COMMITTEE WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:)
)
Appliance Standards for External)
Power Supplies and Other) Docket No.
Consumer Electronics Products)
_________________________________)

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

MONDAY, JANUARY 30, 2006

9:07 A.M.

Reported by:
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Gary Fernstrom
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Tim Cassidy
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Anthony DiGirolamo
David Love
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P R O C E E D I N G S

9:07 a.m.

PRESIDING MEMBER PFANNENSTIEL: Commissioner Rosenfeld and I apologize; we blame Amtrak this morning. We got stuck on a slightly late Capital Corridor train. But we're here and ready to go.

This is the Energy Commission Energy Efficiency Committee workshop on appliance standards. I'm Jackie Pfannenstiel, the Presiding Commissioner on the Energy Efficiency Committee. To my right is Commissioner Art Rosenfeld. To his right is his Advisor, John Wilson. To my left is my Advisor, Tim Tutt.

The subject of this workshop is appliance standards that were adopted by the Energy Commission in December of 2004. And some of them are yet to go into effect. Specifically, the external power supply standards which are scheduled to go into effect July 1st of this year. And the compact audio and digital tv adapters which are scheduled to go into effect January 1st of '07.

There are specific questions outlined in the notice that we will be seeking input on. I would just say more generally that the Committee is concerned in adopting any appliance standards, really about four criteria.

First is that the standard must be technically feasible; that it must be cost effective; that it must represent an appliance with significant energy use; and that it should have minimal customer impact.

So we need to be concerned, I think, generally that the Committee will be looking to input in those areas.

So, before we begin I would like to acknowledge some people who are here today as part of our proceeding, and we appreciate their being here.

First we have Priscilla Richards from New York, from NYSERDA in New York. Thank you, Priscilla. And Andrew Fanara --

MR. FANARA: Andrew Fanara.

PRESIDING MEMBER PFANNENSTIEL: Fanara, I'm sorry, from EnergyStar. Thank you.

So, with that, Commissioner Rosenfeld, do you have any opening comments?

ASSOCIATE MEMBER ROSENFELD: Thanks, no, we're late.

PRESIDING MEMBER PFANNENSTIEL: We are late; we apologize. And should we begin -- John.

MR. WILSON: Just a couple of logistics. I know we ran out of handouts, and they are making more and they will be out there shortly.

And I think a few people probably have PowerPoint presentations; and just to clue you in about the podium and how it works. On the podium there is a cable with a USB connector on it, so if you have a thumb drive you can plug it in. Or if you want to use your laptop, which would be much harder, but you're welcome to do it, there's also a connector for laptops.

And we have asked people to fill out blue cards to help us organize the speakers. It is going to be ambitious to answer all these questions within the time we have. So, there will be constraints on time.

And I think that's all.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Do we begin with staff, or --

MR. WILSON: Jackie, Jim just pointed out to me that some people filled out cards but didn't indicate what question they wanted to address.

PRESIDING MEMBER PFANNENSTIEL: Yeah, that will be interesting.

MR. WILSON: So, --

PRESIDING MEMBER PFANNENSTIEL: Okay, we'll call on them and see.

Mr. Pennington, do you have opening comments?

MR. PENNINGTON: We don't really have opening comments. We've very interested in hearing what the stakeholders have to say today, and so we'll be taking copious notes. And if you have any questions of staff, I'm available.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. WILSON: Okay, let me make some wild guesses here as to who's answering what question, because I have talked to a lot of you.

To get this started, the first question is should the active mode efficiency levels be decreased for low voltage power supplies. And I know that that's been a concern of Elpac and I believe Arian Jansen is here. Arian.

Yes, let me, for the benefit of the court reporter who is going to make a transcript of everything said today because we want to keep a record, that means that you do have to come to a microphone when you speak and identify yourself. And it would help the court reporter if you would give a business card to help us keep things organized.

And we're not doing an honorific opening comments here, but you'll get your chance when you come up to address a question. So, Arian Jansen. He is with Elpac, E-l-p-a-c.

MR. JANSEN: I'm Arian Jansen from Elpac; I'm VP of engineering there. And Elpac Electronics is a company that makes external power supplies for a variety of industries from IT to medical to industrial.

And since we make a very wide range of power supplies we have some concerns about the efficiency standards as they are proposed with respect to output voltage.

I'd like to go to a couple of slides that show a little bit what we see from a pure design point of view, the difficulties, as well as some logistic problems we face.

So, what I would like to do in a few slides is going over the output voltage dependency of the efficiency, as well as the input voltage effect on the no-load power consumption. And some of the -- limitations that are associated with that, especially with no-load consumption; some remarks about logistics; and some remarks about time to market.

First what I did is I followed the graph of a good design practice, switch mounts, external power supply efficiency versus output voltage. And I put in the limits as they apply, or are proposed at this moment by the CEC for efficiency level of those power levels.

The top level is for 100 watts; then one for 30; then one for 10; and one for 3. And what you see, especially if you look at the right side of the picture where the output voltage is pretty high, you see that with good design practice the power supply industry will be able to meet the requirements of the EPS in terms of active mode efficiency.

You also see that the challenge becomes a little bit more with higher output powers because the efficiency limits are higher for lower output power. But for power supplies, let's say, for 20, 25, 30 volts and up basically we would be able to meet that with good design practice; with modern technologies we would be able to meet that.

But if you look what happens if your output voltage decreases, then you see that the efficiency also decreases of the power supply. The reason, I don't want to go into any real details there, but it's basically because conduction mode losses start to prevail over switching losses. And the effect there is that the efficiency is going to go down and there's very little you can do. You can try to improve it, but a certain amount you're kind of limited to the losses of copper and everything.

So, as you see, around 15 volts for the higher watt power supplies, you see the efficiency is starting to drop down. And for the smaller power supplies that is a little bit lower, but it still is going to drop down lower voltages.

So as 12 volts for 130 watts for the higher range we already have significant issues there. And it's very difficult to meet the standards there. At 5 volts and even 3 volts, and those power supplies exist, and I'll give you a couple of examples in a minute, but at those voltage levels it's impossible basically at this moment to meet the 80 to 84 percent efficiency in that range.

And also for the lower power supplies, even though the efficiencies are lower, it's very difficult to meet them.

Let me put in some fields of application. First, on this right-hand side of the graph, especially on the, I would say 25 to 35 volt, that's where all the ink jet printers are working, which is always a very big category of users. And they normally are not an issue to meet this regulations.

Then a little bit lower in the voltage, normally around starting at around 15 to up in the low 20 volts, are the laptop computers. And also those, even though the distance to the limit is less, it's definitely feasible to do that type of efficiencies.

But then if you go lower then we see in the range from, I would say 9 to 15 volts, some medical devices. Medical devices are very large fields for the external power supplies. The majority of the power supplies in that area are sitting at a 9 to 15 volts.

And for those power supplies we see the power levels go up to 200 watts and more actually.

There is simply no way at this moment for that voltage levels to meet the efficiency standards.

A little bit lower on the curve you also see some industrial hand-helds. That's our kind of hand-held unit, that's UPS and Hertz uses, for instance, that larger type of units with a big display on it. They fall in the same type of voltage categories as cell phones, that they tend to use much higher power levels. They're normally, let's say, in the 30 to 100 watts.

And since the voltage there is between 5 and 12, I should have made the bubble a little bit wider there, they're also in a category that's very difficult to meet the active mode efficiencies.

Then on the very left hand there is an application that is gaining momentum at this moment, because the LED science, the LED lighting is an efficient lighting, and it's also very reliable. So that is something that we see taking off, actually. But some of the LED signs, actually they run in the 2 to 3 volt mode. And often those power supplies are still external because it makes it easier from a safety point of view. And those power supplies have just no chance of even getting close to the standards.

And then on the lower bubble there I put in the cellphones and the cordless phones. They tend to sit in the 4 to 5, to up to 10 volts range. And they're also sitting in a fairly difficult area. On the high sides it is probably possible to meet them; on the low sides it's very hard to meet them.

So, what I basically would like to see is that the regulation would taper off in line with the industry, with the technical feasibility of efficiency of power supplies at lower voltage.

Another point I want to touch briefly is the no-load consumption; and also good design practice switch modes power supplies. And I mentioned between, for instance there, results -- limitations, and I come to that in a minute.

Also here are the same power levels; and I put in the limits that are proposed by CEC. You see that at the very low power level it's feasible to meet it basically with the current technology. And I'm talking about specifically about switch mode power supplies. Linears will no be able to do that.

Ten watts it's also below the increase

line there. The 30 watts is more difficult, but the biggest issue here is in the 100 watt range. And the reason why that is much higher than the standard is that if it's a wide range power supply, so it can be used all over the world. It also need to have power factor correction for the European countries, as well as for Japan. And that power factor correction circuitry uses more energy in standby.

Then what you see on the graph is that it's way more difficult to meet the no-load consumption in the 230 volt range than it is in the 115 volt range. You are much closer to the center there. For California and the United States in general, the AC voltage are all 115 volts, so only focusing on 115 or 120 volts and not measuring at 230 would definitely gets most power supply designs a lot closer to the limits than will be possible with 230.

Then some functional limitations that I mentioned, and I think that's important to know because it hasn't been discussed a lot. And that has mainly to do with a no-load power consumption of power supplies.

In order to get them to really low no-load power consumption you need to put them into a burst mode. And without going into details of the technology of that, but it means that the power supply is going to burst in the audible range. So especially the larger power supplies often have some audible noise emitting from it, and definitely no -- customers are happy to see that, especially on the medical front we have got some push back that the power supply should not make any noise, actually.

And the second point's also very important. It's with PSC power supplies, in order to be able to meet the no-loads requirements or get close to it, you need to switch off the ESP from that. And that's technically feasible, but there is a disadvantage. And that is if you wake that power supply up from its sleep mode it's not instantaneously able to supply its power. So the output voltage will drop.

If that's for a laptop pc it's not much of an issue, because laptop pc has battery, and the battery will hold the voltage up basically during that time. But if it's for a defibrillator, for instance, that runs on a very low standby power, and you wake it up because somebody gets a heart attack, it's not a good thing if the unit basically resets and needs to power up again.

And I think the impact on the system design of that is not fully understood at this moment. So, it's really the case that you cannot, for a large power supply you cannot just exchange it for a CEC-compliant power supply and say it's 100 percent compliant for the application.

Then I would like to touch a little bit on some logistic problems. There are only a limited number of manufacturers that make controllers for this especially low no-load consumption power supplies. It's increasing every day. More and more companies are coming out with it. But it's definitely the case that -- suppliers making these kind of controllers have controllers that are going to be compliant for CEC.

Then the other one is, and is a very important one, as well is that between the different manufacturers that make those kind of controllers, no two are alike. They all take a similar approach that they're absolutely not interchangeable. So at this moment there is no chance to have a second source in the power supply. We really need to design in a certain manufacturer and there's no way of getting a second source.

So, tied to market point of view, the components for the power supplies to meet the CEC upcoming regulations, they are becoming available. Some manufacturers already there, others are not, in terms of components. So it's really in upgoing line at this moment. But, a second source issue is definitely not addressed at this moment.

So another point on trying to market, I think it'll take at least another six months to solve the component availability issue. Many manufacturers are coming out; I see in the coming months where they release to the markets. That will help. But the second source issue is definitely not addressed. And the power supply industry has been able to use kind of standard controllers for a long time, but now that's no longer the case.

And then if we have those controllers available, then we need to basically develop a product line that meets the CEC standards. And to do that that'll take about a year, as well, for development cycle for a full line of power supplies. That happens after the good availability of the components.

And then the last point I definitely want to reiterate that again, is that for the low voltages, especially for the extreme low voltages, it's actually technically impossible at this moment to make them compliant. And I don't see anything happening in the coming several years that could address that sufficiently to bring the efficiencies up. And that is a big concern because a whole category of systems using that kind of power supplies will not be able to be sold in California.

So that's what I would like to say about the voltage dependency of efficiency.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Mr. Jansen. Are there questions here? John or Art?

MR. WILSON: I don't have questions, but, Commissioner Pfannenstiel, I thought what we would do is there are a couple of other speakers on this question. I think we should hear from them and then hear from Chris Calwell, who's been a consultant to PG&E on power supplies, and see what his comments are in response to these presentations. And then have some discussion.

PRESIDING MEMBER PFANNENSTIEL: Gary.

MR. FERNSTROM: John, Gary Fernstrom from PG&E. If we do that we might lose track of the key points which we want to question. So could we have a brief opportunity to ask questions in between the presentations?

MR. WILSON: Sure.

MR. FERNSTROM: So, may I ask a question?

MR. WILSON: Please do.

MR. FERNSTROM: Your presentation was based upon the notion of good design practice.

MR. JANSEN: Yes.

MR. FERNSTROM: And I'm not an expert in power supplies, but I'd like to ask a question, and phrase it around an analogy, which is good design practice for building wiring, good design practice for building wiring, as specified by the National Electrical Code.

And just to take an example, it specifies number 14 wire for 15 amp distribution circuits in homes. Now, it's very very difficult to pull in number 12 wire, and it's much more expensive. The number 12 wire is harder to bend and deal with in twist-locks; and it's a slightly larger diameter. But number 12 wire is more efficient. It has less resistance loss in the home.

So even though good design practice is number 14 wire, which is thought by the NEC and UL to prevent fires, it is not necessarily the most economically efficient wiring to put in homes. We could put in number 12 and the state would save a lot of energy, and I'd submit, without doing any research, that that might be cost effective.

So, my question is does good design practice include economics? Or does it just include the technical feasibility?

MR. JANSEN: Well, if you look at good design practice for power supplies, design for power supplies are, in the best case, always a compromise. If you look at designing power supplies you're kind of weighing conduction losses against switching losses. And is there obviously some kind of commercial impacts? Yes. We are trying to keep the cost in mind, as well.

But still you need to optimize, basically find the best compromise between your switching losses and your conduction losses. And it's just a matter of physics that the conduction losses are increasing a lot in low voltage.

And in order to compensate that you need very large diodes or mosfets. And you can compensate it using those large mosfets, but then the switching loss becomes a problem.

So, even if I talk about good design practice I really mean getting the maximum out of the available technology at this moment. So not necessarily designing a long rules for using certain components; it's really to say how to find the best compromise.

In this case, if you find the best compromise for a 24 volt power supply you're probably be able to do 87 percent efficiency. For a 5 volt, you may be able to do 78. But that's pretty much as high as you can go.

And putting in more money might gain you a percent, but no more than that. So we're really falling short in that low voltage to find a compromise to come to that high level of efficiency.

MR. FERNSTROM: So that being the case then, there must be no products on the market that can meet this efficiency criteria for the lower voltages?

MR. JANSEN: Yes, I think in the 3 to 5 volts external power supplies there are not really any units available that meet the requirements there.

MR. FERNSTROM: Thank you.

MR. WILSON: Arian, just to maybe elaborate on Gary's question, and this applies, I think, to all the speakers who will be coming up today. It's very helpful to us to know what's hard and what's impossible. And if it's hard, how much does it cost.

Because we want to do some economics to understand what the payback period is, because to you it might be an insurmountable cost barrier, but when we look at the benefit to consumers it may, in fact, be an attractive and worthwhile thing to do, even though it's hard.

And, you know, along those lines as well, Arian, in some of your graphs you had lines. But it would also be nice to see the data that goes with the lines. You know, how did you draw all those lines.

MR. FERNSTROM: Well, I'd like to ask

just a really brief follow-up question. One of your slides showed a laptop computer. I believe it's that one. And it's along the 100 watt line.

I have a laptop computer here with a power supply. It operates, under load, at less than 40 watts.

MR. JANSEN: Yeah, laptop computers the same between the 30 watts and extending over on that line, so most laptop computers are more than 30 watts. And I think the biggest one I've seen is something like 220 watts external adapter. So, they're sitting in that range of power.

MR. WILSON: So, Arian, can you give us the data that supports these lines?

MR. JANSEN: What do you -- just the background basically I used to come to these lines?

MR. WILSON: Yeah.

MR. JANSEN: Okay. Well, most of the lines are basically coming from say the most modern designs that I've seen and that we've done, ourselves, as well. Just using say modern controllers, modern silicon and modern core materials.

And then just say what is the practical

value that you end up with. For instance, what I did is I took our entire portfolio of power supplies and all run them through the CEC requirements and see where we stand basically.

And we see that most of the, say the current power supply were definitely below these lines. And we've upgraded a few power supplies to try to meet the requirements. And some of them do that, indeed, in the 24 volt range, for instance.

And we've tried some on the 12 volt, as well, and that was just not possible, given the requirements of the customer.

I mean it's a case with an external power supply that takes the toll definitely is that there isn't an output cord, which, for instance, takes, especially a low voltage, gets more power loss than a high voltage because of inherent higher current there.

And some customers, they just specify certain cord lengths, and you cannot reduce that to how the foot are shown. So that definitely plays into this, as well.

But, the data behind it is really done on practical design knowledge and experimentation basically.

MR. WILSON: Okay. If we can get data, you know, some scatter on that graph that would be helpful. And I think we're going to be allowing for written comments later. And so if you could submit something in writing after the hearing, that would be useful.

MR. JANSEN: Yeah, I can do that.

ASSOCIATE MEMBER ROSENFELD: And one further comment. I read your written testimony but these slides are much more convincing to me.

Have you supplied these slides to the staff?

MR. JANSEN: Not yet, no.

ASSOCIATE MEMBER ROSENFELD: But -- with data, but in any case, we'd like to see the --

MR. JANSEN: Absolutely, absolutely. This presentation is available obviously.

PRESIDING MEMBER PFANNENSTIEL: Please identify yourself, sir, for the record.

MR. CASSIDY: I'm Tim Cassidy from AULT, Incorporated. I just wanted to make a comment based on your comment on this slide. The salient point on this slide regarding laptops is output voltage.

The output voltage of laptops is between

15 and 24 volts. And in every case that would comply, right. So it's not the power, it's the voltage that's being referred to, is that correct?

MR. JANSEN: That's correct, yeah. I mean the laptop computers are not really an issue because they're all sitting in a voltage range that is technically feasible to meet. Doesn't mean that all laptop adapters meet that at this moment. But by doing good design practice you can meet it without cost penalty.

PRESIDING MEMBER PFANNENSTIEL: John, any further questions for Mr. Jansen? Should we move on to the next speaker?

MR. WILSON: That would be good.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. WILSON: In fact, the next speaker would be Tim Cassidy who just asked the question. Tim had indicated an interest in the medical equipment question.

MR. CASSIDY: Right. I have spoken with John over the last few days, so I just wanted to make some points about medical power supplies that I think should be considered.

First there's certain classes of medical equipment that require extremely low leakage current. Leakage current is the current that would flow through your body that would give you a shock. And could ultimately kill you.

So, there's power supplies that would be applied for those types of equipment have to have extremely low leakage currents. Designing to compliance for extremely low leakage current products may require linear power supply design, probably does. And switch mode power supply design that might be brought to bear there would require massive filtering in order to comply with EMI. And thus you would have higher losses.

So I think there should be some classes of medical equipment that you may consider excluding.

Secondly, the medical market dynamics are very different than other market dynamics such as computers or telecom equipment, consumer electronics or commercial electronics.

The market life of products in the medical marketplace is a much longer life cycle. If you did a life cycle curve you would see that it may be 10 or 12 years to get to 3 sigma from average, which would mean 99 percent of equipment.

In consumer devices in commercial applications that same life cycle might be three to five years. The reason why I think this is a salient point is that I spoke to Bill, I think, from the Commission, is that his name? And --

MR. WILSON: Bill Staack, yes.

MR. CASSIDY: And we talked about grandfathering clauses. And it's very unclear to me what equipment may be considered to continue sales in the market for some period of time until new products are introduced.

So, in his mind, grandfathering meant things that were in the pipeline, in the stockroom, in a warehouse would be okay to go. And then when they are replaced, the new item replacing it would have to meet the compliance criteria.

And in my mind, we sell these products, we manufacture external power supplies, we sell them to other corporations who then, in turn, sell them to either consumers, governments, or corporations. So we sell to OEMs.

