts, and generally what I've
2 seen with switch mode power supplies is that they hover
3 right around the .3 watts for no battery load, if that's the
4 case, you would need to add the .35 maintenance thing in
5 addition to the no battery. So, it technically should be,
6 if my number is right, about .65, .66, for maintenance,
7 instead of the .5. Am I looking at that correctly? Or, am
8 I making an incorrect assumption?

9 MS. FOSTER-PORTER: The scientist that did the model
10 for us on the team is on the line, and I think it would be
11 great if he could answer that question, directly. Ken, is
12 there any way you can unmute Dave Denkenberger?

13 MR. RIDER: Sure. So, what I'm going to do is I'm
14 going to actually unmute everyone because he's one of these
15 anonymous call-in users -

16 MS. FOSTER-PORTER: No, he's right there.

17 MR. RIDER: Well, yeah, but he called in separately.
18 So, I'm going to unmute them, and then, Dave, once I unmute,
19 if you could just start speaking, I could mute everyone
20 else. Okay, so it's unmuted.

21 MR. DENKENBERGER: So, in order to meet the .5 watts
22 maintenance for these largest observed batteries, you would
23 need a smaller no battery mode, or fixed loss, and there are
24 many products available that do meet that lower no load
25 loss.

1 MR. HABBEN: Okay, but in general, to not have to go
2 out and buy special power supplies with special
3 requirements, a more realistic maintenance value would be in
4 the .6 range. Is that correct?

5 MS. FOSTER-PORTER: Yes, so let me speak to your
6 comment about special power supplies and special
7 requirements. One of the successful markets that the CEC
8 has helped to create is a high efficiency external power
9 supply market, where there are a number of off-the-shelf
10 solutions that are available at the Level V, but even more
11 stringent for very low no load values, so although your
12 statement is correct in that this does not take into account
13 those fixed losses associated with no load, I just want to
14 ensure that it's understood that the external power supplies
15 are widely available and at levels less than .3 watts, in a
16 great many more quantities and models than even a few years
17 ago.

18 MR. HABBEN: Okay. The other issue that I want to
19 bring up is, if you go to the trimmers, as you know and I
20 know, or what everyone else may not know, fortunately the
21 examples you took are actually products that we make, and I
22 guess I would like to speak where you had pulled up the
23 version of the lithium unit and the version of the Nickel
24 Metal Hydride unit. Yes. So, a couple different things,
25 one is, as I had stated earlier, the lithium ion unit that's

1 pictured there, that we saw, that is a retail market of
2 \$40.00, because of the increased circuitry, the increased
3 cost, the controls that we have to have for both not only
4 the - it's on the circuit board in the unit, but also the
5 actual power supply is heavily regulated, as well. The
6 other thing that I want to clarify regarding the UL cost, I
7 actually did the UL approvals on both of those units, and
8 because of the lithium ion and because of the safety
9 concerns with that, when you submit those type of products
10 which are lithium to UL, it's not an alternate construction
11 as UL would maybe give you a break on, and your \$2,000 or
12 \$3,000 cost would be correct. When you submit a product
13 that has lithium ion circuitry, it's evaluated as a new
14 product. You can call UL up and if you get a different
15 price, please let me know because I want to pay the lower
16 amount, but, you know, that's at \$9,400 for a new product
17 approval, not \$2,000 to \$3,000. So, I wanted to clarify
18 that cost to get that done. The other thing, you had the
19 cost to switch from, I think, a Level IV to a Level V
20 transformer there, and that cost was estimated to be an
21 incremental cost of \$.15. Can I ask if that was the raw
22 cost? Or was that cost at retail?

23 MS. FOSTER-PORTER: Those cost numbers were pulled
24 from the DOE document on external power supplies. They've
25 done the most recent analysis of cost vs. efficiency, and so

1 the 10 cents reflects the incremental cost associated with
2 the power supply. We then applied the markup that's in the
3 DOE analysis, that would take that up to retail level, and
4 the markup that DOE uses is just under 1.5 in total, you
5 know, they account for all the things, but the aggregate of
6 all the various factors is just under 1.5.

7 MR. HABBEN: One point five times the cost?

8 MS. FOSTER-PORTER: Times the cost.

9 MR. HABBEN: Okay. So, I can tell you, real
10 experience, that the cost to go from a Level IV to Level V
11 is much greater than \$.15 at retail, it's many times that,
12 and because of cost sensitive, I can't give the exact
13 numbers, but it's many times that at retail. And as I
14 stated before, you know, with the overheads and the retail
15 markup, you know, you can use an approximately four times
16 your raw cost at retail, and that's kind of a general number
17 that you can use. So, I just wanted to clarify that, that
18 the \$.15 incremental is definitely incorrect there. The
19 other issue that I want to bring up is that, regarding these
20 products, it's relatively - it appears relatively simple to
21 bring those into compliance, but we have other products
22 which are cordless products and that means the power supply
23 has to run the product in addition to recharging the
24 battery, and so your current levels are much higher to make
25 that happen, you're trying to run a motor, powering blades

1 or, you know, other maybe potential shaver attachments,
2 whatever the thing would be, and it gets - for us, that's
3 one of our big concerns is it gets much more complicated to
4 create a cost-effective circuit and make that product so it
5 can still be retailed into the price point and price range
6 it's currently at right now because you're dealing with the
7 higher current levels. So, I was wondering if you had any
8 comment to that particular scenario.

9 MS. FOSTER-PORTER: The detailed analysis that we
10 have conducted for the purposes of demonstrating cost have
11 been on these two products, so I can't speak specifically
12 about that product. I don't know if you want to say
13 anything or - I mean, my suggestion would be, you know, your
14 specific concerns that you have, to share those with the
15 Energy Commission because I can't address them in detail
16 here without looking at the product.

17 MR. HABBEN: And then, one last question is, what
18 are the minimum voltage requirements for your control ICs
19 that you're looking at using?

20 MR. WALTERS: We looked at a number of ICs and I did
21 not get everything that I've looked at into test, although
22 there was one comparator voltage reference combination that
23 I did test, that will operate on a VCC as low as one volt,
24 that's designed for that kind of single cell application.
25 And it was, if I'm remembering correctly, it was 100 nano

1 amp of supply, typical for the comparator, and it's onboard
2 voltage reference, which was a two-tenths voltage reference.
3 That would be used for VMAX type two-stage control, and it's
4 one of the data sheets, well, the cut sheets that's on the
5 presentation where I show a lot of different comparator data
6 sheets, so you can get more information on that.

7 MR. HABBEN: Yeah, if you could get me more
8 information on that, I'd appreciate it. Thank you.

9 MR. LEAON: Okay, that's all the blue cards I had.
10 Ken, why don't we - all right, one more blue card in the
11 room, and then we're going to check - oh, yes, come on up,
12 please, I apologize.

13 MR. RODRIGUEZ: Yeah, I'm Stan Rodriguez with Makita
14 USA. And a lot of things have been said here by PTI AHAM, a
15 lot of people, I just want to support that completely, and
16 I'm going to try to keep this brief because I know we're way
17 over. But I wanted to just read a little bit of a statement
18 here. The first thing I wanted to look at was the power
19 factor issue, and in the analysis of the report, it
20 indicated that .9 only applied to about two percent of the
21 battery chargers overall. Well, it applies to all of our
22 chargers, so our complete line is affected. An analysis of
23 the power factor requirement can be met with near zero cost
24 is what the report said. Well, we see a real cost
25 associated with the changes; in fact, in some cases,

1 depending on the size of the charger, it can be up to above
2 \$20.00 to the user, so we are concerned about that. The
3 analysis also stated that the savings estimates given here
4 were quite approximately. This leads one to believe that
5 these numbers are not accurate for all cases, and in fact
6 the report suggests further research is recommended. The
7 report also discusses the fact that the calculations used
8 actually use some very simple assumptions for these
9 quantities. We feel the assumptions do not properly reflect
10 battery power and battery power tool chargers used and
11 causes much concern. The report uses a model that assumes
12 our chargers would be charging for three hours a day,
13 because it's looking at three-hour run time, and for some of
14 our chargers, they only run - or they can charge a battery
15 in 15 minutes, so if you looked at that, and you used that
16 model, that would mean that that charger would have to
17 charge 12 batteries a day in this calculation that's being
18 used. In addition, the model uses 365 days, which is
19 another unlikely usage of the charger and battery, so that
20 would give you a grand total, if you run through all that,
21 that this charger in one year would use over 4,380 batteries
22 it would charge because it is a fast charger. So, this
23 model is clearly not applicable to our product line and
24 makes any type of calculated energy savings very suspect.
25 We believe that the actual power factor energy savings for