And those products, they have, especially in the medical area, they have a compliance regimen that's very difficult, very expensive, where products are tested for a variety of things; their life, their failure modes and effects, the worst case analysis, certifications. These are all very expensive undertakings.

Once they go into the marketplace they have that long life cycle, as I mentioned, but there's a deep reluctance to introduce a new component replacement item because then you'd have to go through the qualification process over again. And this has to do with the FDA and other regulatory schemes.

So I guess I would ask the Commission to look at the prospect of excluding certain medical devices all together, power supplies used in medical devices. And clarifying grandfather clauses, and taking into account the life cycle differences between market applications of various end use equipment.

And that's my comments.

PRESIDING MEMBER PFANNENSTIEL: Mr. Cassidy, you will provide us some information in writing to describe exactly what devices you have in mind? I'd be specifically interested in knowing how many of such devices there are in California; how many get sold every year; what's the turnover; what's the use. That kind of information would be useful.

MR. CASSIDY: I'll do my best to provide what I can. Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. WILSON: There were two speakers from Jerome Industry who also wanted to talk about the issue of low voltage power supplies and the medical question. Anthony --

MR. DiGIROLAMO: Anthony DiGirolamo. Dave Love --

MR. LOVE: Dave Love.

MR. DiGIROLAMO: -- will speak first on the --

MR. WILSON: Dave Love.

MR. DiGIROLAMO: -- technical issues.

MR. LOVE: Similar to the Elpac studies we found that the low voltage power supplies cannot get the same efficiency level that a high voltage power supply can. In fact, in our product offerings we offer the same output power level from 12 volts to 48 volts DC in a specific enclosure with a specific circuit design.

Voltage levels below 12 volts have lower output power capability. And the reason is that the efficiency gives rise to a heat phenomena in the enclosure. And that heat is the limiting factor in most of our designs as far as the output power.

In addition, there's a second factor which prevents the efficiency of a low voltage power supply from meeting the same level as a 19 volt power supply, let's say, for a laptop. And that would be the appa cord loss as the guy from Elpac mentioned.

The appa cord loss on a 12 volt power supply typically could be 3 percent loss of efficiency. If you have to meet an 84 percent efficiency level, then your power supply has to be 87 percent in order to hit 84 at the end of the cord.

On a 5 volt supply the situation is exacerbated. So if you try to meet 84 percent on a 5 volt power supply you would have to meet 90 percent in the power supply, itself, due to a 6 percent loss in the cord. That's nearly impossible given the present state of technology and power supplies.

I would recommend to the Commission that a relaxation factor be developed for low voltage power supplies. In my email that I sent to the Commission I recommend a very simple compensation factor for power supplies below 12 volts. So that if you have, let's say, a 5 volt DC power supply, you would have a 7 percent relaxation factor, 12 minus 5. Everything above 12 volts would have the same efficiency level. Very simple to predict what your efficiency requirement is.

The no-load power loss, of course, doesn't vary, as the appa volts vary. So 5 volt power supply, whatever the no-load power loss is, it would be the same thing for a 24 volt power supply.

The other thing I wanted to mention was regarding 56 ERS transformer units, a lot of our medical customers do require ultra-high isolation, only possible with a conventional 50 60 hertz transformer. For these customers we have a problem because we can supply transformers up to 120 watt output rating in one of our standard enclosures.

The present no-load energy requirements will not allow us to meet, to produce 120 watt medical isolation transformer.

So my feeling there is, just to keep things simple again, eliminate any requirements above 25 watts for a 50 60 hertz front-end power adapter. At 25 watts the 750 milliwatt level isn't too difficult to meet.

The other thing regarding the requirement for transformers be 60 hertz transformers and power adapters, I feel that going from the efficiency level three to efficiency level four requirement after two years is really is going to be impossible for a transformer to meet.

In fact, in general, I think the two-year transition is really unrealistic. That there should be no requirement for the efficiency level four to ever go in place. Or if there is a requirement for it to go in place, it should be at least ten years beyond the implementation date on the efficiency level three requirements.

The other thing I wanted to bring up would be regarding the compliance enforcement issue of the Commission, which is going to be based predominately or entirely on retail store sales.

Due to that factor, medical equipment

would not be enforced. Medical equipment, as the fellow from AULT mentioned, and the fellow from Elpac, has a very long life cycle. There is extremely complicated enforcement protocol through FDA, through the European community, through China.

When you design a piece of medical apparatus, similar to any consumer apparatus, it has to work worldwide. Therefore, I think there should be voluntary compliance for a product which is not sold through retail sales.

By making the compliance voluntary it would allow older product to be grandfathered in, and allow it to remain in manufacturing for three or four or five years, until it is replaced with a newer medical system, which could be made to meet the CEC requirements.

So, those are my primary comments on the CEC requirements.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Questions?

MR. WILSON: You mentioned efficiency level three and four and I wasn't sure what that referred to.

MR. LOVE: Well, the CEC requirements

are based entirely upon the EPA requirements. The EPA requirement is that for power supplies 50 watts and up they meet 84 percent efficiency and 750 milliwatts no-load power loss.

The efficiency level 4 is that power supplies 50 watts and above meet 85 percent efficiency, a 1 percent increase, which is not a major issue, but there is a drop in the no-load power requirement from 750 milliwatts to 500 milliwatts, which is a one-third reduction. And that could be significant in many cases, especially power supplies which have appa powers above 100 watts; where this 750 milliwatt requirement is extremely difficult to meet.

In fact, I would recommend to the Commission that above 100 watt level no-load wattage requirement be relaxed. And if there could be some sort of interface with the EPA, I think the EPA's specifications should be relaxed in that regard, also.

So, the efficiency level 3 from the EPA is the present CEC July 1, 2006 implementation of specifications; the EPA's efficiency level 4 is the CEC specification, if limitation for July 2008.

So, what I'm basically recommending is the 2008 requirements be prevented from going into effect at all, or be pushed out to ten years instead of two years. Two years is just, with the power supply design life cycle of the medical power supplies really very impractical. It's just too fast.

MR. WILSON: I guess I would ask again, as I did Mr. Jansen, define difficult.

MR. LOVE: Well, basically it's costly; it's costly. We have customers that might sell let's say, you know, $600,000 of product over a ten-year life cycle on a medical system, and it might cost them $200,000 of just testing, compliance run and testing with the FDA, with the European and regulatory requirements, it's extremely expensive.

And they amortize that over the cost of product life cycle. And, you know, to try to take that, you know, six or eight year product life cycle and say, okay, now you're going to do a design, you know, again after you've just done it. It's a big burden for them.

And, you know, one of the complicated issues, as I've explained it, and I say, well, you know, but what I'm hearing is your product's really not going to be audited. But, you know, they say, well, we want to do the right thing. We want to, you know, make it comply. And there's a legal requirement, as well.

MR. WILSON: So are your comments limited to medical equipment?

MR. LOVE: Yes, predominately medical equipment, but I think the efficiency level at lower appa voltages applies to all types of equipment.

MR. WILSON: Okay.

MR. LOVE: Relaxation factor.

ASSOCIATE MEMBER ROSENFELD: I wanted you to clarify that, too. You talked about perhaps exempting products which aren't sold at retail.

MR. LOVE: That's correct.

ASSOCIATE MEMBER ROSENFELD: That was just for medical?

MR. LOVE: Well, I think simply for enforcement issues it's a practical thing. If somebody's selling something, let's say, from Wisconsin and it's a computer or something like that and it ships to their house. Well, you guys going to send something out to their house? Send a guy out to the house to pick up their laptop and bring it back to the electronics lab to analyze it? No, I don't think so.

So just from a practical perspective you could exempt all product which is not sold at a K-Mart or a, you know, a Home Depot or something like that, just for -- make it voluntary compliance.

Now, what is going to happen inadvertently, of course, is that the guy who's selling laptops in a consumer electronics store in New Jersey, well, he might have a retail mail order, you know, company. He's going to be sending the same external power supply to California.

So, the larger volume selling products are going to, of course, be compliance anyway from a mail order perspective. But the medical products are basically going to be shipped from a factory to a hospital, or a doctor's office. They're not really going to come into the enforcement activity line, you know, of the guys who are going out to the field picking up product for auditing purposes.

MR. WILSON: Okay. In the interest of time I'm going to move on, --

MR. LOVE: Okay.

MR. WILSON: -- if you don't mind, sir. Those are all the cards I have from industry or for that matter --

MR. DiGIROLAMO: Excuse me. I didn't want to speak on the technical issue, but I wanted to speak on the economic issue.

PRESIDING MEMBER PFANNENSTIEL: Excuse me, sir, please. Introduce yourself --

MR. DiGIROLAMO: Oh, I'm sorry.

PRESIDING MEMBER PFANNENSTIEL: -- for the record.

MR. DiGIROLAMO: I'm Anthony DiGirolamo from Jerome Industries. You mentioned two speakers from Jerome Industries?

MR. WILSON: Right.

MR. DiGIROLAMO: So I was hoping to speak after Dave, if appropriate at this time.

PRESIDING MEMBER PFANNENSTIEL: On the same subject, sir?

MR. WILSON: Briefly.

MR. DiGIROLAMO: No. It was the economics of your timeframe. I'm speaking on requesting to push out the effective date of July 1, 2006. Would you like to address that at a later time?

PRESIDING MEMBER PFANNENSTIEL: For medical equipment?

MR. DiGIROLAMO: Well, I'll talk about medical equipment, to reiterate some of the things Dave said, but just in general for all equipment that we manufacture, the need to push out the effective date.

PRESIDING MEMBER PFANNENSTIEL: Go ahead.

MR. DiGIROLAMO: Okay.

MR. FERNSTROM: Can we have the opportunity to ask, at some point, a couple questions of the prior speaker?

MR. WILSON: Sure.

PRESIDING MEMBER PFANNENSTIEL: But, continue for the --

MR. DiGIROLAMO: All right. My name is Anthony DiGirolamo. I'm the President of Jerome Industry Corporation. Jerome has been manufacturing external power supplies for 31 years now. We're one of the original manufacturers of the product, along with some other competitors here today, AULT and Elpac.

And the problems we see, we started moving as soon as we learned about the requirements of EnergyStar and CEC to design EnergyStar product about a year ago. And we have a small line presently, certainly not a complete line.

However, the way our customers do business with us is the engineers identify as the beginning of the product life cycle. And they specify power supply whether it's with us or one of our competitors.

At that point they go through a myriad of testing. And in the case of the medical power supply that testing can cost between $100,000 to $250,000.

In order for them to change over to EnergyStar to meet the CEC there's a process they'd have to go through to get the new designs from the companies, if available. And then they'd have to test them and go through all the testing over again, which testing FDA and EMI; and all this takes a lot of time. And July 1st is just too close at this point.

One of the things, we have probably 500

customers. So far one customer has contacted us that had any knowledge at all of the CEC. And that was this month. That's why we're here basically because they pointed -- they're a medical company -- they pointed out that they had heard about the CEC.

We had told them, don't worry about the enforcement; we understand talking to the people on the CEC that it was at the retail level. But they want to -- we don't know if that's true or not, but that's what we heard -- but they want to abide by the letter of the law.

Well, this sends them into a redesign process of the power supplies they need to buy now to get different design from us, because they've been buying the product for ten years from us. So now they have to go through, and a lot of these small companies don't want to be faced with a $250,000 fee or cost to reevaluate a new product.

Now, we are selling that EnergyStar product line to people coming to us now. And they've beginning to incorporate in their line. And their products probably will be coming to market in another year or so. Those will obviously have EnergyStar product that we will be offering to them.

Now, a lot of people call us today, they don't even require anything that's EnergyStar because they've not heard anything at all about the CEC. I call on some major California medical companies, and they're not familiar with the CEC's requirement.

So, everybody, if we were to start -- have to first get the word out to the customer that they need this, or assign all of us in the industry to get the word out. But, you know, none of us are going to, by themselves, just go to all our customers and say, hey, you need to re-spec the new power supply, go -- somebody and hope that those 500 customers come back to you. So nobody in the industry has advertised the CEC; nobody's website mentions the CEC.

People do the EnergyStar; people have gotten into the EnergyStar, but nobody wants to be the first one to turn around and tell all their customers, go look for another power supply. Because I would say right now, from the customers, three of them buy EnergyStar products from us. And I'm sure that it's very similar with all our competitors, knowing what they have to offer.

I would say we offer as large a line of EnergyStar product at this time than anybody. But, I'm telling you what's going on with our customers.

So, if we all of a sudden had to -- everybody was informed right away that they absolutely needed to meet EnergyStar July 1st, I wouldn't have enough engineers possible to -- and they wouldn't really want to do that because of the expense.

We do a lot of medical, talking about economics, we sell, say one company makes the artificial heart. He buys 500 -- we are American manufacturer, one of the few people left in this country, so we deal in this business, the small volume people; not the large volume that would use a lot of electricity.

You know, your consumer products, 100,000, 500,000, your medical products typically 25 pieces to 5000 pieces.

And if, for example, all of a sudden they needed to start a supply, and someone buying a 5000 piece power supply from us be in the economics of volume. But you're paying $30 apiece, say, to ship up all around the world. But then they come back and say, we need 100 for the EnergyStar to go to California; how much does 100 pieces cost. Oh, about $150. So now the California consumer is looking at very escalated pricing for these low volume type products.

Because they're getting the very very low volume. Matter of fact, I don't know if my competitors here even sell 100 pieces still. That's something that Jerome does. That's how we've stayed in business here in the United States by offering small volume sales.

So in addition to just the medical people, typically our industrial users are not consumer product people, and they also buy small volume. And they like to sell product that's good throughout the world.

And so either, a) the good thing would be buying a product that in the future will be available throughout the world without having to exclude California. But initially it could very well be that they're going to have to just find product to ship to California separately. That would, again, two or three times the price at the low volumes.

So, economically I don't think it's good for California to have this date of July 1st. I think to be honest with you, again, I don't know when you plan to do some advertising or how do people find out about this, so that my customers come to me and say I want this.

Grandfathering is something that's not new to the industry. Underwriters Laboratories, who tests our product for safety, specifications, when they decide they want the next level of safety and they're going to change the specs, they say all adapters that previously -- external power supplies for any product -- that previously were tested they're fine. But anything new you submit to UL for use has to meet the new spec.

So that's what I propose for medical equipment is that the product that's presently being sold in California be okayed to continue to meet the spec they're meeting, but new product being introduced has to meet the new EnergyStar spec. And eventually the product's life cycle, I don't know if it's nine years or five years, but eventually you'll have nothing but EnergyStar product.

But to do that you really have to get the word out to the customers, my customers, which is basically every industry uses external power supplies; medical uses more, laptop uses quite often.

We've looked at a lot of power supplies in the marketplace today. There's very very little, if nothing, in the way of EnergyStar out there. I guarantee your laptop (inaudible) does not meet EnergyStar. And that's just the way it is right now. We see a lot of --

MR. FERNSTROM: It may not meet EnergyStar, but --

PRESIDING MEMBER PFANNENSTIEL: Gary, --

MR. FERNSTROM: -- it could.

PRESIDING MEMBER PFANNENSTIEL: Gary, excuse me.

MR. DiGIROLAMO: It could, yes. It could. It's available. But, anyway, sorry.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. Thank you for your comments.

Is there a single question?

MR. FERNSTROM: Well, I had two questions for the prior speaker. You mentioned EnergyStar in your presentation. Is the EnergyStar efficiency specification a function of voltage?

MR. LOVE: Right now it is not.

MR. FERNSTROM: Thank you. The second question has to do with the cord. I thought I heard you say that there was like in the lower voltage power supplies maybe 3 to 8 percent loss in the cord. That kind of reminds me of the building wiring analogy. You know, what can a little larger cord cost?

MR. LOVE: Well, it's often not the cost of the cord, but the inflexibility of the cord. If the cord diameter exceeds .3 of an inch, the problem is that moving the cord will -- it acts like a steel beam, almost, attached to the power adapter.

If you're grabbing the cord three feet from the power adapter and you move it, the power adapter is going to be bouncing up and down off the bench. So you can't really put a half-inch diameter cord.

Then the other problem is the connector at the end of the cord. If the cord's too big it can't go into a connector.

MR. FERNSTROM: So in hi-fi and stereo wiring, they have this cable that is made up of many many very fine conductors that's very flexible and has a very low resistance.

MR. LOVE: Well, unfortunately for power adapters nobody makes anything like that, you know. The issue of safety compliance is also there. The UL has specifications on the cables and those aren't really available.

You know, from a novice perspective it might appear to be practicable, but from an engineering perspective, it's just, the technology isn't there right now in appa cords.

MR. FERNSTROM: I'd like to submit tot he Commission that it would just be atrocious if California deprives its citizens of an energy efficiency opportunity simply because the cord can't have a low enough resistance.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Gary. I think --

MR. LOVE: Can I also mention a shorter cord is often the simplest way around the problem, although the fellow from Elpac said the cord length is specified by the customer. A lot of times it's a coordinated effort. And if we need to put a two-foot cord on a power supply to meet a specific customer requirement, we'll tell the customer that. And he'll buy a power supply with a two-foot cord.

PRESIDING MEMBER PFANNENSTIEL: Thank you, sir. Commissioner Rosenfeld, do you have a question?

ASSOCIATE MEMBER ROSENFELD: Mr. Love, sorry. I'm still puzzled by your steel beam power cords. Are these stranded wire?

MR. LOVE: Yes, stranded wire, but here's what happens on a power adapter. Maybe the Commission's not aware of this.

The cords can weigh twice the weight of the power supply. We have some power supplies where the cords weigh about ten times the weight of the power supply.

And the cords are not that flexible. I mean if you take a cord that's hospital grade AC appa cord attached to a 10 watt power supply, the cord diameter is about .350 of an inch. It's over .3 of an inch.

They try to make it as flexible as possible. Remember these cords are sold in millions of units per year. But UL has requirements on that hospital-grade cord. And they say if you're rolling over it with a hospital cart or any sort of hospital equipment, they don't want any possibility of damage to that cord.

And so if I was to put the 10 watt power adapter here and grab the cord here I could move that power adapter up and down by doing this. I could lift it off the bench about six inches, lift it off the podium about six inches and put it down again.

Well, those types of cords, they're really not that practical from an end user perspective, from my viewpoint, anyway.

MR. FERNSTROM: Thank you.

PRESIDING MEMBER PFANNENSTIEL: John, is that the end of this discussion? Should we move on to the next subject?

MR. CASSIDY: If I may make one comment on this topic.

PRESIDING MEMBER PFANNENSTIEL: Please introduce yourself again for the record.

MR. CASSIDY: I'm Tim Cassidy from AULT Incorporated. My friend here from PG&E would probably acknowledge that we transmit power over power lines using alternating current for a reason.

We've talking about DC output cords here. So, the losses on the cord are substantial with DC. And when we increase the power the diameter grows. If you put a big fat cord on that device it would potentially tip it over. It just doesn't work well.

And we have so many customers that request us make our cords thinner, finer, smaller for that reason.

PRESIDING MEMBER PFANNENSTIEL: Thank you, I think we --

MR. CASSIDY: Thank you.

PRESIDING MEMBER PFANNENSTIEL: -- understand that issue.

MR. FERNSTROM: So I'd like to concede the point for FDA-approved equipment. However, I was asking the question about power supply cords in general having the perception that the cord might account for 3 to 8 percent of the loss, for example, in my laptop.

PRESIDING MEMBER PFANNENSTIEL: Understood. John.

MR. WILSON: Yeah, I think at this point I'd like to ask Chris Calwell if he would like to respond to what has been said so far.

MR. CALWELL: So, John, my only question would be whether it would make more sense to respond in total after all the presentations have been made. Or if you want to just hear on this subject initially.

MR. WILSON: What's your preference?

MR. CALWELL: Well, I have a presentation that goes in sequence through the questions that you raised. I could go to individual parts of it to respond to each, or wait until the end if it --

MR. WILSON: Well, I'm a little concerned about running out of time and not having heard --

MR. CALWELL: Okay, yeah, it's entirely up to you.

MR. WILSON: Okay.