1 battery power tool chargers is very minimal, at best only a
2 very small fraction of any of the estimated savings would be
3 realized, making this required change for a cost-effective
4 energy savings means to the customer not very effective.
5 Therefore, the subject should be further studied for power
6 tool type battery chargers before requiring such changes to
7 this category, or it should be removed from the requirement.
8 So, that's our thought on the power factors. The next thing
9 I wanted to look at was the effective dates. It was
10 proposed that these requirements would be published July
11 2011 and the effective date would be in place July 2012.
12 This would give all Manufacturers one year to bring all
13 their products in line with the requirements. The one-year
14 timeframe is not practical. The time period is not a
15 practical time period to make the necessary changes to a
16 large number of charger products in our line, it's just not.
17 As you can imagine, due to the current economic situation,
18 many companies have kept their staff lean in all departments
19 in order to ride out the economic downturn. We are no
20 exception to this trend and, due to the fact that our
21 development resources are limited, it is not possible for us
22 to be able to make all the changes to the many charger
23 models affected by this proposal within a one-year period.
24 There are design issues, performance testing issues, safety
25 testing issues, parts procurement, applications to NRTL

1 testing labs, and manufacturing arrangements that just take
2 time in order to produce something. And we can't do that in
3 a year. In light of these concerns, we would request an
4 effective time period of two years be applied to this
5 requirement. Our experience in the past with safety
6 standards where safety issues are addressed, the effective
7 period of two years is used regularly. It is believed that
8 an effective date of two years can be used for safety-
9 related issues; this same time period should be more than
10 suitable for energy saving proposals. And lastly, I'd like
11 to address the charger and replacement parts. The current
12 proposals allow the use of chargers to be used as
13 replacement parts up to five years after the effective date
14 of this proposed requirement. We agree with the intention
15 of this proposal, however, we would like to recommend that
16 this date be pushed out to 10 years for power tool chargers.
17 Our users tend to purchase a number of battery powered tools
18 that run on the same platform, battery charger system.
19 These tools, if cared for, can last a long time. Many
20 times, the collection of tools can run in the thousands of
21 dollars to the consumer and to the contractor, who have made
22 quite an investment that is now worthless if you can't
23 replace a charger. We feel that, after a 10-year period,
24 the impact of not having a replacement charger would be at
25 least minimized. Thank you for hearing my comments.

1 MR. LEAON: And for the Court Reporter, can you
2 state your name and organization?

3 MR. RODRIGUEZ: Yes, Stan Rodriguez with Makita USA.

4 MR. LEAON: Okay, all right, one more blue card in
5 the room and my eyes are getting blurry - Pierre - I don't
6 want to mispronounce it.

7 MR. DELFORGE: Pierre Delforge at NRDC. Just a
8 question, the savings that this proposed standard will get
9 us to for small chargers was shown as 40 percent vs. a
10 technically feasible 70 percent, so my question is have you
11 - and the question is actually more for Ken for the CEC,
12 have you looked at higher efficiency levels that would still
13 be cost-effective? And could you do that as, you know, next
14 iteration as you take into account the comments from today's
15 meeting?

16 MR. RIDER: Well, the way the model, the Excel sheet
17 model that we posted on the Internet, you can alter the
18 proposed regulations and it will change - it won't
19 unfortunately - there's no model for cost - the hard part is
20 cost. So, if we got to a more stringent level, developing
21 new cost assumptions are very difficult, and that's actually
22 one of the problems that I had with - I had mentioned with
23 the DOE analysis, is that extrapolating out from what you
24 know, like these teardowns, and the DOE teardowns, is a kind
25 of guess at what the cost is that is difficult to measure.

1 I think it's well established given that the cost benefit
2 ratios of what we're proposing are three, that there's room
3 to go to more efficient chargers. I think, within the
4 timeframe of one year that we're proposing, that might be -
5 I don't know what the feasibility of that would be. But the
6 model is open and you could see what different assumptions
7 would be and if you have cost assumptions to go with a more
8 stringent level, you could plug those in, but unfortunately
9 I wouldn't know what the cost - I have no idea what the
10 costs would be for more stringent levels.

11 MR. DELFORGE: Okay, thank you.

12 MR. LEAON: Okay, why don't we go ahead and check if
13 anyone on the phone has any comments.

14 MR. RIDER: Okay, well, I like this hand-raising
15 feature, so I'm going to go with the hand-raised people
16 first. I'm going to mute everyone else. So, I'm going to
17 start with Joanna and you are now unmuted.

18 MS. MAUER: Thank you. This is Joanna Mauer from
19 the Appliance Standards Awareness Project. And, first of
20 all, thank you very much for the opportunity to participate
21 today in this workshop, and I just wanted to briefly comment
22 on the significance of this CEC rulemaking and the context
23 of the DOE rulemaking, and this has been touched on earlier.
24 First of all, the CEC rulemaking has a broader scope than
25 what DOE is addressing, which means that this rulemaking

1 will achieve long-term savings for California from standards
2 for non-consumer products, which DOE does not have the
3 authority to regulate; second, California has the
4 opportunity with these standards to accrue savings from the
5 standards for the consumer chargers before the DOE standards
6 take effect, and this can help the state meet its aggressive
7 goals for reducing energy consumption and greenhouse gas
8 emissions. Based on the proposed effective date in the
9 staff report, California would accrue at least one year of
10 savings before the DOE standards go into effect. And I'd
11 also note that, while DOE is required by statute to publish
12 a final rule by July 1st, we still haven't seen a proposed
13 rule published by DOE. And DOE has recently missed its
14 legal deadline on new standards for refrigerators, the
15 deadline was December 31st of this past year, and we still
16 haven't seen a final rule published, and other rules also
17 seem to be falling behind at DOE, which raises the question
18 of whether DOE will be able to meet its legal deadline for
19 battery chargers. And because of this, we'd certainly
20 strongly urge the DOE not to abandon its efforts on this
21 rulemaking when the timeline and outcome of the DOE
22 processes are still uncertain. Third, a strong California
23 standard could potentially result in a stronger national
24 standard than what otherwise might be achieved. As has been
25 noted, today during the workshop, the proposed metrics in

1 the staff report would ensure energy savings in the field,
2 regardless of how a particular product is operated, since
3 they address efficiency and charge maintenance and no
4 battery modes. In contrast, in the preliminary analysis
5 that DOE released last year, DOE proposed an annual energy
6 use metric. And DOE could follow California's lead and
7 establish metrics that would at least more closely resemble
8 California's proposed metrics to better ensure energy
9 savings in the field, and we, along with other
10 organizations, proposed this approach to DOE in comments
11 last fall; of course, we don't know how DOE will respond to
12 these comments since they haven't yet released a proposed
13 rule. And we hope that, if California sets standards that
14 achieve significant cost-effective energy savings using
15 readily available technology, DOE would establish standards
16 that are no less stringent than the California standards.
17 And finally, regardless of the ultimate DOE standards, the
18 initial California standards would likely spur efficiency
19 improvements in the market that could have long term energy
20 saving benefits. Thank you very much.

21 MR. LEAON: Thank you, Joanna.

22 MR. RIDER: Okay, I'm going to unmute Katt Fretwell.
23 And you are unmuted.

24 MS. FRETWELL: Thank you. I'd just like to say
25 that, as a smaller Manufacturer, we have not been privy or

1 not been following this process, so a lot of the stuff I've
2 heard today has been something that was a surprise to me and
3 I feel like I need to come up to speed before I can give
4 adequate comments, but I did want to say that, as a company
5 that makes industrial very low volume, very long-lived
6 products, the things I see as far as cost estimations have
7 not really been representational of our own experience with
8 respect to upgrading power supplies. I would like to know
9 if there is a way that you can provide detailed costing
10 information to support such a case without it being, you
11 know, publicly available to your competitors. Is there some
12 sort of confidentiality in what you submit? And I'd also
13 like to understand better how the proposed Title 20 no
14 battery efficiency can be looking at 0.3 watts when
15 California hasn't even mandated Level V, and Level V for
16 external power supplies above 50 or 51 watts are allowed to
17 be at 0.3, alone, without adding the complication of adding
18 extra batteries to that. Thank you.