MR. CALWELL: Either way is fine --

MR. WILSON: Why don't we try to talk about these first two questions -- issues of low voltage, number one; and power factor correction.

MR. CALWELL: That sounds fine.

MR. WILSON: For higher wattage output.

MR. CALWELL: So my colleague will give you a written copy of these slides so that the Commissioners and staff can see them. And I will walk through the key slides.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. CALWELL: So, for the record my name is Chris Calwell. I'm here on behalf of Pacific Gas and Electric Company and I work for Ecos Consulting.

Let me scroll down to the question in hand. Okay. The questions we've been discussing have to do with output voltage and current. And one of the research tasks that we finished recently with California Energy Commission funding, the Public Interest Energy Research program, was, in fact, this question.

We took the hundreds of data points that had been measured during the course of this process and plotted them on a voltage-versus-current basis.

So, this is a complex slide. I'll take a moment to explain it and then show you what we found.

What we have here on the horizontal axis is the rated output current of the power supply. So that would be DC output current. What we have on the vertical axis is the rated output voltage, also DC.

And then what you see here are a set of, if you were looking at a weather map you would call these isobars, but they're sort of the equivalent of that. They're lines of constant wattage. And so they represent, as you might imagine, the product of those two things, voltage and current.

So this line out here represents power supplies of 150 watts or more. Anything further out from this line is more than 150 watts. This range is between 100 and 150. This is between 50 and 100, and so forth.

So what we were looking for was first on the no-load, and then on active mode efficiency. What trends did we see, not best practice, but measured data from physical power supply samples that we have in hand or that have been tested at labs around the world under a consensus test procedure. And what no-load did they achieve.

So, what I wanted to highlight first. Here's the range between zero and 5 volts, which was the subject of much --

PRESIDING MEMBER PFANNENSTIEL: Excuse me, I think we have somebody that -- I'm sorry, you need to come to the microphone if you need to speak.

UNIDENTIFIED SPEAKER: Just can we lower the light level so that we can see the colors of the slide better?

PRESIDING MEMBER PFANNENSTIEL: Thanks.

ASSOCIATE MEMBER ROSENFELD: Chris, the color is crucial to this.

MR. CALWELL: Yeah, that's why we furnished you a copy in print.

ASSOCIATE MEMBER ROSENFELD: Thank you, but not her.

MR. CALWELL: It's very tough to show this much data any other way. I did not -- we struggled in vain to find a clear way to present this.

What I'd like to highlight in this chart is that the black dots represent the lowest no-load power supplies, zero to .3 watts measured. And what's interesting about them is that they are roughly evenly distributed throughout the data set. In fact, here are a set of compliant power supplies between zero and 5 watts; ranging in this case all the way out to a unit that has somewhere between 10 and 25 watts of output power.

And so this slide can serve as a simple

response to the comment made initially by Elpac. I think I got the quote right: there are no compliant units in the no-load specification below 5 watts.

So, let me then look next. I'll just highlight a couple other colors so they can make sense to you. Black --

UNIDENTIFIED SPEAKER: -- 5 volts, not --

UNIDENTIFIED SPEAKER: Can I make just a short little --

MR. CALWELL: Below 5 volts, yes.

PRESIDING MEMBER PFANNENSTIEL: Sir, I think you need to wait till Chris is finished and then we'll ask for comments back, responses.

UNIDENTIFIED SPEAKER: Okay.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. CALWELL: So I appreciate the clarification. This is zero to 5 volts. I'm illustrating the number of compliant units that are in that voltage range.

Both black and green dots represent compliant units. Black is zero to .3 watts no-load; and green is zero to -- I'm sorry, is .3 to

.5. There's one more color, blue, and blue in the higher wattages also represents compliance, because as you know, in the higher wattages you're allowed to range up to .75 watts of no-load.

Let's take a look then at another way to answer the same question more simply. This is simply a black dot if the product is compliant, and a white dot if it's not compliant.

So, we've labeled it as EnergyStar versus non-EnergyStar, but it could be also CEC versus non. What you see here is that the black dots represent compliance, span a wide range of voltages and a wide range of current outputs. And it's not the case that compliance can only happen in certain voltage ranges.

Let's take a look next at the active mode. This is also a slide from the report that we did for the Commission. And here we're looking at active mode efficiencies, same format that you saw before but a slightly simpler presentation.

Here's the 150 watt power supplies, 100, 50, 25, 10s, 5s and 1s. These lines of current wattage here. I've listed the requirements for active mode efficiency along each of those lines, so you can see how it marches from 49 up to 84 percent.

And then the dots correspond to measured ranges of efficiency in certain current and voltage combinations. So, what we had spotted, in effect, is that as you might guess, when wattage rises so do voltage and current in general.

There are a small number of high voltage/low current power supplies. There are a small number of high current/low voltage power supplies. But the bast majority of them increase current and voltage as wattage rises.

And so if you see, for example, an 84 percent efficient power supply or greater, a black one out by the black line that would be what you would expect. When you see them further back in this direction it means that a very high efficiency was achieved at a much lower wattage than the standards require.

And so in general the dots correspond closely to the lines. In other words, they tend to have the efficiency around the area where you would expect it. But some of them are substantially more efficient than their counterparts at low wattages.

And here what we noted was simply that

there aren't very many data points up here in the high voltage/low current, and there aren't very many data points in the high current/low voltage.

So, is it possible that products in those two ranges have more difficulty complying? Yes, it's possible. If we had more measured results it would be easier to see how palpable the trend is.

So one of the conclusions I think emerges from the earlier presentations is if medical power supplies tend to live in this region and they require very long periods of time for FDA certification, the simpler thing to do may be to extend the qualification period for medical power supplies that require FDA approval rather than to take a relatively simple spec and make it more complicated with voltage allowances that decline as voltage declines.

So, let me drop down to one or two more slides. This is the same slide I showed you before, but now instead of ranges of efficiencies in color, I'm just showing you a black dot if it meets the standard and a white dot if it doesn't meet the standard.

So you notice, for example, in a given

current output range all different voltages up to 30 show compliant models. In a given voltage range like, let's say, 5 to 10 volts, here's a range of different current levels that comply. So we would love to see more data out here. And in fact, we especially went out in the market looking for samples to buy and test for this report. And the limited number we could find we did purchase and measure and those dots are shown on here, as well.

Let me then conclude this response with just one more small set of data. As many of you know there's a parallel process underway in Europe called the code of conduct on power supplies. Their meetings occur every six months and although I was not able to attend the last one in May of 2005, the data from their presentation is available on their website.

This is a two-slide excerpt from a presentation by Hans Paul Siderius of the Netherlands entity Novem. And he made this presentation on May of 2005 reporting results that they had measured in 2004.

I want to repeat that and make sure everybody followed what I was saying. These are products that were measured in 2004 on the market at the time.

What you see at the lower axis is the output wattage of the power supply. What you see on the vertical axis is the measured no-load consumption. The red lines corresponded to the code of conduct requirements at the time, which are in the process of being revised downward.

What's interesting about this chart is that the Europeans, as many of you in the room know, require a power factor correction for power supplies of more than roughly 75 watts input power.

Since what we're showing you here is output power, and there's an efficiency loss, that means that the European power factor requirement would cut off sort of in this range, roughly 60. And what you see is that the Europeans measured a large number of power supplies between zero and 120 watts output power, all of which were comfortably below the 0.5 watt no-load requirements. These are power factor corrective devices above 60 watts.

There are a handful of products out here that needed a little bit more, in some cases .75

or .8 or .9. This represents what the market could do in Europe in 2004. It's been a year and a half since then and I think more progress is possible.

I'll just close with this table from Novem. Here, he's summarizing what they found on the previous chart in tabular form. In the 60 to 150 watt range they had 15 models that averaged a no-load power of .47, and 100 percent of them complied with the code of conduct levels of 2005. They had no units between 50 and 60 watts, but of the ones that were between 15 and 50, 17 models average no-load .79 and 24 percent complied, and so forth and so on.

If we are particularly concerned about this high wattage range of 60 to 150 I think it's worth sharing more data with the Europeans, finding out what kind of solutions are available there, and encouraging their use in the United States, as well.

I will leave it at that and take questions.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Chris. Are there questions specifically on Chris' -- I'm sorry, this gentleman here had already come up.

MR. JANSEN: I'm Arian Jansen from Elpac. First, I'd like to mention that nobody from the industry, including my colleagues here, have made any link between output voltage and no-load efficiency.

And the remark I made earlier had nothing to do with that, it was really about the active efficiency of low voltage power supplies. I think you need to make that modification.

MR. CALWELL: Okay, thank you.

MR. JANSEN: I think what very clearly shows in your graph on the active mode efficiency is that there are no positive data points in the high power range that are anywhere low voltages. Everything you have there, all the black dots, are all in the 15 to 20 watt range -- 15 to 20 volt range, sorry.

So, in the higher power level the 84 percent efficiency, and that's what I meant to say there, it's for an external power supply in the 100 watt range virtually impossible to make 5 volts power supply with 84 percent efficiency, including let's say a reasonable cord. And the cord is part of the problem, but not the only problem.

So I think this graph shows very clearly that the ECOS report does not take into account any lower voltage, high-power power supplies. And I fully agree that they are probably only a limited number compared to the laptops and the inkjet printers. But it poses a tremendous problem on certain industries that use this lower voltage, high current power supplies.

And from that point of view I think it would make sense to have legislation taken that into account. So that even other let's say industrial medical devices could go along with this energy efficiency, could be part of the bandwagon basically, but not necessarily held to a standard that is actually mainly made for laptop computers and inkjet printers.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Other questions?

MR. DiGIROLAMO: I just had a question, not really a comment. Does the data including linear external power supplies, like linear regulated transformers, AC to AC, non-switch --

MR. CALWELL: Yeah, this is an excellent question and I appreciate it. These are data that

I've been showing off and on at these meetings for two and a half years, and so I forget that, you know, not everybody's been for the previous discussions.

We obtained these measurements in a variety of different ways, covering a variety of different technologies. So, just to summarize, as a consensus test procedure was being developed worldwide in 2003 and 2004, there were laboratories in Colorado, Tennessee, Australia, China and Europe all making measurements.

And they were choosing a variety of power supplies, including ones that were used and had been sold in previous years, ones that were on the market brand new at that time, and ones that were being introduced for certification by manufacturers.

So, it does, in fact, span linear and switching, old and new, a variety of wattages and voltages. So I appreciate the question.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Yes.

MR. MARKWALTER: I'm Brian Markwalter of CEA. Chris, on your EU slide -- I don't know if you really need to go there, go ahead and turn to it --

MR. CALWELL: Okay.

MR. MARKWALTER: With whatever's turned in and available to us will we be able to find out what supplies, what that data set represents there?

MR. CALWELL: Yeah, I think what we should do is I can contact Hans Paul Siderius who's in the Netherlands. His English is good. And ask him if he can furnish more specifics on the individual units that are represented here.

MR. MARKWALTER: Okay.

MR. CALWELL: But I think many of you know how to find the code of conduct website, so do start there. And there are presentations from Bob Harrison and Hans Paul Siderius and others.

MR. MARKWALTER: Okay.

MR. CALWELL: And then I apologize, I didn't have time to get more specifics on what these units were.

MR. MARKWALTER: And this has been part of, you know, the age of data is one of our concerns, and whether we're looking at linears or switchers or whatever. I think in Arian's presentation when he did state of the art, his was all switcher technology. So it's kind of already assumed we have made that leap to switchers.

My other question is on the code of conduct, is that voluntary or mandatory?

MR. CALWELL: The code of conduct is a voluntary program in Europe.

MR. MARKWALTER: Okay, thanks.

PRESIDING MEMBER PFANNENSTIEL: Thanks. John, are we ready to move on to the next area?

MR. WILSON: Yeah. What I'm going to propose is that we talk next about the cordless phones. And we have to start doing some time budgeting for say 20 or 30 minutes, and then take questions 4, 5 and 6, battery chargers, and lump them together. And I think that's going to take about an hour and a half. And that would leave doing some not-very-careful arithmetic, maybe ten minutes to talk about the 230 volts question.

So, I know Jim Haynes wants to talk about cordless phones. And that's the only card that I have here that really is for cordless phones. Am I correct in that?

(Pause.)

MR. CAMPBELL: Good morning. My name's Dwayne Campbell; I'm Project Director for Radio

Shack, and want to talk to you a little bit about the retailers' perspective on the impact of the CEC's regulations.

Radio Shack has over 5000 corporate stores throughout the United States; 650 of those Radio Shack stores are in the State of California. 94 percent of Americans live within about five minutes of a Radio Shack store.

In addition, we have 63 locally owned Radio Shack stores owned by individuals living within the State of California. And all told, you count all of our retail stores in California, including kiosk and everything else, about 1100 stores all total.

Back when these regulations were being promulgated we went through and started doing assessments on what the impact would be to our product line. We identified we have over 201 products that use external power supplies that would be impacted by these regulations.

As of to date I have confirmation from four manufacturers that they'll be able to meet the July requirements. The remaining 197 products are scattered over 20 product lines. This includes anywhere from AV products to cordless telephones. It's just an entire range.

The compliant products we have identified, they're primarily all top tier. The lower tier products are where we're having the biggest problems.

Manufacturers we have been talking with have been showing cost increases, but they've yet to submit power supplies that actually meet these requirements.

Unless we find suitable power supplies in adequate volumes it is going to impact our store shelves. And our concern is it's also going to impact sales, it's also going to impact tax revenues.

Generally, on implementation, manufacturers, as regulations change, there's usually for a minor change there's typically a two-year implementation date for a regulation.

If it's a significant change, like when UL adopts a new standard, there's anywhere from five years and above before that standard is actually adopted. In many cases, with the FCC, certain product lines maybe even grandfathered before the standards become effective.

This allows manufacturers to comply with dates. I know we had one discussion and we were told that these regulations were coming into place, why didn't we start working then. Manufacturers don't start working on meeting requirements until standards become published, because standards are subject to change until they are actually published.

The impact of change in power supplies. Linear power supplies are typically used in these low-cost consumer products because they're cost effective, they minimize -- they're one of the easiest ways to minimize EMI and audio noise back in amplifiers.

Replacing a linear type power supply with a switch mode type power supply requires the entire system to go back and be retested to make sure it actually does still work.

We've found in many cases when you just take a switching power supply and put it in place with an audio product you'll get either EMI from the product, it will start causing interference with television and radio reception, or you start hearing buzzes or whine noises back through the audio amplifiers.

In addition, we also found that these

switch mode power supplies when we switch them, and we also now had to go back and get FCC certification again. Switch mode power supplies are subject to part 15 verification rules. And as a result, the external power supplies we sell now need additional information to the consumer on what the consumer needs to do to minimize interference. It's about a one page of a lot of technical jargon the FCC requires we ship with each product.

Cost of replacement products. Switch mode power supplies to meet these new energy requirements, more costly than their linear components. At this point we've been quoted in some cases as much as four times the cost for the power supply versus for the replacement power supply than what the initial power supply was.

Then in the CEC's research, they're expecting about 49 cents to about 90 cents increase to meet these requirements.

Based on our supplier quotes we believe that at retail we're going to see a minimum increase in cost and to recover our cost in handling the product of anywhere from $5 to $10.

We have been evaluating again, as I

mentioned earlier, we started looking at this as soon as we started seeing the rules being promulgated, and we found one manufacturer producing a hybrid linear type power supply that would meet the requirements. And it seemed like a very cost effective approach. However, even their supplies, we've only gotten a few samples so far; they're having problems meeting heat requirements and can't pass UL.

Certainly consumers are going to face a limited number of choices from retailers. They're going to have significant more cost impact on the actual power supplies that they purchase.

One of our biggest concerns is as we approach golden quarter this year, where retailers make the most of their gross margins, we need to start placing orders now. These rules come into effect July 1. The product being manufactured to meet those requirements is manufactured between now and even after that date. We don't know how to place the orders for those products.

We don't know to have manufacturers start producing the new power supplies that are CEC-compliant if they can find them, which they've not been able to. Or we need to start taking some other action on these power supplies. We need a quick decision or quick indication from the CEC on what they plan on doing.

Talking with other members of industry, our recommendation is basically this: One, delay the implementation of external power supply regulations to allow industry to solve supply chain issues.

Number two, one of the things you've heard from several of the power supply manufacturers today is that low wattage power supplies become very very problematic, especially the low voltage, which is a lot of the products that we sell. These products should be exempt.

Number three, infrequently used products don't contribute greatly to this power consumption, and they should be exempt, as well.

There are also specific classes of products that have been mentioned this morning that are problematic to meeting these requirements. And they should be exempt.

Radio Shack and other industry members are not opposed to making more efficient power supplies, but we'd like to work with the CEC on how to do that, and make sure we have a consensus that we can actually achieve a compliant power supply.

Many other states are looking at this. You guys are leading the way here. We'd like to work with you on a national-type standard, rather than having to deal with this on a state-by-state issue.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. Questions here?

MR. WILSON: Mr. Campbell, when did Radio Shack start working on complying with these standards?

MR. CAMPBELL: Last year. Excuse me, actually it was year before last, in 2004.

MR. WILSON: I guess I find some of your statements surprising, because I get a lot of communication from power supply manufacturers who are looking for customers --

MR. CAMPBELL: Um-hum.

MR. WILSON: -- and have compliant power supplies. And I just can't figure out, I mean why Radio Shack and the power supply manufacturers can't get together.

MR. CAMPBELL: Talking to several

manufacturers and they're having difficultly locating compliant power supplies. You know, one of our manufacturers is here at this meeting, and they're having difficulty finding a power supply that will meet all the technical requirements.

In many cases, maybe the power supply -- the power supply manufacturers have a power supply that they say works, but when it's actually put to the test of what the consumer product needs, it may not meet those requirements.

I've seen it very often where we deal with manufacturers and they say they have the greatest new product in the world. But when we actually put it in our lab and start testing it, it falls very short of customer expectations.

MR. WILSON: What are the expectations?

MR. CAMPBELL: For a power supply?

MR. WILSON: Yeah, I mean I have test reports in power supplies. I mean I feel like a drug dealer, this stuff sort of shows up at my house at midnight.

(Laughter.)

MR. WILSON: I've got all these little bags, you know, little plastic bags. Looks very suspicious.

MR. CAMPBELL: These power supplies, they need to be cost effective. We've got to meet certain margin requirements. They got to meet certain bio-electric requirements. They got to meet UL. They got to meet FCC.

MR. WILSON: Yeah, I have test reports here for some of these power supplies, you know, --

MR. CAMPBELL: Okay.

MR. WILSON: -- and it says meets UL, meets the CEC standard. So, I don't know, you guys ought to hang around my house at midnight, you know, see what shows up.

MR. CAMPBELL: I would like to see some of these power supplies and actually start testing them. Because I know, like the ones we've gotten from manufacturers we've been working with, and these are our preferred vendors, we've had difficulty with them meeting those requirements.

MR. WILSON: And you said on one slide these things would cost $5 to $10 more?

MR. CAMPBELL: Yes.

MR. WILSON: This is another thing I find very surprising. I mean people talk about these switching chips costing, you know, five cents.

MR. CAMPBELL: It's not just the chip, itself, but also --

MR. WILSON: I understand that --

MR. CAMPBELL: -- the support circuitry that goes along with it --

MR. WILSON: I mean it does take, you know, it's more than just five cents. But it's certainly not $5. In fact, in most cases it's less than $1 for the whole unit.

So I mean, how do we rectify these things? I know part of the problem here is the power supply manufacturers are your customers, and so they're reluctant to stand up and, you know, address economics and engineering and availability.

But, you know, these things keep showing up with test reports, and people saying, you know, this is going to cost, you know, ten cents more to the OEM.

MR. CAMPBELL: What is the wattage of the supplies you're looking at? Because what we've seen is --

MR. WILSON: I've got a big selection.

MR. CAMPBELL: -- typically with

switching power supplies versus linear power supplies, there's a tradeoff somewhere between 15 watts and 35 watts where it becomes more cost effective, and also more efficient switching to a switching power supply versus a linear.

One of the problems we've run into greatly is a lot of our products are very low wattage, low voltage. For instance, a distribution amplifier that we sell. These things are typically around 1 to 3 watts. They operate somewhere between 5 and 12 volts. And getting a power supply that actually meets that and meeting the energy efficiency requirements is very very difficult. And that's what we're seeing in a lot of the issues.

Another specific product I just had a conversation on with our manufacturer last week is a public alert certified radio. They were a quote as a 4x increase in cost for the power supply for that product versus what the linear power supply for the product would cost originally.

MR. WILSON: Now, Chris' data that he just showed seemed to show a pretty wide range of availability of compliant products. Are you saying that this data is not right?

MR. CAMPBELL: We haven't been able to find the power supplies. And maybe we're looking in the wrong place, but we've had difficulty -- our manufacturers are having difficulty finding those, yes.

PRESIDING MEMBER PFANNENSTIEL: Mr. Campbell, your recommendation that we delay implementation leaves me sort of wondering for how long. What would be your preferred time there?

Because I understand, for example, in our view we really have delayed implementation, since we adopted these standards over a year ago to be going into effect some months from now. So there's already been a time when the standard was actually adopted.

And you're saying that nobody will really act until the standard has been adopted. But, in fact, it has been adopted. And so how much longer would be needed do you think?

MR. CAMPBELL: Again, we started working on this as soon as the rules were actually published. And began working with contacting -- we sent emails out to all of our manufacturers advising them of the issue. And wanted to know what their path for compliance was going to be.

As far as a date, what I'm really asking for, and what we can delay the effective date is, push off the July date. Let's start working towards standards that are achievable. And then let's establish a compliance date for those standards.

PRESIDING MEMBER PFANNENSTIEL: But for those manufacturers who believed us when we put in the date that we did in December of '04, and have worked to meet that date, the date upcoming now, is it, in fact, fair to them if we have some products that have been manufactured according to the schedule that we laid out at that time?

MR. CAMPBELL: Again, we began working on this back when those rules were originally published, and started contacting our manufacturers. And our manufacturers are coming back to us and telling us they can't meet this date.

PRESIDING MEMBER PFANNENSTIEL: I see, so you're just not finding, --

MR. CAMPBELL: They're having difficulty.

PRESIDING MEMBER PFANNENSTIEL: -- as John is, that, in fact, the manufacturers are able to comply. And yet we're hearing both from data, as Chris Calwell presented to us, and you know, anecdotally from the information that we get by being the Energy Commission, that, in fact, there are manufacturers who can comply.

So it's a question of how many, or which ones, or the quality of the products that we have in hand?

MR. CAMPBELL: Well, John mentioned he has one power supply that does meet the requirements. I don't know where that power supply's being manufactured at, or who the supplier is for it.

We deal with a whole host of manufacturers in Asia, and the ones we're working with there have had difficulty providing us (inaudible) meets our technical requirements. We have a few that will meet it, but by and large, still have several that don't.

PRESIDING MEMBER PFANNENSTIEL: And, again, the big issue, as we've heard so far this morning, tends to be down in the low wattage, low voltage level?

MR. CAMPBELL: That's correct. That's correct.

PRESIDING MEMBER PFANNENSTIEL: So at the very least we need to share our information with you and make sure that you know what we know about them.

MR. CAMPBELL: Yes, please.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. I think there was -- John.

MR. WILSON: I want to probe a little deeper on this, and try and cure up my role as the dealer in this operation. I mean can you tell us what your technical specifications are? I mean I want to try to broker this a little bit. I'm quite serious about that.

MR. CAMPBELL: I can provide that information to you. We have a test plan that we actually take our products through, and we can provide that information to you, John.

MR. WILSON: Okay. Dave Kline.

MR. KLINE: Just a question about these power supplies. I'm Dave Kline from JVC, General Manager for Strategic Product Planning.

First question. Who are these manufacturers of these power supplies? We, as an industry, deal with major manufacturers here who have an established supply chain capacity. We've unaware, or at least we at JVC are unaware, of new startup manufacturers who may have invented a better mousetrap, but to whom we have not been proven that they had a better mousetrap, or their supply chain capacity is significant enough to actually merit that.

We're concerned that a company can make a claim, and base their commercial success on a regulation. That's a difficult issue for us. And we really would like to know who are these manufacturers who've submitted compliant supplies, and what actual capacity, what percentage of the supply chain they represent.

MR. WILSON: Well, I can't answer all your questions, Dave, but here's a brochure from Ten Pau, International. Seems to be a substantial company. Has brochure in the back about how they make CEC-compliant power supplies. I have power supplies.

Now, you know, I can't obviously vouch as to, you know, whether or not they meet all of your criteria, but it certainly looks to me like a plausible company to talk to.

And I have, you know, half a dozen or eight letters here from companies, all Chinese companies, saying they're ready to produce millions.

Now, again, I can't, you know, vouch for the veracity of the claims, but it certainly seems like there's a lot of capacity around the world to produce compliant power supplies. And I visited these factories in China with Andrew Fanara. And I've seen how they operate, you know. You give them specifications and they build to your specifications.

MR. KLINE: Okay. I just want --

MR. WILSON: It's not --

MR. KLINE: -- to thank you for that information. That's one of the great things about these workshops is the exchange of information from both sides, and we really appreciate it. And we're very very much looking forward to finding those types of products and companies.

ASSOCIATE MEMBER ROSENFELD: And, Mr. Kline, I do remember that when Finar and Wilson came back from their pilgrimage to China and Taiwan that they said that the increases in cost were going to be in the range of zero to 5 or 10 percent. They were not 400 percent.

MR. DiGIROLAMO: Just a comment. Well,

my company doesn't really sell to the consumer industry anymore. Back in the early '70s we did. There was nobody making these products in China at the time, only in the United States.

I would say, though, I do pay attention, being in the sales department, of pricing that's available out there. And just talking about the one issue that the gentleman from Radio Shack mentioned, basically if you take a cordless phone that's using a little plug-in linear power supply, that product probably goes for about $2.

Right now I have no manufacturer that produces switching power supplies low voltage, low wattage, or any type less than $5.

So you look -- I can't imagine that's not true, -- switching power supply manufacturers below the $5 area?

MR. WILSON: Right.

MR. DiGIROLAMO: I stand corrected then.

MR. WILSON: If you have data, let's have some data. But otherwise, let's move on.

MR. DiGIROLAMO: Okay.

MR. WILSON: Noah.

MR. HOROWITZ: Hi, my name is Noah Horowitz, and I'm with the Natural Resources

Defense Council, NRDC. I just want to clarify for the record, the prior speaker from Radio Shack was talking about cost effectiveness.

Yes, nobody's denying the fact that in some cases the more efficient component or product may cost more at retail, but cost effectiveness in California means if you spend $1 more for a product and you save $5 in electricity, that, indeed, is cost effective.

So, when you were saying cost effective were you looking at life cycle or just first cost?

I don't know where he went.

MR. CAMPBELL: We're looking at first cost.

PRESIDING MEMBER PFANNENSTIEL: Sir, if you want to respond you can do so from the mike, thank you. Thanks, Noah.

MR. HOROWITZ: Okay, so I just want to clarify that, that cost effectiveness is viewed differently here for these standards.

Also, if we're looking at only four out of 201, where over 95 percent of your products can't find a cost effective power supply, challenge that.

So I think the burden is on you to say,

here are the 197 products, the efficiency, any other specific requirements, and why you can't meet that. And whether it's Chris Calwell or the manufacturers in the room who might be reticent to share that information in public, I think that number will probably be four out of 201 can't meet it.

So, let's have more information exchange. Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. WILSON: I think I'd like to move into the cordless phones and have Jim Haynes speak.

MR. CALWELL: So there were slides in my presentation addressing the topic just raised, as well. Do you want me to come back with that topic or hold till the end?

MR. WILSON: Why don't you address that point that was just raised.

MR. CALWELL: Okay, that should be fine. This is brief. I'm sorry my remarks will be slightly out of order with what was presented, but I did want to respond first to the question of which manufacturers have compliant power supplies, because I agree, that's exactly why we're here.

We went to the EnergyStar website before we came to the meeting and just printed out the list of compliant units that were on there as of December '05. The manufacturers that have compliant products on the website include Aztec, CUI, Delta, FRIWO, Leder, Lite-On, LSE, Salcomp and Total Power, International.

There may be additional ones since December. Some of these companies like Delta, FRIWO and Lite-On are among the largest manufacturers in the world of power supplies.

So, as I'll show in a minute, we've tried to do some things so that John isn't the only person hooking up buyers and sellers. And let me, if I can, just talk a little bit about the timeframe, because I do appreciate Radio Shack's concern that if you start with responding to a standard in December of '04 when it's adopted, that it's tough to be ready by July of 2006.

The first CEC-sponsored workshop on external power supply efficiency was in November of 2003. This is the invitation for it. I believe Radio Shack attended. There were so many of these workshops that I can't recall who attended all of them. But this one was both a discussion of test procedure and a sharing of measured data.

The advance notice that a manufacturer might have had to begin planning for these standards can be summarized on this slide. There were technical workshops with industry in 2002, 2003 and 2004. I met many of you there at those workshops.

The draft test procedure and the measured data resulting from it were posted for comment at efficientpowersupplies.org starting in late 2003. And as manufacturers supplied comments and urged us to change the test procedure or asked us questions about it, those were posted, as well, so that it could improve and update over time.

PG&E funded a codes and standards evaluation report with proposed standards levels and a savings analysis. Since early 2004 it was available on the Commission's website.

So, since the final standards that the Commission adopted were fairly similar to those, manufacturers who were being prudent and looking for a risk that these standards might come down the line could have been expected to take a look then after notification by the trade association and begin discussions with suppliers.

We presented on this topic at the Applied Power Electronics Conference in 2002, 2004 and 2005. When I attended APEC in 2002 I was told by many of the manufacturers of power supplies that although voluntary labeling programs could help and although utility incentives might be a good idea, that frankly mandatory standards would be a better way to address the issue because it would level the playing field and have everybody doing the same thing.

So the affected industry, itself, was the party that first suggested mandatory standards to me in 2002.

There were similar presentations. John Wilson, I think, spoke to the Consumer Electronics Association and I was invited to speak on the subject at the consumer electronics show in '03 and '04.

Then the Commission, itself, held a variety of workshops and hearings on external power supplies in late 2003 ranging through its adoption vote in late 2004.

John mentioned before the travels to

China. Well, that was a part of a broader effort whereby governments did outreach to their electronic product and power supply manufacturers, and the people who make components for them, who, after all, have to have the manufacturing capacity ready so that people can order from them.

Those meetings occurred in U.S. Europe, China and Australia throughout '03, '04 and '05. All of them had the same test procedure, an 800 point dataset, and a common proposal for marking protocols.

As Commissioner Pfannenstiel mentioned before, when the Commission did vote in December of '04 to adopt standards, it granted a six-month extension to external power supplies relative to the other products at manufacturers' requests, which caused those standards to take effect on July of '06 instead of on January of '06.

And thereafter similar standards were adopted legislatively in a lengthy public hearing process in 2005 by the Legislatures of Arizona, Massachusetts, New York, Oregon, Rhode Island and Washington, with subsequent signature by governors.

So, I think that to say that this

standard was in the public eye, or that reasonable people might be aware of it is an understatement.

The immediate coverage after the December 2004 CEC decision was, to say the least, extensive. I've listed here Associated Press, Greenwire, and AFX Asia wire stories that all posted before the end of 2004; trade publication articles and Appliance Magazine, the trade association for the power supply manufacturers; and various other trade publications that are read by their suppliers and buyers in early 2005.

There were stories about the subject in The Wall Street Journal, USA Today, San Jose Mercury News and various regional papers. CBS covered it on a television story. Consumer Reports devoted an entire article to the subject called "AC Power Supplies, Keeping Them from Zapping Your Wallet and the Environment."

The Power Sources Manufacturers Association that represents the people who make the products posted in October of 2004 a position document that said there should be one set of efficiency standards applicable globally and they fully support the efficiency initiatives now in progress.

So this was a letter that they posted two months before the CEC's adoption date, and more than 15 months ago. And their participant manufacturers are the ones that have to do the heavy lifting to meet the standard. They have to do the certification; they have to buy the efficient components; they have to do the redesign. The affected manufacturers have to buy the products from them, and incorporate them with their devices.

So, I think if you compare that then to what else was happening in industry at the same time, this is a snapshot from Power Integrations website, where you can go and look at anytime and see which proposed mandatory standards or voluntary levels are out there for power supply efficiency, when they take effect and what you need to do to comply.

And we just sorted it for mandatory standards in California, but you could sort for voluntary programs, as well.

And then finally, as many of you know, the California Energy Commission funds our ongoing research into power supply efficiency, and so this website, efficientpowersupplies.org, has been posted for some time now.

We recently added the following section. It's called a power supply efficiency standards form. And it's a simple database of a few items. Here's the name of the poster, their title, what company they work with, their phone number, their email, their website. And then a short comment.

And they can simply say either I need qualifying power supplies in the following voltages, currents and wattages, and I need them for these products by this date. Or people can post and say I'm a component manufacturer; I have efficient components; do you want to buy them. Or I have efficient power supplies that already meet this; contact me if you need more information.

And I hope that this forum and others can help the market work better, and connect buyers and sellers with needed information.

So, those are the primary things I wanted to share. I'll just leave you with one other set of measured data.

John Wilson was reporting earlier that lots of manufacturers contact him saying they have available products that are efficient and compliant.

This is some data from a manufacturer that wanted to remain nameless for this hearing, but they furnished 45 sample products ranging from 2 watts to 180 watts output, from 5 volts to 24 volts DC output. They're all switch mode products. Of the 45 models they furnished for testing, only three did not pass the more stringent standard from California that doesn't take effect until 2008. And these measurements were all made in May of 2004.

So here you're seeing products substantially below the no-load requirements and products substantially above the mandatory active mode requirements.

So, I think the standards are engaging a market that is paying attention and that the most innovative manufacturers have responded the fastest with the most cost effective products.

And with that, I'll hold until there are additional comments.

MR. WILSON: Chris, that says 2004 on the top right; is that right?

MR. CALWELL: Yeah, that was the date on which the measurements were taken. So this was a manufacturer who was watching the standards debate unfold in California and wanted to see how many of its products at the time already met the standards.

And so they sent a variety of their products for testing and found that 42 of the 45 that they had were already compliant in May of 2004.

MR. TUTT: And, Chris, that was compliant with the 2008 standards. Were the other three compliant with the 2006 standards?

MR. CALWELL: I don't know the answer to that, I'm sorry, Tim. I could look.

MR. WILSON: And these are all power factor corrected?

MR. CALWELL: No. As you can imagine, power factor correction is not normally required for devices below 75 watts in Europe or 50 watts in Japan. So, the sample data you see here, most of them are below 75 watts with the exception of this last product here.

PRESIDING MEMBER PFANNENSTIEL: I think we should ask whether people have a few questions for Chris. We're not going to belabor this a whole lot longer, but I do think that since he's presented some real useful information we can offer a chance for some questions.

MR. DiGIROLAMO: Well, I must not be a reasonable person because I never heard of the CEC until December of 2004. I guess the companies who were lucky enough to be at the CEC show or be reading The Wall Street Journal on those specific days, they know about it and they were lucky, because they got the in.

I, myself, I guess I missed those articles. I was never notified by my government official or by the CEC. And there's only, what, a dozen manufacturers of external power supplies, maybe three in the United States. So I'd like to know why I wasn't notified. So I know you had all those nice articles and everything, but I don't think the -- I think if you would do a survey of the manufacturers, the OEMs that buy the product from me, like I said, it's hard for me to take the responsibility of telling my customers, you know, the product you buy from me is no longer going to be able to buy and use in California, go find somebody who makes it.

And my customers don't seem to know. If you did maybe a survey and got a percentage of the manufacturers, California manufacturers, the engineers out there who's familiar, I'd be curious what percentage of them know about this. That's all I have to say.

PRESIDING MEMBER PFANNENSTIEL: Thank you, sir. There's another question.

MR. CALWELL: While the speaker's coming up I can just say I know the Power Sources Manufacturers Association does a good job of communicating government developments to its members, and so they certainly encourage all U.S. manufacturers to join in order to be part of that dialogue. And they have a standing efficiency committee that interacts with this group on this subject.

MR. JOHNSON: My name is Joe Johnson. I am Director of Product Stewardship for Cisco Systems. And first off, I'd like to thank the Commission for the opportunity to provide the comments at this workshop today; it's very much appreciated. And also say that we do support the Commission's activities to promote greater energy efficiency in products.

I appreciate the information that was presented here on timeframe. I'd like to draw a parallel to another regulation that most of us in the room are very much affected by, and that would be the ROHS Directive in Europe, which is actually referenced in the California regulations SB-2050.

If we look at the timeline on that regulation, the initial discussions began probably in the late, maybe even mid '90s, and the regulation was promulgated in early 2002. The regulation comes into effect in July of 2006, so there was greater than a four-year period to allow industry to adopt.

And even with that, I have to say there's some bumps in the road, but when you look at regulating a global industry, it does take a significant amount of time for these regulations to be integrated both into the design and into the supply chain.

And I'd also like to make a point on the availability of compliant power supplies. I believe that there are such power supplies available for many products, but not all.

And if you will look at say, for example, Cisco's products, which are a critical part of the infrastructure networking equipment, we have a number of products that we don't have drop-in replacements. And for those products that requires a lead time of design and qualification of the product, of the power supply, itself, which then has to be qualified with the equipment that it is intended to be used.

So I'd like to stress that point that you may not be able to look specifically just at the power supply, but need to evaluate that power supply along with the equipment which will be used, and in some cases would have to be submitted to external approval for the unit -- excuse me, for the system, as opposed at the unit level.

And because of the number, we have a certain number of products we don't have drop-in replacements, and for that reason in the letter I submitted before the workshop, we were asking for a delay of at least 12 months to help industry efficiently adopt to this regulation.

Right now we would have to do significant stockpiling which we think ultimately does not come into accordance with the intent of this regulation, to ultimately reduce the power, the net power consumption. If we have to stockpile that could promote the use of certain noncompliant devices.

I'd just like to make one other point

which is again looking at other regulations, the EUP directive in Europe does intend to regulate energy consumption, the title is energy using products directive.

And that does allow for a de minimis level of product placed on the market. So in other words if there's less than 200,000 units a year the EUP directive does not propose to regulate those products.

So there may be merit in evaluating such a provision in this regulation, as well. And thank you again for the opportunity to provide these comments.

PRESIDING MEMBER PFANNENSTIEL: Thank you for your comments. Yes, one last perhaps question on this.

MR. FERNSTROM: Can I ask just a quick question?

PRESIDING MEMBER PFANNENSTIEL: Sure.

MR. FERNSTROM: Pardon my ignorance, but does Cisco make a substantial number of products throughout their line that use external power supplies?

MR. JOHNSON: There certainly are external power supplies used on a number of products, yes.

MR. FERNSTROM: What fraction of Cisco's production do you think that might represent?

MR. JOHNSON: I really would have to get back to you on a specific question like that. We make thousands of products, and we have looked at this issue in terms of its impacts across our product line. There are some products which we would be able to comply and others not. And that's why we ask for a deferment.

MR. FERNSTROM: Would you characterize it as a large or small portion of the product line?

MR. JOHNSON: I would say it's significant product to many of our customers, so the volume question is one that I'd have to get back to you if you are looking for a specific answer. But I'd be glad to do that if you leave me some information.

MR. FERNSTROM: Would you please. Thank you.

MR. WILSON: Excuse me, Jackie, I have a question for Joe before he sits down. I had a conversation last week with a major manufacturer of electronic products and they were talking to me about the power factor correction issue.

And in the course of the conversation they said well they hoped that we didn't delay the standards because they had been working on complying with the standards and had incurred costs, and now they, if the standards were delayed it would have an inequitable effect on them because they would have higher costs than their competitors. What do you think about that?

MR. JOHNSON: Well, I appreciate that that could be the case for a limited number of companies. I would also look on the other side of that issue, and I think that as it is the likelihood that products will be compliant by the date across all products that would be covered, there's -- I think there's no doubt there's going to be a significant number of noncompliant situations out there.