19 MR. LEON: Yes, Katt, this is Mike Leao. Yeah,
20 there is a confidentiality process and if you want to
21 contact me directly, offline, we can talk about that. Oh,
22 hang on. All right, I was having a sidebar there. Yes, the
23 data request letter that is posted to the CEC website does
24 include information about the confidentiality request, so I
25 would encourage you to go to our webpage, it's under the

1 appliances docket, and take a look at that letter and if you
2 have any additional questions, please give me a call. The
3 technical question, I didn't quite follow that last
4 question, is there something that we wanted to respond to
5 there, Ken?

6 MS. FOSTER-PORTER: This is Suzanne Porter from Ecos
7 Consulting. Katt, the no battery levels are more aggressive
8 than the current mandatory standards for external power
9 supplies, in part because this technology to reduce fixed
10 losses at low loads has become much more widespread and much
11 less costly than it was when the external power supply
12 mandatory standard was adopted. So, the incremental cost
13 associated with reducing those fixed losses has become a lot
14 lower, and there are many components suppliers and external
15 power supply manufacturers that can meet requirements at
16 fairly low cost.

17 MS. FRETWELL: Okay, thank you for clarifying that,
18 I did just want to mention that, for - there's a significant
19 difference between the models used by very low volume
20 Manufacturers who have to meet worldwide regulations on one
21 external power supply vs. a high volume consumer electronics
22 Manufacturer, and which suppliers you can deal with, and
23 what you have to try and roll into one package, so again,
24 the costs are a lot higher than what I see represented here,
25 I just want to make that point clear, for us, anyway. Thank

1 you.

2 MR. RIDER: Okay, I'm going to open up the lines, in
3 general, because there are some people who may not be logged
4 into the WebEx. Well, some music to finish up the workshop.
5 If anyone wants to speak above this while I locate the
6 culprit, go ahead just so - are there any other questions on
7 the line? I'll take that as a no, so I'm going to mute.

8 MR. LEAON: Okay, any other questions, comments in
9 the room? All right, well, it was a long day, it's almost
10 4:30. I want to thank you for your patience and endurance
11 today during this workshop. I think it was a highly
12 valuable dialogue, and I encourage everyone to submit
13 written comments by March 15th, and these need to be
14 submitted both electronically and in writing, and look at
15 the notice that's posted to the website for specific
16 direction on how to submit written comments.

17 Our next step is, well, to continue the dialogue, I
18 think. I think we heard some issues today that we're going
19 to be following up with, and I certainly encourage, if you
20 have questions on policy, or process, call me directly. For
21 technical questions about the staff report, please contact
22 Ken Rider or Harinder Singh, directly, they would be more
23 than happy to talk to you about your questions. We'll also
24 look at what we can do, given our very tight schedule, about
25 either having some one-on-one meetings, or conference calls,

1 or WebEx, and we'll try and get that done over the next two
2 to three weeks. Our objective is to complete the staff
3 report over that period of time and, again, our aim is to
4 start the formal rulemaking phase by the end of March and,
5 of course, that ultimately is a decision of the Efficiency
6 Committee. We will be reporting back to them. And they
7 will make that call, ultimately. But, should they direct us
8 to go forward, we would notice the proposed permit
9 regulations at the end of the month and there will be
10 another public hearing probably in the late April timeframe.
11 So, again, I thank you for your participation today and your
12 feedback. It looks like we have one question in the room
13 here. Yes, the question was, was Ecos' presentation up
14 online, and it is. And I do want to thank the Ecos team for
15 their presentation today, I think it was very informative,
16 and we appreciate your support, and we appreciate the
17 comments and feedback that we had from industry today. All
18 right, that concludes our workshop. Thank you.

19 (Adjourned at 4:25 p.m.)

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