And then by deferring the date I think you'd allow a greater opportunity for industry to be compliant on a broader basis. And that may actually lead to less inequity than the one that you're outlining. Because I think when there's a consistent adoption then you haven't created discrepancies in the market for companies that comply or not.

And the example I'm thinking of is if there's a -- I'm not sure to what extent enforcement has been planned for this, but if you have companies that, for example, don't comply and continue to put products on the market, which I think is likely, given what I have seen. Then you've created a disadvantage back in the other direction for the companies that have already invested.

So, I think in general a deferment would lead to a greater -- a lesser inequity in that regard.

PRESIDING MEMBER PFANNENSTIEL: Thanks. There was another question for Chris? Noah? Go ahead.

MR. HOROWITZ: Very quickly, I'm sensitive to time. Noah Horowitz with NRDC. The previous speaker made an analogy to the ROHS regs in Europe. Those regs call for, for example, either a zero lead or basically lead-free solder and other huge changes that do require a lot of time. Here we're talking about a drop in substitution outside the product, so in terms of the need for three-plus years change I don't think that's a fair analogy. That's my point of view.

(Laughter.)

MR. HOROWITZ: Secondly I think we should acknowledge or recognize the speaker from Cisco did mention that many of their products with external power supplies are already able to meet this, which paints a different picture than the speaker from Radio Shack where only four out of 200 met it. So maybe there could be some information exchange.

And to keep the dialogue going it would be good to know what are the products that aren't meeting that, and it could be that collectively there are opportunities you might not be aware of. So instead of keep saying we can't meet it, we can't meet it, oh, if we had a little more time, oh, we could meet it, let's find out is there a technological barrier or is it just time.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. LOVE: I'd like to speak on the topic of volume of units because I think it's --

PRESIDING MEMBER PFANNENSTIEL: Next.

MR. MARKWALTER: Thank you, Noah. Well, Noah, I think you missed the point.

PRESIDING MEMBER PFANNENSTIEL: Excuse me, sir, identify yourself again for the record.

MR. MARKWALTER: I'm sorry, Brian Markwalter with CEA. One of our main points is these need to be form fit and function compatible with what they're replacing. It is not simply a black box with AC power on one side and DC on the other that we're dropping in. That's where many of the problems are, so that needs to be factored in.

This is a really large supply chain and these regulations affect a huge variety of products. And that's why we think that it needs more careful analysis of the different categories that are affected.

Now Radio Shack happens to sell a certain segment and a lot of individual products with low-power power supplies; and some with particular needs like an antenna amplifier that needs to be particularly low noise. It might not be addressable by a switcher, and that's why their situation is unique.

Cisco has a huge product line, Gary, I'm not sure if you're aware, they own Linksys (phonetic), I believe, right? So they have everything from high-end commercial equipment to stuff on retail shelves at Best Buy and other stores.

So the other issue, I think, John, and maybe you can help best with this, I get this feeling that the Commission has received input from one part of the supply chain. But part of the message is that what matters is when it makes it all the way to the retail at the end of the supply chain.

So, we're sure there are power supplies that meet the EPS standards, if you just look at the efficiency. We're certainly not convinced that 50 cents adder that was the basis for the proof of its economic viability is appropriate for all supplies and all products. We don't believe that's true.

That may be generally true for some certain class of power supplies, but it certainly doesn't appear to apply to all products.

MR. WILSON: Brian, I guess I'd like to see some examples of the complexity of, you know, why you can't just -- why it's not a drop-in solution.

MR. MARKWALTER: Okay, well, I think

we've got one. In fact, if Jim ever gets to do his you'll see it.

But the medical guys is another example. I mean I don't represent their industry, but I can appreciate what they face.

We have compliance issues, and you know, you're asking us to do a whole product line change. And if you go from a linear to a switcher power supply, you now have to go into your product material and change. You go from a whole new category of FCC compliance when you go from a linear to a switcher.

Switchers are directly called out by FCC part 15 rules. You got to do verification; you got to put notice in your manual. Every part of the product line is affected. It's not like they simply say, can you change what's inside that black box for me. And it's even worse for the companies that have other compliance issues that they have to factor into their product cycle.

MR. WILSON: Well, we will get to Jim.

MR. MARKWALTER: Okay.

MR. WILSON: Guarantee, but --

(Laughter.)

MR. WILSON: -- and you don't have to

respond to this, but I just want to say I do want to have some specific understanding of what you mean by that. And then I want to sit down with a power supply manufacturer and say, you know, can you do this. I mean this is sort of the brokering I've been trying to do here, answering these questions.

Give me a specific device --

MR. MARKWALTER: I understand, --

MR. WILSON: -- with a --

MR. MARKWALTER: I think what's been missing is the individual conversations and not the conversation maybe of you, power supply manufacturers, and the actual requirements from the buyers of the power supplies. That's where there's a clear disconnect to me.

Somebody giving you a few samples does not mean that it necessarily works in these applications. Or, more importantly, that the cost is actually drilled all the way through to the retail side.

But anyway, I think that it's going to take more conversation and it's going to have to look at specific product categories probably.

PRESIDING MEMBER PFANNENSTIEL: I think

Mr. Love had one last comment perhaps on the unit volumes.

MR. LOVE: Yeah, on the unit volumes I'd like to state that I believe there are approximately 50,000 different types of products manufactured in the United States which use external power adapters.

Of those 50,000 different types of products, 50 of those products are what we call commercial products. They're available from Best Buy, from, you know, Home Depot, from WalMart. And for that 1 percent of the product line all those products are meeting the EPA and the CEC requirements right now.

Each of those product lines would may be $100,000, $200,000 was invested. They got the products to comply and that's what you're auditing when you're going out and buying products from the field.

However, the Radio Shack products, these routers from Cisco, the Jerome medical power adapters, these aren't sold in the huge volumes that that 1 percent product is.

Now, that 1 percent of the designed products in the United States probably accommodates 90 percent of the power usage that you're trying to eliminate, the wasted power that you're trying to eliminate. So you really need to regulate that 1 percent core product.

The EUP products with the 200K per unit year requirement and less makes a lot of sense. There's a lot of economic justification for selecting a number of units per year cutoff level.

And I think the Commission needs to respect that with the industry, that there's small volume products with high costs of redesign that need to be looked at. Okay? Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you. John, should we move to cordless phones.

MR. WILSON: Cordless phones. Mr. Haynes.

MR. HAYNES: Good morning. First off, my name is Jim Haynes, but Commissioner Pfannenstiel, Commissioner Rosenfeld, Mr. Tutt, Mr. Wilson, thank you very much for allowing me to come in and speak with you today. However, and I never should do this, I guess, but while I was sitting here, at the last, we keep hearing these words, it should work, it should work.

And I've heard that almost until I'm

blue in the face; and I'm on record back in 2004, especially about my products, to say I'm tired of, it should work. I kind of feel like that lady, what's her name, Clara, whatever it was who made the Wendy's commercial, where's the beef. Well, where is it? Because I haven't seen it.

But, anyway, I'm going to go back to my prepared presentation. I'm going to try to talk about cordless, but I'm also reminded that I need to talk about consumer telephones, cordless and corded, and possibly telephone answering machines, because just as my wife informs me that I am very narrow minded, when I was here before I was focused in on cordless telephones because obviously that's one of my keen interests, because it does pay some bills around my place.

But, anyway, I am also cognizant of the fact that a lot of the corded telephones, especially those with features, telephone answering machines in the consumer marketplace, have the same concerns of a cordless telephone.

However, one thing that we have to remember is the fact that telephones that use external power supplies are on 24/7. Those are plugged in all the time.

And I want to recap a little bit about the presentation I made back in October. I know that you people have seen this before, but you know, these are some of our early cordless telephone models, and you'll notice that there's no power adapter on these. These all plugged directly into the commercial wall plug for electrical power.

Now, as you see, this is one of our later models. It does have an AC adapter, and now just about everything we make utilizes external power supplies.

The affected product applies, like I say, to any of the telephones with external power supplies, cordless telephones, primarily the base station, answering machines, DSO modems. The problem might apply to cable modems, although there's no historical experience to tell. Anyway, that slide pretty well says what it says because -- and then some of these devices in some applications used with IT products may, in fact, go into surge protector type strips, but that's something else.

In the early '80s Underwriters Laboratories started investigating telephones.

And we were involved in that back in that timeframe. And right now I can say all unit -- cordless telephones are listed for UL. That means we have to go through an investigation for UL compliance.

However, I want to point out UL, a lot of people say it's UL tested and that means everything's all hunky-dory with it. UL primarily investigates a product whether or not it's going to create a fire hazard, or an electrical shock. If it doesn't work that's not a problem with UL.

(Laughter.)

MR. HAYNES: In the late 1980s Uniden began experiencing a tremendous high rate of returns compared to normal. And we analyzed this problem to be excessive voltage that was damaging the telephone network circuitry.

And we found that these returns were more prevalent, especially in areas that were prone to electrical storms and what-have-you.

I've made a little bit of a slide here and you'll see there -- by the way, these are in the telephone interface circuit -- and you'll see there right behind the telephone plug, a component that's blown up. Here you'll find a capacitor that's blown up.

Next one. Here you'll see where the trace on the circuit board is just vaporized. Here a component's blown apart. There's another trace that's blown up. These are just some of our typical photos showing this surge voltage problem.

In an engineering analysis the service return was diagnosed as being caused by the tremendous high differential voltage between the commercial electrical connection as well as the public switch telephone network.

And let me also say to the nontechnical people, a telephone connects both to the AC power as well as metallically to the telephone circuit. And it's the differences between these two points that's causing the problem.

The external power supply was found to allow too much voltage to go through it, and that's why this differential was able to reach the telephone interface circuits.

Let me also point out, too, that the telephones, themselves, appeared normal. They may even be brand new phones as far as from an appearance standpoint. But, they were inoperable. You could not receive calls. When you tried to place a call, you could not get a dial tone.

Of course, we were interested in finding the cause of this problem and how to fix it. And we found that the external power supply blocking voltage criteria, which is established by UL to prevent fire and shock hazard, was certainly not enough to protect it up to the surge voltages to keep the voltage -- from coming out, or from getting into the telephone circuit.

And we found that we needed to improve that protection to block voltages up to about 10,000 volts. The results of that improved external power supply, which Uniden merged to for all our cordless telephones, and the slide says it all. Especially down at the bottom.

Those returns that we could trace as being problems into the surge, those returns dropped by 90 percent. So essentially, I would say we fixed the problem.

Let me talk a little bit about EnergyStar. We're very concerned about energy and the conservation. And we were one of the first, if not the first, EnergyStar partner for telephony. And today if you go to the EnergyStar listing for telephony you will find that Uniden is well represented. I think that we probably have at least a third of the products that are on there are Uniden-made.

However, when EnergyStar announced that they were going to the version two of the telephone specifications, I wrote letters back in 2004 that we had not been able to find power supplies that were achievable in maintaining the excessive surge voltage and that would still meet the requirements for EnergyStar.

And I'm on record with a letter, and I've stated in that letter that we were not going to sacrifice the product durability or integrity, and that Uniden will have no recourse except to reduce our involvement in the EnergyStar program accordingly.

When the CEC requirements came out. We looked at them. They were essentially the same with the EnergyStar version two requirement. As far as the maximum energy consumption and the minimum efficiency.

Of course, the big difference is EnergyStar is a voluntary program; the California Energy requirement is mandatory.

Last June I requested and received a

listing from EnergyStar of all of the EPS partners that made power supplies. This is where I, you know, been getting the comments that, it should work.

And I sent letters to all of the EPS partners requesting samples and pricing information. And when I was here last October, at that time I had only received two samples. However, when they were tested in our facility for our surge voltage blocking specification, both of them failed.

It wasn't until after the battery charger workshop in San Francisco I was able to have some conversations. We did, in fact, get a sample. And as of now we have received one satisfactory sample, and we got it in December of 2005. And it does, in fact, meet the blocking voltage specification that's in our criteria.

Well, you can't judge, you know, your future of the company on one sample. So we asked for 20 more. Possibly that one sample was a hand-made unit, I don't know. But we requested 20 more as well as some pricing information.

As I'm standing right here today, the end of -- or January of 2006, we don't have the 20 samples, and I don't have a price.

What are we going to have to do? We need samples that we can evaluate that will pass. When you say that they're a drop-in replacement, huh-uh, I can't go with that. Not when you're talking about radio circuitry.

The telephones may be need to be redesigned in order to incorporate new switch mode EPS technology. New cordless telephones that use and approve external power supply, you also have to investigate for your regulatory approval, such as FCC and IC and you're talking about verification.

Let me go a little bit further on this. On a cordless telephone when you put a verified product up with a certified telephone, the entire device must meet the certification requirements, which are a lot more stringent than just verification.

The power supply, by itself, may have to meet verification. But when it's put together with the phone, the entire package must be investigated under certification.

And we also have to do almost the same thing for UL for safety compliance. It has to be investigated; you have to have samples; there has to be testing that goes through to make sure that that product is going to hold up and withstand the rigors of those testing.

And you have to do that before you can put the UL seal on your product. Now, I'm talking about the cordless telephone. I've been told that the EPS units, they are all tested for UL. That's fine. But they have to be tested with our cordless telephone, and they've become a recognized product then, a component of our cordless telephone. And that must meet UL listing, as well.

Next slide. To me it's apparent that a suitable external power supply that meets the required CEC specification and unit and surge voltage specification is not readily available. No pricing information has been received to date. No reasonable assurance or expectation of meeting the shipping requirements as been received by Uniden.

Cordless telephones amount to about a 13, 10 to 13 million unit per year for North America. And we don't even know if they can produce them.

In conclusion, the fact that it's not foreseeable that cordless telephones and other similar telephone manufacturers will have a product to sell in California by the July 1, 2006 effective date, and because a suitable device is not available and possibly doesn't exist, there needs to be an exemption at least until July 1, 2008 for telephones that will meet the CEC requirements.

Thank you very much.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Mr. Haynes. Questions?

MR. WILSON: Well, Jim -- oh, Tim Cassidy.

MR. CASSIDY: With respect to cordless phones I'm curious if those are considered battery chargers or external adapters, because I believe they are charging a battery, and then that leads me to wonder if the CEC is having different rulemaking regarding battery chargers as EnergyStar EPA is doing?

MR. WILSON: Battery chargers is next. Right now we're talking about them as power supplies.

MR. CASSIDY: Okay, I was just curious

if that's considered a battery charger or not.

MR. WILSON: Right now we're talking about it as just a power supply. Gary, hold on.

Now, Jim, you and I have had a few conversations. And I've described to you some power supplies that meet the surge requirements. You know, I have a power supply here from Panasonic for a cordless phone. And it's UL certified. Here's the website. And it meets the EnergyStar spec, it's on the EnergyStar list.

MR. HAYNES: You glossed over the fact that it meets the cordless telephone requirement. Does it, in fact, meet the surge requirements?

MR. WILSON: It's --

MR. HAYNES: That's what we don't know.

MR. WILSON: -- UL safety certified, --

MR. HAYNES: That's not the problem. The problem is the UL problem -- I mean the UL listing is good, it's needed. But the problem is we can put all sorts of stickers on it that say it meets this spec and that spec, but will it meet the surge requirements of a 10- to 12,000 volt breakdown and --

MR. WILSON: Well, apparently it meets Panasonic's requirements.

MR. HAYNES: Well, apparently, and like I said, I'll go back to Ms. Clara at the Wendy's commercial. You have it, I don't have it. I'm prepared to buy millions of these things, and I can't get one.

MR. WILSON: Okay. We also talked about another power supply by Sino American.

MR. HAYNES: Right.

MR. WILSON: And I do have a test report for it.

MR. HAYNES: Okay.

MR. WILSON: It says that they meet 12 kV surge. They were on your list, I think.

MR. HAYNES: Yes, and I have not seen the unit. I would like to see the sample and test it. Because, again, you're talking about the things you get in the mail, if I got in the mail -- I mean if I believed everything I got in the mail, well, you can imagine, you know, all this get out of debt free, and all that sort of stuff you get.

But I want to see it; I want to put it in my hands and I want to put it in the engineer and have it analyzed and see it work.

MR. WILSON: Okay. When we talked last

week I gave you the product number for this Sino, and also --

MR. HAYNES: Right.

MR. WILSON: -- the product number for this Panasonic, --

MR. HAYNES: Right.

MR. WILSON: -- which comes from another company. Have you tried to contact them?

MR. HAYNES: I have sent the information that you sent to me over to our people to see if, in fact, they can research those units. I believe that I'm still waiting on the specifications that were supposed to be faxed from the Sino unit. I don't have that.

MR. WILSON: Oh, I'm sorry, I said I was going to fax it to you and I didn't get around to it on Friday.

MR. HAYNES: Okay.

MR. WILSON: I guess I just continue to be amazed that I can get power supplies and you can't.

MR. HAYNES: That's -- I wish I knew. I'm serious, I really wish we knew. I don't have one. And we're in, you know, we're in the final stretch here of this thing and we don't have one.

And I'm just worried about, you know, I just put the term, but I mean there's going to be empty shelves.

PRESIDING MEMBER PFANNENSTIEL: Just seems like Panasonic needs, I mean that there's a market here that manufacturers are not seeing? I'm fairly -- it's pretty hard to believe.

MR. HAYNES: Are those power supplies -- are those power supplies used in cordless telephones today?

MR. WILSON: I believe so. What I want to do to really satisfy myself is go to Walmart and buy a Panasonic phone with this in it. I don't know if I can do that. I haven't done that experiment yet.

MR. HAYNES: But it would also have to meet the surge requirements of the Uniden.

MR. WILSON: Okay. Now, I've talked to the company that gave you the unit that met your test, and I guess they would speak for themselves, but what they told me is that they're going to give you a quote, but they have to get through the patent process before they can give you a quote. If they were to give you a quote now it would somehow mess up their IP.

MR. HAYNES: That'd be great. And samples. And some assurances we can get them. And some, you know, those are the things that we need. As of today, standing right here, I don't have it, though, and that's my problem.

And that's the problem of the telephone industry as I see it.

MR. WILSON: Can I get a finder's fee for providing these to you, or --

(Laughter.)

MR. HAYNES: What?

MR. WILSON: Can I get a finder's fee for providing this to you?

MR. HAYNES: We'll talk about that.

(Laughter.)

MR. MARKWALTER: This is Brian again, with CEA. I think red flags should go up if you're hearing a supplier say they need to get through any kind of intellectual property process before they make a quote to a buyer. I've never heard that before in my life, so something's not right.

Either they have some magic that's not in volume yet, and this is part of our complaint. This stuff's got to be in volume. You're asking us to fill all the shelves in California with these products.

And back to the other point of the supplies. I'm not sure, maybe a little bit talking past each other, the surge has to be what I think most people call a common mode voltage on the mains. There's a differential between the telephone side and the AC side.

So even if they may tell you they meet a 10 kV breakdown voltage, that may be on the AC line, itself, but that's not the protection that Jim's trying to achieve for his product.

MR. WILSON: And why not? I don't understand that.

MR. MARKWALTER: How about -- okay, so, you can take a power supply by itself and put a resistor on the output and put a differential voltage, a cross line and neutral ont he supply. And that's one kind of breakdown. And that's mostly what these supplies are going to be spec'd for.

In the application of a telephone network there's also a potential difference between the telephone wire and a common voltage on the AC wire. And that's across the whole product.

And something has to absorb that differential.

And what Jim is saying is they learned that in the '80s it was their product that took that differential and looped parts out. They learned to spec a higher quality power supply, external power supply that would withstand that breakdown voltage, but it's not the typical breakdown voltage that you expect for a stand-alone unit. And this goes to the point of whether they meet all the requirements or just the efficiency ones.

MR. WILSON: Gary.

MR. FERNSTROM: John, I have a background in both electronic engineering and industrial engineering. And I don't want to, for a moment, discount the difficulty of manufacturing these products and getting things to match and so on.

But I have a question for Uniden about who is on first. And the way I understand it, these surges that come over the power line are, in fact, very short, high voltage transients. And they can be eliminated in the power supply, or since Uniden said they damage the telephone network, they could be eliminated at the output of the power supply.

So being an electronist hobbyist, when I find a surge problem it's no big deal. I go to my parts store; I get a choke, a capacitor, or a metal oxide verister and I stick it into the circuit and fix it.

In fact, I even have some little outlet connectors, the kind you find on the back of certain kinds of electronic equipment like computers where you plug the electrical cord into the appliance, as well as into the wall. And these little outlet connectors have built-in chokes, capacitors and MOVs to limit surges.

So it would seem to me that Uniden could equally well address this problem in the telephone. They just chose to make it a requirement for their power supply manufacturer.

That being the case, who's on first? Is Uniden responsible for this, or can they just, -- I guess they can, as a manufacturer buying equipment, just tell their power supply manufacturers they have the expectation that their power supplies are going to withstand a 10,000 volt surge.

MR. WILSON: Jackie, I think in the

interest of time, we'll let Jim respond to that, but I think we need to move on to battery chargers here as quickly as possible.

PRESIDING MEMBER PFANNENSTIEL: I think so, too. So, Jim, why don't you respond and then we will start with the next speakers.

MR. HAYNES: Okay, thank you. As far as fixing it in the unit, like in the telephone circuit, there's another part in telephony called FCC part 68, and the telephone interface circuit has to be designed to those standards. And putting that type of circuitry in there most likely, in fact I can't say that it -- what it did, but it also has to meet the part 68 compliance circuitry for the telephone. (inaudible) on-hook and off-hook impedances and what-have-you for the telephone to work. So, that's not practical to put it there.

Also, when you're seeing it at the output of the power supply that's exactly what we're trying to do is keep that voltage away from our phone. In the slide that I had up there with the AC power going into the telephone, itself, one of the problems is to keep that out of the phone, keep it completely out.

ASSOCIATE MEMBER ROSENFELD: Look, I have a suggestion. I think this is an interesting discussion. I thank Jim and Brian and Gary and if we ever get to lunchtime, which we may not, could we get together during the lunch break and follow this a little bit.

PRESIDING MEMBER PFANNENSTIEL: Thanks, Art, you can facilitate that discussion.

All right, John, who will speak then first on the question of battery chargers?

MR. WILSON: I think we'll start with Wayne Morris. We also have Michael Fliss, Larry Albert and Rick Habben, if I have that correct.

MR. KLINE: We still have some remaining issues about the external power supplies, specifically 230 volt testing, exempting products, and timelines.

PRESIDING MEMBER PFANNENSTIEL: May I suggest first of all the 230 volt testing is later in the questions, and we're trying to go through in that order. Also, before we leave this whole general subject we will ask for people who have issues or recommendations or information for us that hasn't already come before us. We'll give you a chance to do that.

MR. MORRIS: Thank you, Commissioners. My name is Wayne Morris; I'm with the Association of Home Appliance Manufacturers, and we represent a large number of manufacturers who make the types of battery rechargeable appliances that are used throughout the homes.

And we appreciate your opportunity to speak to this situation; we want to have some discussion with you and dialogue on how this relates specifically to appliance type battery chargers.

We've never appeared before the Commission asking against or asking for complete relief from standards as they apply to regulations on appliance battery chargers. Our mission and what we've always tried to say to you is let's have the regulation that applies appropriately to the type of products that we manufacture. Let's have a test procedure that fairly applies to the type of products that we're looking at, and let's have regulations which apply to saving real energy for the consumers of California. And also saving energy on the grid, itself.

The current CEC external power supply standard has requirements for the efficiency of charging whereas appliance battery chargers spend a very little portion of their time in the actual charging mode. According to data that has been made public at EnergyStar workshops, probably in the neighborhood of 17 percent of their time spent in actual active mode charging. Whereas the bulk of the time is spent in other modes.

The CEC regulation has requirements on the standby power limits. But appliance battery chargers, many of them spend very little, if any time at all, in a standby type of mode.

External power supplies, some appliance battery chargers spend 61 percent of their time in maintenance mode. Currently the CEC EPS test procedure does not currently measure this. However the proposed ECOS test procedure does address the situation and we believe we're moving in the right direction with that type of situation.

The current external power supply standard does not properly measure and act on a number of types of products. It's probably not appropriate to measure certain type of inductively charged products where they're charging through plastic for very important safety recommendations, safety means. I know Commissioner Rosenfeld uses a cordless rechargeable battery operated toothbrush, and we certainly would want to, for sake of his health and his well being, maintain that separation of line voltage from the battery voltage so that he remains with us for a long period of time.

We also do not believe that the standard currently measures adequately the cord/cordless type of products, and makes the distinction of when we are measuring in the corded mode and when we are measuring in cordless mode.

As late as even a few days ago some of the suppliers that are trying to meet the CEC requirements have been communicating with the staff at the CEC to try and find out how to properly measure with the current EPS test procedure. There seemed to be some problems there, and we need to address those.

And we also don't believe it properly addresses some very low power type of products. I want to thank Chris for presenting the chart of those products that meet the CEC requirements. Unfortunately, the chart actually shows exactly what we're talking about. Many of the low power products, there are no chargers.

And I noticed that none of those type of products that were on that chart are below 5 watts, which is a critical issue. Many of the hundreds of thousands of products that are made for consumers here in the State of California that are appliance battery chargers are, indeed, below 5 watts.

And switch mode power supplies, other types of computer power supplies, very difficult to obtain, if any, in those lower power type of consumptions.

So, what does it really do? We believe that the EPS current standard really would not save sufficient energy, and will cost the consumers far beyond any savings. For a 3 to 5 watt appliance battery charger the savings on an EPS standard compliant product would probably be in the neighborhood of a little over a quarter of a kilowatt hour per year.

And even at 20 cents a kilowatt hour, or you can even go higher than that, 30 cents a kilowatt hour, the savings to consumers is less than 10 cents a year.

So, in five to seven years, which is the active life of these products, we're talking about 35 to maybe as much as 50 cents of savings that a consumer will realize, which the cost increases for these type of products are significantly above this.

And we are talking about now low volume, in many cases for some manufacturers, but even in the higher volume situations, the cost increases are at least $1, in some cases more than $2. And we have manufacturers here that have been in communication with their power supply manufacturers. Where they can obtain them, and for certain models they can't even obtain them, that, in fact, are looking at cost increases well beyond this. So the payback analysis here just simply is not available for the consumers.

We stood up here, I stood before you a little over a year ago and we made a promise to the CEC that we would work with the EPA EnergyStar program to develop a test procedure for appliance type battery chargers, and we did that.

We agreed that we would work with EPA EnergyStar on specification for appliance battery chargers, and we did that. We now are requesting the time necessary to give us the ability to resolve this issue on appliance battery chargers; give us time to work with the CEC on an appropriate appliance battery charger standard level.

We understand the need for standards. We get it. We're not saying don't regulate us. We're simply saying let's do the regulation that makes the most sense and saves the most energy for the consumer.

We believe that by adopting a standard within one year we're confident we can save more energy in a reasonable amount of time than would be lost by any delay.

We also believe that there are some unique type products, products with virtually no standby power, products with no or very low maintenance, products with multiport, multilevel types of situations. These are not insurmountable. We've worked on some of these with EPA EnergyStar; we believe we can sit down and work with your staff on doing these exactly.

We don't believe that these type of replacement products are off the shelf. Safety issues, Jim certainly mentioned some them with regard to the performance issue, but safety issues to us are paramount in the situation. And in many of these low voltage type of applications there are not products that really meet these with a simple, quote, drop-in replacement.

Some of the products require medical listing which can take more than a year to go through the requirements of FDA. Some of the designs are integral to the product; these designs have to be completely redesigned within the product, itself. A battery charger is not the same as an external power supply. We've talked about that before, and I know you're acquainted with that.

Costs are very very volume dependent and rise substantially with smaller manufacturers which puts them at risk. You know, it's one thing to say that when you buy millions that you can get a cost of X or Y, but, you know, are we trying to say that small manufacturers don't have a place in the market in California? I hope not. I hope we're making the market fair to everyone.

There is data available. The data is now available. It's in the public record on the measurements that have been made on many of the different types of battery chargers at these very low types of voltage, and especially in the low wattage kind of situations.

You asked us for certain products in today's standard. We believe that it restricts the products for which there are no compliant battery chargers. It requires severe cost penalties on many of the manufacturers, and may cause, in fact, severe disruptions in the marketplace to meet these standards.

You specifically asked, are specific standard requirements for specific consumer products not feasible. We do believe that they're not feasible to be met in certain cases. Standards for external power supplies are built around constant voltage -- supplies that are -- spend a considerable amount of time in a standby mode, this does not apply to appliance battery chargers, where the issue is maintenance mode and not standby mode.

Several types of appliance battery chargers do not have feasible alternatives to meet the EPS requirements. They do not exist for the low power products under 2.4 volts, under 3 watts, many of these. And for inductive charge devices. In addition to the test procedures, does not adequate test cord and cordless type products that are very common with electric razor, for instance.

Should the battery chargers, those covered by EnergyStar specification be exempted for external power supplies and new efficiency standard for battery chargers? Yes. We believe that the appliance battery chargers should be exempt from an EPS standard, and instead should have a meaningful and correct appliance battery charger standard developed for them.

Should the Energy Commission create new efficiency standard for products covered by EnergyStar? Yes. We have data on this. I believe we can speed the process considerably by the work that we've accomplished over the last year. Many of the issues have been addressed, and we can address the other ones that need to be.

You ask should the Energy Commission create a new efficiency standard for all battery chargers. We're not going to speak to that because we simply don't know about all the other types. Golf cart battery chargers, or defibrillator. We can't speak to that situation.

But for our type of products, yes,

absolutely we believe that there should be an efficiency test procedure and standard that takes into account the type of differences within the product.

I'm sure many of you have consumer products at home, and you use them in a wide variety of ranges. Some are left in charging for fairly long periods of time; others you probably don't. We need to address this situation.

If the CEC will dedicate the staff resources we believe we can have a meaningful appliance battery charger procedure in place by the end of 2006 and we can be ready to implement by 1/1/08.

The situation is urgent and we ask you to give an answer to our manufacturers within ten days if possible. I know that's really rushing, but we've got a very important date within us of 7/1/06 to try and meet and we do not want the supply interruptions with our retail partners.

We're asking to delay the appliance battery charger section of the EPS specification by as much as 12, perhaps as much as 18 months, whichever you decide, to give us the time to actually sit down and work on this situation.

That's all we're really asking for.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Mr. Morris. Questions? John.

MR. WILSON: Wayne, I also use an electric toothbrush but you didn't express the same concern about my --

PRESIDING MEMBER PFANNENSTIEL: Well, there's a reason for that, John.

MR. MORRIS: Sorry, John. I just didn't have the benefit of seeing you walking the halls of the CEC with it.

(Laughter.)

MR. WILSON: I don't have any questions.

MR. TUTT: I guess the only question I had, and maybe we'll address it, is did the cordless phones apply in the battery charger section or the external power supply section; do you have an opinion on that?

MR. MORRIS: Not our product. Couldn't even hazard an opinion on that one, thank you, Tim. I'll leave that to the experts from CEA to better speak to that situation.

PRESIDING MEMBER PFANNENSTIEL: Sir.

MR. SLACK: Doyle Slack with iWatt. I

just would like to understand a little more clearly what maintenance mode for the charger is, versus the standby mode for a constant voltage adapter. I'm just trying to understand the differences.

MR. MORRIS: Good question. To us the standby mode would be when the battery is disconnected from the product, and so I could use an analogy here. If you use a cordless vacuum cleaner and you keep it charged as you want to have it fully charged to pick up the coffee grounds when you spill it, the time that you remove that appliance, or the vacuum cleaner from the charging stand and pick up those grains of coffee that you spilled, might be a minute or so. That's the no-load or standby mode as it applies to the appliance type of battery chargers.

In terms of maintenance mode, this would be the series of time that after the battery has been fully charged, after it has gone through its regulation and equalization, then the time period that it is maintaining that period of time, maintaining that charge for you to be able to use it, would be what we consider to be the maintenance mode.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Noah, did you have a question? Yes.

MR. HOROWITZ: Hi, Noah Horowitz with NRDC. And I do own a power supply, for the record.

I just want to respond to question six, should the CEC create a new spec for all battery chargers.

Wayne, I'm sympathetic and undecided on the various points you've made, and I think that's a special situation. But I want to make very clear the fact that we have a external power supply and somewhere upstream there's a battery, that doesn't mean we should gut the entire regulation.

So things like cellphones and laptops, which are some of the largest volume and big potential savers, we need to be very clear that that's very separate from what Wayne is talking about.

MR. MORRIS: Thank you, Noah. I'd just respond by saying that the EPA EnergyStar did have a definition which they use to separate out the appliance battery chargers, and it seemed to have worked fairly well.

I just can't comment on the other types of things with regard to that, I don't know. I can tell you, though, that we have gone through some supply type of issues that John and you raised.

We had a regulation within our industry on room air conditioners for a particular type of box that goes on the end of the cord that plugs into the power. And this was a requirement that certain manufacturers of these special boxes, called arc fault circuit interrupters, that came to Underwriters Laboratories and came to the National Electric Code and promoted the use of these as being great savings and safety.

And the manufacturers of room air conditioners said that's very interesting, but, you know, we have to be sure that they actually work with our product. They said, oh, there's absolutely no trouble whatsoever. We've tested them with all different kinds of devices. They should absolutely work with anything.

And the fact is that we now have manufacturers of room air conditioners with tremendous supply problems with getting increased numbers of these products coming back from the consumers.

We've got reports of the actual consumers cutting off the cord and wiring on a plug, themselves. We've got situation with the manufacturers with surge situations, where in Florida particularly where there are lightning situations, severely above where they are in many other parts of the United States. These devices are not only failing, they're failing in a very violent manner. In many cases involving destruction of that and destruction of property, as well.

So I am very sensitive to whenever somebody on the end of the cord says, it should work. I've been there, and all the shoulds in the world don't necessarily pass the test.

PRESIDING MEMBER PFANNENSTIEL: Thank you. John.

MR. WILSON: Wayne, remind us what the situation is with the EnergyStar battery recharger specification, how many products now are listed?

MR. MORRIS: I couldn't tell you; it's only -- the appliance battery charger specification has only been out there for less than a month. And I don't know how many appliance battery chargers are in compliance. But I would venture to say not very many. Andrew maybe could answer that certainly better than I could.

MR. WILSON: Yeah, I'm looking at the EPA website and I don't see a list of products. Maybe it's just not there yet.

MR. FANARA: (inaudible) --

PRESIDING MEMBER PFANNENSTIEL: Please, yeah, that would be helpful, thanks.

MR. FANARA: Good afternoon. Andrew Fanara with the USEPA, and one of the managers of the EnergyStar program.

In answer to your question, Wayne's right, the EnergyStar battery charger specification which addresses just a subset of products; it actually is quite new, just came out in January.

And given the voluntary nature of the program, manufacturers have whatever time they need to be able to comply.

We have had some express interest from a number of manufacturers, but no one that has signed up yet. And it probably is a lag in just getting it up on the website from the standpoint of it being there. Probably don't have any models yet, but we're expecting some.

So, thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. WILSON: Thanks a lot, Wayne, that was very --

MR. MORRIS: Thank you, John, if you do have specific questions about how this impacts individual manufacturers, we have a number of manufacturers here of appliance battery chargers. They can certainly speak to some of the individual impacts on their own company.

MR. WILSON: That's where I was going next here, because I have -- Larry Albert.

MR. ALBERT: Hi; my name is Larry Albert. I work for Black and Decker. I'm representing the Power Tool Institute.

Thank you very much to the Commissioners and staff for permitting us the opportunity to respond to your thinking on issues regarding external power supplies and battery chargers.

A couple of issues that I'd like to discuss. One is the relationship between the EPS regulation and some proposed discussion regarding battery charger regulations that may come out of -- that may be promulgated over the next few months.

One of the concerns that PTI members have is that there may be two regulations that may be enforced at the same time that may cover the same products. And that's of particular concern because we believe that essentially the EPS regulation and our anticipation of what a battery charger regulation may be, may in fact involve two different kinds of design options in terms of how we would meet each of those.

And the concern is you have a situation where to achieve one you may, in fact, make it more difficult to achieve the other one.

And so one of the big concerns is whatever the outcome it with respect to battery charger regulations versus EPS regulation, that there be, for every given product, every battery charger, one standard, one regulation that would apply so manufacturers are not forced to have to make a decision between optimizing one or the other.

I think one of the mis-impressions about this is that what is necessary -- what would be required to meet one regulation would necessarily make an anticipated battery charger regulation easier to meet, and that's not necessarily true. Particularly if the battery charger regulation focuses more on maintenance power and less on active power.

In that situation to achieve lower maintenance power, which PTI believes is the most significant contributor to unwell spent energy in a battery charger, you would involve intelligence in the battery charger that would require some energy overhead that might end up being added to the standby power that already exists in the EPS.

So this would cover essentially battery chargers that currently use EPSs.

The other issue with respect to that is that if a battery charger regulation were to be considered by the California Energy Commission, we would hope that that regulation would be one that would consider the comprehensive use of the energy of the battery charger in all modes of operation, in a way that reflects an approximation, anyway, of the use patterns of battery chargers.

Comments that Wayne just made about how battery chargers might be used for let's say vacuum cleaner or power tool or something like that, may, in fact, be different. We understand the difficulty that might arise in trying to have a battery charger standard that might apply for every single different class of product out there.

And so we recognize that, in fact, you need to have, or may need to have, a regulation that reflects a reasonable compromise between different kinds of use patterns between different kinds of products.

As you may be aware, the Power Tool Institute, along with AHAM, participated with CADMAS and EPA EnergyStar in what we believe was a productive manner to work towards achieving an EnergyStar specification for battery chargers for appliances in what was, I guess, might be considered a fairly short period of time.

We believe that that specification reflects a good balance between the interests of various categories of appliances and power tools in a way that strikes a balance in a use pattern.

That particular specification excludes active mode charging. And part of that was as a result of an analysis that was performed that seemed to indicate that that might not greatly affect the outcome of the ranking of these various products. And, in fact, might create more confusion with respect to how you would establish appropriate use cycles.

So consequently, we believe that the specification, while it does not include active mode charging, still is valid with respect to providing a ranking of products with respect to their actual energy consumption, as used.

And so we would support strongly the adoption of a California Energy Commission regulation modeled after the EPA EnergyStar specification, that would however have limits more appropriate for regulatory basis. That is, the EPA EnergyStar is based upon best of class. And typically will set a percentile limit at around 25 percent; acknowledge that that standard that EnergyStar sets is to demonstrate the most efficient products out there, available in the market.

And at a regulatory level, you know, one might consider a more permissive limit. But still structured along the same lines.

I think it also has a secondary benefit that manufacturers in pursuit of energy efficiency for battery chargers would be able to follow a single common approach to evaluating the energy efficiency. And as they work along this domain of having increasing energy efficiency, meet the regulatory requirement, in that a higher degree of complexity, or higher degree of effort be able to meet the EnergyStar best in class qualifications.

So with respect to this, what we're requiring of the CEC is that the EPS requirements, as they apply to battery chargers, be delayed -- for appliance battery chargers be delayed long enough for us to be able to work with the CEC and staff so that we may be able to put into place an effective battery charger regulation that would be done by January 1, 07, and therefore be effective January 1, 08.

That concludes my comments. Thanks, again.

PRESIDING MEMBER PFANNENSTIEL: Mr. Albert, thank you.

MR. ALBERT: Sure.

PRESIDING MEMBER PFANNENSTIEL: Have you submitted your comments in writing, or are you planning to do so?

MR. ALBERT: I will do so.

PRESIDING MEMBER PFANNENSTIEL: Thank

you.

MR. WILSON: Michael Fliss. Does Rick Habben also want to talk, or is this just one speaker for Wahl Clipper?

MR. FLISS: We'll both speak if it's okay.

MR. WILSON: Yeah.

MR. FLISS: I'm business; he's technical. I'm Mike Fliss; I'm with Wahl Clipper Corporation. And I'm requesting a delay in the standard also.

Wahl is an 86-year-old company; we're family-owned and family-operated out of Sterling, Illinois. We were founded in 1919, so we've been around the block a time or two. And we've always been pretty good at compliance.

We employ 655 employees in Sterling, and over 2000 people worldwide. You see us when you go to the barber, when you go to the beautician, if you're into home hair cutting, and hopefully you have one of our products to trim your beard.

In addition, we believe we're the world's largest manufacturer of surgical trimmers and disposable blade sets that are used in the health care field to help reduce infections at the would site or the surgical site.

Our company prides itself as being one of the last U.S. manufacturers of personal care products. And we sell our products in over 150 countries around the world.

Rick will get into this, but we manufacture a complete line of rechargeable and cord/cordless products. These products use less than 2 watts when charging in the maintenance mode condition.

And it was interesting to hear Mr. Jansen from Elpac saying that he doesn't know of anyone that can provide the type of power supply that we need for under 2 watts.

Our own numbers are in agreement with the Radio Shack individual, and we thought that our costs would go up anywhere from 2.50 to 3 to $5 per unit in order to add these to our product. Probably on the retail side we're looking anywhere from $5 to $10 to the California consumer.

As we look at the cost savings of our product, we're thinking it's somewhere around 22 cents, is what the California consumer will see in the savings of energy. From a business perspective that's a 22 to 45 year payback. So, we're hoping that you'll take a look at our product under 2 watts as you look at the actual regulation.

We're a small company. We estimate our re-engineering and approval costs will be in the range of $12,000 to $18,000 per product. That totals around $216,000 to $324,000 for our company. That's a significant amount of money.

We have some competitors here that may speak a little bit later on, but it would be a drop in the bucket for some of their international, the international corporations that we try to compete against.

As far as timing, I'd just throw out one other item. We kind of get caught into personal care side as well as the medical side, because of our surgical trimmer. It will take us over a year to source and test through this product to make sure that we are in compliance with the international medical device standard ISO-13485.

So, in summary, we're asking you to delay so that we can work with AHAM, our group, as well as with the California CEC so that we can come up with a regulation that makes sense for all of us.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: Mr. Wahl (sic), do you have any idea, since you're on the business side, how many of your products you might sell in California in a year?

MR. FLISS: We have 18 products that fall into this bucket. Nationwide we sell probably around 700,000 units, so you're about 11 percent of our goal, so we're talking about a significant number of products for us, for our company.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. FERNSTROM: Can I ask a question? I have a question about the economics. If I understand this right, we're proposing to go from 2 watts to 1 watt?

MR. FLISS: No, I'm asking the Commission to take a look at anything under 2 watts to see economically if it makes sense for us to go forward.

MR. FERNSTROM: Okay, well, let's suppose for a moment, then, that we're going from 2 watts to 1 watt. And someone earlier said that 60 percent of the time these products were in the maintenance mode, that would be 8760 watt hours a year times 60 percent, which to me seems like it's around 5 kilowatt hours.

And at 15 cents a kilowatt hour, that's 75 cents in actual consumer cost. It might be more than that if they're a business customer or in the highest tier.

So, it seems to me what we're measuring this against is not the 5 cents that's been represented, but somewhere between 75 cents and a buck.

MR. FLISS: I might let Rick respond to that, but we think a realistic condition for charging one of our products is that it's one 24-hour charge period about every three weeks.

And if you go through the math that's where we came up with 22 cents. The average consumer doesn't keep our products battery charger plugged into the wall socket. They basically stick it in the wall socket, charge it up and pull it out.

Normally the wife requires them to because they want to get clutter out of the bathroom, or they want to use a curling iron, or they want to use a hair dryer.

So, from our perspective we don't think that our units are going to be charged, you know, on the levels that you're talking about.

MR. WILSON: Rick -- I'm sorry, Michael. Are you going to participate in the EnergyStar program?

MR. FLISS: We are a participant through AHAM.

MR. WILSON: But your products will be eligible? The question I'm getting to is I think EPA also exempts real small battery chargers.

UNIDENTIFIED SPEAKER: Yes.

MR. WILSON: So from talking to Rick previously I think, in fact, you all are going to be exempted from the EnergyStar, even the EnergyStar program.

MR. HABBEN: That gets into a little bit of a tricky situation because of the way --

PRESIDING MEMBER PFANNENSTIEL: Sir, would you put your name on the record, please. Thank you.

MR. HABBEN: My name is Rick Habben from Wahl Clipper. It gets into a little bit of a tricky situation because of the way the EnergyStar battery charger standard is written. It's written with the wattage nameplate must be under 2 watts.

In the rechargeable appliances, we would be exempt because all of our rechargeable appliances are under 2 watts. In addition, the cordless ones were the product where you run the unit, you have the option of running the unit with the dead battery, or running it just with the battery.

Those power supplies or battery chargers have to be greater than the 2 watts in order to run the product. So in those particular product categories, the cordless ones, the way the standard's written we wouldn't be exempt.

And the battery chargers that we're using right now would not meet the -- not all of them would meet the EnergyStar requirements. So, I hope that answers your question.

Just to highlight a little bit what Mike was talking about on the cost versus the savings. I thought it was kind of ironic sitting here listening that you mentioned Ten Pau, and was the other one Sino American?

MR. WILSON: Yes.

MR. HABBEN: Those two just happen to be suppliers of ours, both of those. I've personally been in both of those plants. I've toured both of those facilities, and talked with the people.

We currently buy battery chargers from Sino American right now, the linear type. And I think, I'm going to be conservative here, but currently just top give you an example, as far as the cost difference, and since I gave you as ones being compliant, a linear supply for a rechargeable product, our type, our OEM cost, it would be under $1. From Sino American, the same unit that's a switch mode power supply that complied with the EPS spec, they said that they could not get it under $3. So we are talking a $2-plus cost increase.

Now when you bring that in, you have freight, you have duties, you know, that's all based on your cost. You have the markups at the retailers. I think we're pretty conservative at the $5 increase at the retailer minimum.

So, I think that, you know, people have been wanting numbers and looking at numbers, and that's one of your companies that you currently have on record.

We currently are buying a switch mode power supply from Ten Pau, and that switch mode power supply is above $5, the one that we're buying. So just to give you some reference costs there.

Mike explained a little bit the timing for medical products, and we do make a surgical trimmer. And with all the hoops that we had to jump through for the medical thing, if the EPS date for appliance battery exchanger is not extended for us so that we can make sure that the battery charger standard is correct, I don't see any way how we can comply with it.

You might say, since I have both of those suppliers, you know, that already make approved switch mode power supplies, why would it be a problem for me.

Well, if you look in both of their brochures for our trimmers and shavers, most of them are all one battery appliances. This is to meet price points and to the retailers. Most of our products have one battery in them. That's 1.2 volts DC.

If you look on the brochures nobody makes a switch mode power supply -- I haven't found one, under 3 volts. Maybe Chris, maybe you have found some under 3, but I have not found any under 3 volts.

And I'm not talking wattage, I'm talking voltage. I don't want to get those confused, because there are very low wattage ones, but the voltage is usually always above 3 volts. And there's a reason for that, it's much harder to make them below the 3 volt range.

And when we have to buy one that would be above 3 volts, now I start putting waste back into my product because now I got to put a resistor in there to cut down the voltage so I charge my battery are a proper level. So this is an issue for us, as well.

Again, we have -- it's not simple just to buy a standard one off the shelf. There's circuitry inside of the shavers and the trimmers. Most people want an LED in there to make sure that they can tell if it's charging, or other separate functions. And those all have to be mated properly with the battery charger.

And then last thing is the medical low leakage tests for our surgical trimmer. That was an issue brought up earlier for medical devices. That is a real stickler, and that's in the UL requirements. Whenever a product is used around a patient the leakage currents are incredibly small. And with the switch mode power supplies, just because of the nature of their design, it's very difficult to meet those leakage requirements.

So that's the highlights of what I wanted to give you. I'll take any questions.

PRESIDING MEMBER PFANNENSTIEL: Questions? Thank you.

ASSOCIATE MEMBER ROSENFELD: I --

PRESIDING MEMBER PFANNENSTIEL: I'm sorry.

ASSOCIATE MEMBER ROSENFELD: Rick, there's this big difference. You quote $2 extra wholesale from these two offshore suppliers, and I'm looking at John and Fanara again. That's a real contradiction to the sorts of impressions you got back, right?

MR. WILSON: I think the difference is volume. I think in large quantities these are less expensive.

MR. HABBEN: I mean our volumes aren't super high, but again, I'm buying a linear one that does the same job for under $1. So, you know, I wish, you know, if Sino American, Ten Pau, if they would give me one for even slightly more than that, you know, that price of what I'm paying now, I would jump all over it.\

But when you have a $2 difference from existing manufacturer, that's --

ASSOCIATE MEMBER ROSENFELD: Thank you.

MR. WILSON: Rick, is that 2 watts output you were talking about or input? Earlier you were talking about 2 watts.

MR. HABBEN: Right. That's the input wattage. When I measure the input wattage when I'm charging the battery it's under 2 watts.

MR. WILSON: Coming out of the power supply.

MR. HABBEN: No, that's the input wattage. If you plug it in and you measure it with a power analyzer, that's your input wattage. That's the total wattage that the battery charger is drawing.

MR. WILSON: I'm a little puzzled, because if you go from say a 40 percent efficient power supply at roughly 2 watts to 70 percent efficiency, that would save you about 2 watts.

MR. HABBEN: No, when I hook -- when I measure a linear power supply that we have right now charging a battery on one of our average appliances, it's about 1.6 watts of power is what I'm drawing out of the wall. Okay.

When I hook up a switch mode type of supply, and I haven't got a good one yet, so I'm using some approximations here, but the best I can guess it's about .7 watts of power.

So, I'd be saving about .7 watts of power while I'm charging my battery, linear versus switch mode.

And then if you go through the calculations that Mike had given us earlier, with a trimmer or a shaver, we're figuring you charge about once every three weeks, depending on your usage pattern, but, you know, two to three weeks is about all you're going to need to charge it, and then you do that that many days per year, and like I say, our marketing research that we've done, and I think there's another manufacturer, you know, they've had return cards on people, and people do not leave it plugged into the wall. They unplug it for reasons stated earlier, they just don't like the clutter out, they don't like it sitting out.

PRESIDING MEMBER PFANNENSTIEL: Thanks. There was another -- there was one question here.

MR. CHAMBERLAIN: Bill Chamberlain from Cobra Electronics. I think the issue we have here is quotation and prices. If you look at switch mode power supplies, as the power goes up they become more cost effective. As you get these lower wattage products you can get a linear transformer, a small little transformer to do that job for a much cheaper price.

So what happens is that, you know, as your wattage goes up you got a huge transformer which costs you a lot of money; compare that to the switch mode, which you know, is not going to cost you as much.

That switch mode price doesn't really change a lot between the lower and the higher wattage products, you know, you got the same supplies. You may have to increase your diodes, you may have to increase the windings on the coils, but that's the reason we're getting such a discrepancy between people are using the lower wattage parts.

You know, you can go back and ask any supplier, you know, and he's going to give you the most cost effective version, you know. Okay, I got a 15 watt power -- and it's only 20 cent increase in price, but then you go down to a 3 watt or a 5 watt power, and there's a large difference in price, because you got to pay for the electronics.

PRESIDING MEMBER PFANNENSTIEL: Thank you, sir. There's another question.

MR. ERDHEIM: Just a follow-up, and I won't take more than a minute. I'm Ric Erdheim with Phillips Electronics. We make Norelco shavers and Sonicare toothbrushes. And we certainly hope Commissioner Rosenfeld and John Wilson were using the Sonicare toothbrushes and not our competitors.

The point I wanted to follow up on concerned the products being plugged in continuously. Obviously if they're unplugged after they're charged, then you have no energy use.

And this, I have the brochure from our latest shaver which we just came out with. But all of the brochures are the same. Where there are six different references in this brochure, which is not very big and half of it's in Spanish, so there's not a lot of material in here and there's six references to unplugging the shaver after you've charged the battery.

So these products are not continuously plugged in, and you don't have energy use.

PRESIDING MEMBER PFANNENSTIEL: Thank you. We're --

MR. WILSON: I think Chris Calwell wanted to respond to some of these comments.

PRESIDING MEMBER PFANNENSTIEL: Did Chris Calwell want to respond to these comments?

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: I want to gauge some time here, and get a sense of whether people are going to pass out from hunger if we don't break at some point for lunch.

I know that, you know, we could, of course, just kind of keep going and then people will fall off, and you know, we'll shorten the day. But, I think we're probably better off breaking at some near term point for lunch.

So, perhaps, we had been hoping to get through the entire discussion of external power supplies and battery chargers before lunch. And I suppose that's true if we define lunch as whenever we finish all of that.

It would be helpful to me if I could

just get a sense of how many more people want to speak to the general subject of external power supplies and battery chargers.

I know Chris has some comments to make. Beyond that, can I just get a show of hands of how many more speakers we might have on this whole general subject, including the 230 voltage issue. There really is only one? Jim. And then we're finished with this subject for, presumably for the day. Of course, there's always the chance at the very end of the day we can come back.

Okay. Chris.

MR. FERNSTROM: Can I ask a 30-second question?

PRESIDING MEMBER PFANNENSTIEL: Of whom, Gary?

MR. FERNSTROM: Of Phillips.

PRESIDING MEMBER PFANNENSTIEL: I suppose, unless it can wait. I'd like to wrap this up for lunch --

ASSOCIATE MEMBER ROSENFELD: Oh, 30 seconds.

PRESIDING MEMBER PFANNENSTIEL: Quick question, quick answer?

MR. FERNSTROM: Well, the

question/comment is that I do, in fact, unplug my razor. But I sure leave my Sonicare toothbrush plugged in.

PRESIDING MEMBER PFANNENSTIEL: Is that a question?

MR. FERNSTROM: Um-hum.

MR. ERDHEIM: So if I take more than 30 seconds you won't let me answer, is that -- so maybe, that's the way -- the Sonicare toothbrush is plugged in all the time. It's an inductively charge; it's done for safety reasons. I don't think you'd want to have plugs around the water.

So, you're right, that is plugged in. My comment's only for the shaver products.

PRESIDING MEMBER PFANNENSTIEL: Chris.

ASSOCIATE MEMBER ROSENFELD: Okay, we did it in less than minute.

MR. CALWELL: Understanding the hazards of standing between people and lunch I'll be necessarily brief. And I'll ask Suzanne Foster, my colleague, to comment on one of the slides.

The three slides that follow here were speaking to the issues raised earlier about whether these levels of efficiency are achievable in power supplies.

The Energy Commission and the USEPA cosponsored something called efficiency challenge 2004, during which the gauntlet was thrown down to industry, college students and graduate school engineering students around the world to see what levels of efficiency they might be able to achieve with a limited budget and a limited period of time.

So the orange squares that you see in this graph correspond to the achieved efficiencies by those teams with very little capital in calendar year 2004. These individuals were all recognized and given awards by the Commission in early 2005 at a industry trade association function.

So, of particular interest here is that some of these designs were exceeding the California Energy Commission's standards line by as much as 20 percent efficiency at the low wattages that we've been talking about earlier today.

This is a zoom-in of those low wattages and you can see a variety of the designs came in with, 1.5 to perhaps 10 watts of rated output power. And we were particularly interested to see these results, because as I mentioned before, many of the products in the data set are quite old and not representative of what efficiencies can be achieved today. So these designs told us a little bit more about where the technology's headed over time, and not surprisingly they sit near the top of the data set.

Here are the equivalent no-load values. And again, the Energy Commission's levels shown in green and black, and the achieved no-load values of the winning products, most of them around .2 to .3 watts.

So, the discussion here has been on battery chargers. I'll be brief, but we want to be sure to draw a distinction between what happens in a battery charger, AC/DC power conversion happening on the front end, some battery charging circuitry usually placed next, a battery pack, itself, placed here, and then that power, in turn, going to a load.

And so it seems reasonable to ask the question, if you want to make everything that's in this red rectangle efficient, where might you start. And we logically assume that the place to start would be where the power comes out from the wall and into the AC/DC conversion process.

It would be akin to saying I want to make my car more fuel efficient, where should I start. And if the fuel line that takes the gasoline from the gas tank to the engine is leaking, that would be a great place to start. Don't let the gasoline drain onto the driveway. After we get it to the engine, let's, by all means, burn it efficiently, but let's not let it drip away. That's, in effect, what an inefficient power supply does.

So, next we asked the question, well, where does the power go in the charging process. So, these kinds of tests are very difficult to do in the lab, and I won't take you through a bunch of them. I just want to show you one.

This is a 9.6 volt power tool battery charger. And what we did is we watched how much power was flowing from the wall while we charged it. As with all battery chargers you tend to see the highest power initially, and then it drops off a little bit as the device charges.

Couple simple comparisons. The overall efficiency we're defining as how much energy can you get out of the battery; that's this 10 watt hours right here, power times time; 10 watt hours in the battery.

The total area under this blue curve, so everything you see in here represents how much AC energy it took from the wall to do that. And that added up to about 50 watt hours. So this is a roughly 20 percent efficient system; 20 percent of what you took from the wall you can recover back from the battery.

Okay, so where do those losses occur. And the area between the blue and the red line is all of the power lost in the power supply, itself. You can see that's fully half the total, 24 of the 50 watt hours.

The next biggest source of losses was we put 19 watt hours into the battery but we can only get 10 of them back, so certainly there are some chemical losses, as well; what we call (inaudible) losses.

And then the third category of losses which is the smallest in this case, was how much energy was consumed by the battery charging circuitry, itself. And that was about 7 of those 50 watt hours.

So, when you run these kind of tests in

the laboratory you start to conclude when you see the same result over and over again, that the first and best way to improve battery charger efficiency is to get this blue line to be closer to this red line, and reduce the losses associated with power conversion, itself.

This is another example from a laptop computer. Here you see the total power that the laptop computer requested, in effect, from the power supply while it was charging over a period of a few hours. That's DC.

Here's the AC power that the laptop power supply was drawing from the wall during that process. And then I put a few arrows on there in particular places where we measured the efficiency of that conversion process. And you can see it held remarkably flat, 80 percent, 81 percent, 79 percent.

And what this told us, in part, was that even at a wide range of load conditions, here's 30 percent load condition, this is about 50, this is up to 75, we got a fairly consistent real world efficiency while we were charging.

And interestingly enough, those ranges of efficiency, this would be the battery maintenance mode, this would be the charge process, and this would be the tailend of the charge process, those look suspiciously like the test procedure conditions for the external power supply spec. This is 25, 50, 75.

So, granted the zero percent condition is not here, and the 100 percent condition is not here because we virtually never see it, but we do feel like battery charging in many products spans the range of loads that you would expect to see in the test procedure.

One final point that has surprised us and the utilities for whom we work, it is true that many battery chargers spend a long time in lower power modes, but the brief periods they spend charging are often at dramatically higher power loads, so here's five different products we've tested.

A Makita power drill, a Drummel cordless tool, a RayOVac high speed battery charger, a Rigid power tool and a Bosch charger. The gray bar shows how much power this thing is drawing from the wall during the charge process; and the two blue bars correspond to maintenance and standby.

Notice in some cases that the charge power can be four or five, six, ten times higher than the lower power modes. So if you're a utility that's worried about peak load consumption, or worried about overall energy use, you would certainly want to pay attention to active mode, and then decide later how much time you spent there, as opposed to ignoring it from the outset in your definition of efficiency or your test procedure.

This is really the key slide for my presentation before lunch, and if I leave you with nothing else I hope you pay close attention to this one.

We also were very interested in the question that industry had raised earlier, which is how much difference does it make if you put an efficient power supply on the front end of a battery charger.

As you can imagine that's tough to do with an internal power supply, but it's very easy to do with an external power supply because they are separable.

So, what i'm showing you here are two regions. I've plotted power supply efficiency measured in the lab on this axis, and I've plotted overall battery charger efficiency on this axis, including active mode.

And so the first group of power supplies range from about 12 percent efficiency to about 55 percent efficiency. And of the battery chargers sold with those power supplies, the average measure battery charger efficiency was 3.7 percent.

Now, what does a 3.7 percent efficiency mean. It means that if you used 100 units of energy from the wall over a 24-hour period, 3.7 of them would be recoverable from the charged battery. And the other 96 of them would be lost in heat and inefficiency.

Then we looked at a separate group of battery chargers which had, in general, power supply efficiencies from 60 to 85 percent. And on average, that group of battery chargers had a measured battery charger efficiency of 18 percent, which is still not stellar, but is about four to five times better than the first group.

So, what does this mean? It means the power supply efficiency is not the sole determinant of battery charger efficiency, but gosh, it sure looks like a big one.

And if you're going to start to improve the efficiency of battery chargers in the near term, it's a nice place to start.

What I'd like to leave you with, this one is a little complicated. I won't dwell on it for a long period of time, but we compared the no-load power consumption of power supplies to the no-battery mode or the standby mode of the battery chargers with which they worked. And many of the devices, the power supply was the battery charger, so the two numbers are the same. And then in a few cases they can be more.

What this told us, in part, is that there are big differences in how much power a battery charger needs to draw when its battery is full, and a more efficient power supply can help with that.

Let me close by turning this over to my colleague, Suzanne Foster Porter, and she just outline for you some of the steps that would need to occur between now and the next few years if the Commission were to pursue a battery charger standard. Thanks.

MS. PORTER: Thanks, Chris. This is the

best estimation that we can make of what we think it would take in time to create a battery charger standard of the scope that's currently under consideration, that Ecos is currently considering with our Public Interest Energy Research.

You can divide it into two groups. Sort of, what's the technical work that needs to be completed, and secondarily what policy work would need to be conducted to get to a standard.

Go back a little further in time than what's listed here, in November of 2004 was the first workshop for a battery charger test procedure that was released in the fall of 2004. We can call that a preliminary draft; that industry participated in the workshop and a number of comments were received.

Draft one was released as part of Ecos' research for the Commission under the Public Interest Energy Research program, this fall, in October. And a second workshop was conducted to review this draft.

We're right here, in January of 2006. And very shortly we'll be releasing a second draft of the test procedure that will reflect the comments received in that workshop in November of last year.

Quickly I'll just move through the rest of these. We believe that in order to keep the scope of the document, probably a second workshop would be needed to receive comment. And the earliest a final draft could be completed would be towards the end of this year.

We would then need a period to combine data, asking industry to gather their own data according to the test procedure; combine it with our data; and allow a codes and standards report to be created in the early part of 2007. There would then need to be a series of hearings, and a final ruling.

This is a pretty quick timeline and it could be longer, but we think this is the best approximation at this time. And then, of course, the one-year lead time with the standard taking effect in 2009.

Chris, did you have any other comments?

MR. CALWELL: I think that's it. There's one final slide on cordless phones which I'll just drop down to here at the end.

The question came up before in presentations about what's it worth to make a cordless phone power supply more efficient. It's a very simple case, of course, because they're plugged in 24/7.

And so what we did here is we measured the five cordless phone power supplies that we had onhand in our laboratory, all recently purchased. You see here their AC power consumption on this column ranging from 2.6 to 5 watts.

Here's their rated power supply outputs; here is average power supply efficiency ranging from 35 to 56 percent with an average of about 47 percent.

And then this final column shows what percentage efficiency these devices would need to meet under the California Energy Commission standards. If you improve the power supply efficiency from the average they are today to the average that the Commission standards would require, it saves about 3/4 of a watt.

That requires even simpler math than what Gary presented before, because you can just multiply by the number of hours in a year. And what you get is 33 kilowatt hours over a five-year product lifetime, which is worth $4 to $5 at current electric rates. And I don't want to speculate what it would be worth if rates continue to go up as they have.

We estimate there's about 25- to 30-million cordless phones in use in California; although it's very difficult to get the numbers with precision.

So the savings potential from this product category is in the range of 800 million to a billion kilowatt hours over their five-year product lifetime. If you could convert all existing cordless phones to this higher level of efficiency. And that's worth about $100- to $130-million to the state's energy users over that period.

So, other product types are much more complicated to calculate than this one, but I hope this is illustrative of the savings potential. And I will return you to your schedule for lunch.

PRESIDING MEMBER PFANNENSTIEL: Well, I think we need to allow those who have questions on your presentation to ask them now before they lose them.

Are there questions of Chris? Okay, go ahead.

MR. FERNSTROM: I just have a quick

comment. We tend to use the consumer cost of electricity, which we know is going up. But in these proceedings we use the marginal cost, and that's usually significantly higher than the retail cost.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Gary. Questions?

MR. MORRIS: Yes, thank you. Wayne Morris with AHAM. I have a question for Chris or for Suzanne. I'm struck by the Gant chart of the timeline as to why it is that when the Commission went forward with the requirements on the EPS timeframe, it certainly didn't take three years from the time that the Commission first announced an external power supply standard to having it completed, when suddenly we're looking at a battery charger timeline that is considerably longer.

I can only say that from our standpoint and our industry, we're fully committed to finish the work within a year. If it takes longer for the contractor to catch up, that's okay. But that's up to you all.

We certainly think when it seems to be important to move forward rapidly, many people are willing to do so. And I would find every assurance that if the Commission asked its contractor to do so, they would do it.

Thank you.

MR. CALWELL: Wayne, I appreciate the comment. As you recall we met for the first time on this subject at a technical workshop in 2003. The Commission's final standards for external power supplies are scheduled to take effect July of 2006, which is, in fact, three years.

The timeline we see here is an equivalent three years, recognizing frankly about six months or a year of work that went on prior to where the timeline starts.

MR. WILSON: Well, one question I have for Suzanne. This is for all battery chargers, right? This is a much broader scope than what Wayne has been talking about, which is what he calls, quote, appliance battery chargers, is that right?

MS. PORTER: That's correct.

MR. CALWELL: And I think it's fair to say, John, although the scope is broader and the number of products covered, that the reason a second battery charger test procedure workshop is shown on here is that there were enough comments and disagreements among stakeholders of the home appliance products, themselves, that they're not necessarily going to look at the second draft of the test procedure and say, we're fine with it, let's use it exactly as is.

So, if anything, I've been accused of being optimistic with how quickly we can get things done in a regulatory setting. And so, I hope this is conservative, but if people see places where we can compress it, we're certainly happy to do so.

MR. WILSON: Well, one problem, Chris, is I really can't see it.

MR. CALWELL: And does John have a copy of this one printed?

ASSOCIATE MEMBER ROSENFELD: Yes, we have it.

MR. WILSON: Oh, do I?

MR. CALWELL: We've given you print copies, yeah.

PRESIDING MEMBER PFANNENSTIEL: Okay, Jim.

MR. HAYNES: Jim Haynes with Uniden. Just a quick question since you mentioned cordless telephones and you threw out these numbers of units in California, and I don't know how many the totals were, you don't have it on the screen now, of energy saving for a cordless telephone.

Do you have any figures on these nightlights, like a little 6 watt bulb? Do you have any figures on that?

MR. CALWELL: We do, actually. It's another subject of some interest.

MR. HAYNES: Okay, how do they compare?

MR. CALWELL: It's a difference between do I have the numbers and do I remember them. I would be happy to look at them --

(Laughter.)

MR. CALWELL: -- and talk to you about it at lunch.

MR. HAYNES: I just wanted to know, I was just curious. But that's my question.

MS. PORTER: I would guess roughly similar in number.

MR. HAYNES: That's what I thought. Okay.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. ALBERT: Larry Albert again from

PTI. I just wanted to clarify a couple of issues that Chris might have brought up. One was PTI's position with respect to EPSs and battery chargers is not that the conversion efficiency and standby power losses of an EPS don't have a bearing upon battery charger efficiency, it's that we believe the better way to achieve energy efficiency on battery chargers is to address it as a end product specification.

It looks at a comprehensive test method that covers all different modes that are likely to be encountered in real life. And in proportion to some degree in how actual users use these battery chargers.

So that we don't mean to indicate that we believe that there's no merit to having a high conversion efficiency in an EPS that might be powering a battery charger, it's just that we believe that in some cases some of these issues such as standby power conversion efficiency may have a lower impact upon overall battery charger efficiency than, let's say that energy that might be inappropriately consumed during maintenance mode.

And so in those cases members of our

industry would prefer to have the opportunity to conceive of different innovative approaches to lowering overall consumption of battery chargers other than just the sort of simplistic approach of improving input/output conversion efficiency.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. CALWELL: And I think it's fair to say we agree on those points actually. In other words, there was no proposal made by this team, at least, that a battery charger standard not be considered.

What we were simply urging the Commission to do was to do it in two steps. First, require the manufacturers to improve power supply efficiency, and secondarily adopt a battery charger standard on the amount of time that it's going to take. And upon that date, migrate the products over to it, so they're meeting the standard that's appropriate to them at the time.

MR. ALBERT: And to address that I guess it would be our first comment that we made, which was basically that it would be, we believe, a waste of our industry's resources to pursue two divergent requirements that may not have the same impact, the same degree of impact upon battery charger efficiency.

If the intent is to pursue a battery charger regulation covering energy efficiency, it would be much better for industry and for the public in general if we could pursue that battery charger, that regulation, if we believe that it were to achieve a higher degree of energy saving for the public.

Having two independent regulations, both covering the same end products, which may result in different design decisions may overall reduce the total amount of energy savings that the public may benefit from. And at the same time, produce unnecessary cost increases to that product with a corresponding improvement in energy efficiency that could be achieved by selecting just one energy efficiency regulation.

That was our comment, just that there should be --

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. ALBERT: Thank you.

PRESIDING MEMBER PFANNENSTIEL: Was

there another question? Yes.

MR. CHAMBERLAIN: Could you put up the slide on the cordless phones. Bill Chamberlain from Cobra.

Now, maybe my math is wrong but if you're talking about a $5 to $10 increase to the consumer, you're talking in $150 to $300 million cost. It's a little bit more than the savings, but --

MR. CALWELL: Yeah, I think what's in dispute is the incremental cost. So this is just a slide about the savings.

MR. MARKWALTER: I follow, because I have one on this, also. Brian with CEA. Hey, Chris. Were these linear supplies, do you know?

MR. CALWELL: I believe they're virtually all linears.

MR. MARKWALTER: I feel certain they're linears.

MR. CALWELL: Yeah, I'm glad you raised the question, because we got the question at the adoption hearing in October of '04, is this a switching power supply standard. And it's not. In fact, we've shown that linear power supplies can meet this requirement at the low wattages, and we expect many of the qualifying units to be linear.

MR. MARKWALTER: Okay, so I guess that hasn't been proven to our industry yet. But I believe to Bill's point that what we see consistently, and we did not know the gentleman from Wahl when we came here, but they're reporting exactly what we're finding, is that the cost differential to the manufacturer is on the order of $2 for low wattage power supplies because those are extremely mature products, they're linears and they're done very cheaply. You make them more efficient.

It appears to be a $2 adder which passed to retail is $5 to $10, $5 to $8 range. And we believe that for classes of products, if you analyze them separately, they'll fail the cost effectiveness metric that you're supposed to meet.

I had a couple of others, if I could do those. Would you go back to the one that had the 3.7 percent efficiency?

MR. CALWELL: Sure.

MR. MARKWALTER: Had the box in red at the bottom. Okay, for this one, the test -- this stemmed from that test where you had the area under the curve, is that right, and you charge for a certain period of time, and unplugged it to figure out how much.

So that's kind of a charge time dependency, is that correct?

MR. CALWELL: Yeah, Suzanne could speak to it probably better than I can, but it's a combination of a charge period, a battery maintenance period, and then I think the standby measurement is made separately, right, Suzanne?

MS. PORTER: I could say a little bit.

MR. CALWELL: Go ahead.

MS. PORTER: The 24 hour battery charger efficiency metric you see on the vertical axis is a measurement of the energy consumption over 24 hours. And in that measurement the battery is completely discharged, placed into the charger, charged fully and then maintained until 24 hours.

And at 24 hours the measurement stops. So the ratio you see here is the comparison of the battery, the energy that was extracted from the battery under a .2C discharge, divided by that total 24 hour energy in charge and maintenance modes.

MR. MARKWALTER: Okay, is there more --

was this just presented in this hearing? Is this the first we've seen this data?

MR. CALWELL: Yeah. The reason is that we had never been asked before to compare battery charger efficiency to external power supply efficiency for devices that had both.

So, these measurements and I think the graph was made last week? Yeah.

MR. MARKWALTER: Okay, and I don't know whether this is maybe an AHAM issue, but it seems to me that this test, you could change parameters and make the efficiency arbitrarily low if you extend charging time. So I guess it's okay for the comparison you're trying to make, but we need to be careful with how it's done.

MR. CALWELL: To be fair, it's a publicly discussed and commented on test procedure for all battery chargers, not for --

MR. MARKWALTER: Yeah, I understand.

MR. CALWELL: -- this hearing or this purpose.

MR. MARKWALTER: I understand. Could we go the timeline one, one final comment or question. I believe our industry uniformly will say that the one year lead time from the '08 to

'09 doesn't work.

Every federal regulation we face, everybody recognizes there's typically an 18-month lead time from a brand new requirement. Yes, people pay attention; they contribute in all this front-end process, but you don't go asking suppliers to supply if there's a silicon change, that takes months and months to crank through a silicon -- and so one year is going to be problematic if that's what you're counting on for the standards to take effect from final ruling to taking effect.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Yes.

MR. CASSIDY: Tim Cassidy, AULT, Incorporated. The data that you took on these batteries, is that from nickel-based batteries, or does it include lithium ion, lead acid or any other types?

MS. PORTER: These are a range of battery charters, and it includes nickel metal hydride, nicad and lithium ion chemistries.

MR. CASSIDY: Okay, and then is there differences between those type of chemistries. I know they have different charge algorithms.

MS. PORTER: There are, but that is not highlighted here. The purpose of this slide was to illustrate how power supply efficiency compares to the 24-hour charge efficiency. So, we have data on those specific battery chargers and the trends, but that's not necessarily the subject of this slide.

ASSOCIATE MEMBER ROSENFELD: Let me make a comment here. It seems to me that Ecos slightly complicated this situation on this slide. I'm more interested in just what is the 24-hour battery charger efficiency, independent of the chemistry. And what I see there is for the ones in the red rectangle, the average seems to be around like 3 percent. And just reading the left-hand scale.

And for the contents of the green rectangle it's way up at about like 20 percent; so it's about five to one.

So there is a significant difference quite independent of averaging over chemistries.

MR. CASSIDY: Okay, I was just curious about that. There was another slide you had where it showed the losses on the power supply, and the losses on, I'm going to guess the battery management system, and then the losses on the battery is another different -- yeah, this one. Right.

Is that about a 1 watt gap for a battery charging, battery management, let's say a microprocessor or something? Is that what that 1 watt is?

MR. CALWELL: It would be a little less than 1 watt. I think you're talking about the area between the red and green lines?

MR. CASSIDY: Yes.

MR. CALWELL: Is that right? Yeah, it looks to me like it's about, I don't know, 2/3 of a watt.

MR. CASSIDY: Okay, yeah, 2/3. So could I assume then that if we had perfect efficiency in the power supply we'd always have 1 watt sitting there, as long as we're plugged in?

MR. CALWELL: This product here is a circuit that doesn't shut off when the battery is fully charged, or when the battery is removed. So, again, we're a little bit out of scope for the overall hearing, but we could show you many other graphs where we measured this. And the best battery charger designs dropped to an almost unmeasurable AC power when their batteries are full or when there's no battery connected.

MR. CASSIDY: Okay. I'm just asking these questions because the battery -- these things would be something that should be taken into account in any type of measurement scheme.

And we make both external power supplies, and we make external battery chargers, in which the battery management microprocessors and chips and sets are within that product. And then the cable goes out to something.

And if you unplug that from the unit you're still going to have these losses is my point. And that's different, I suppose, than if you have a power supply plugged into some unit that then has the battery management -- that's the reason I brought that up.

PRESIDING MEMBER PFANNENSTIEL: Thank you. I think I'm going to -- Jim, did you still have a last comment on this subject before we break for lunch? Mr. Jim Haynes?

MR. HAYNES: No.

PRESIDING MEMBER PFANNENSTIEL: I think then that we will take a lunch break now. Come back in an hour, come back at 2:00.

And we will go today as long as is necessary to complete the subject matter that we have in front of us.

I'm hoping that recognizing we've got still material to cover, that people will focus their discussion this afternoon and try to be as efficient with the time as possible.

See you back here at 2:00.

(Whereupon, at 12:55 p.m., the Committee workshop was adjourned, to reconvene at 2:00 p.m., this same day.)

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AFTERNOON SESSION

2:05 p.m.

PRESIDING MEMBER PFANNENSTIEL: We're going to change a bit our focus, and start talking about digital television adapters. And I understand that we'll start with a presentation from an Energy Commission consultant. So, John, why don't you lead us into that.

MR. WILSON: I guess I'll just introduce this by saying the Commission had adopted a standard of 8 watts on and 1 watt standby for the simple digital tv adapters. And those numbers came primarily out of a set-top box workshop in Paris May 2004, where there were a lot of set-top box folks internationally, both manufacturers and governments and efficiency advocates.

Last fall, early November, Andrew Fanara and Noah Horowitz and I were at a set-top box conference in Seoul and talking to the Australians who were about to promulgate a DTA standard with higher numbers. And they said the higher numbers were required for the American broadcast system.

And I began to feel technically inadequate, which was probably obvious since I'm an economist not an engineer, to, you know, advise the Commission on what kind of power requirements the DTA should have.

And so in the last month we hired a consultant out of the Silicon Valley, Paul Rudnick, who is at the podium. He has a lot of experience in chip design, chip manufacture, broadcast systems. He is an engineer.

And so Paul is going to present his findings on what is the status of DTA technology and what power requirements should be.

Jim, if you can adjust the lights.

(Pause.)

MR. RUDNICK: Thank you, everyone. As John has introduced, my name is Paul Rudnick. I have a number of years of experience in designing large systems, small systems, consumer electronics products.

My immediate background is that I have a call center in Vietnam, which is a little bit tangential to this work. But I have designed satellite communication systems, satellite receives, up converters, basically all of the fundamental components that one might find in a set-top box, and two-way set-top boxes.

In any case, in looking at the problem I was originally asked to kind of give a primer on the core technology that is found inside these various set-top boxes. Specifically with emphasis on the digital to analog boxes that will be requisite after 2009.

And to look at what technology was available to address the problem, would be available in the timeline. That would also meet the proposed standards that the CEC had set. And to kind of look generically at set-top box practices. And then ultimately to make some recommendations and then provide some reference and backup materials.

Just a little history. As you're probably aware, as of last year all stations are to have been broadcasting digitally. As it turns out, a number of the stations which broadcast digitally are just echoing the analog content that they have, because there's not that much content yet that's flowing out over the airwaves.

However, all of the major networks are up and transmitting DTV. And, as you're well aware, the absorption of digital televisions is starting to occur now. And, of course, with the mandate that all tvs by the end of the year will have to be digitally ready, not just compatible, but actually have receivers in them. We'll start to see a lot more tuners and things coming up.

Now, and then, of course, Congress pushed back the date of when absorption was going to come in, and when the analog stations were going to go black. And that date has been pushed back to 2009.

So, somewhere between now and then there'll be a cliff when people will be running down to Radio Shack and want to procure these digital to analog boxes because they're going to want to continue to use their analog television sets. I mean, ideally the manufacturers would hope that they would go buy new tvs, but that's not in the -- that's not likely.

As I said, digital broadcast only after 2009. That'll free up all that bandwidth to be reused for broadband systems. Interestingly, as most of you are aware, originally when the cellular telephone networks were proposed, what we saw was that the high UHF stations were taken away, and that bandwidth was reallocated, producing, you know, that was only six channels worth of bandwidth. Now all of a sudden we're going to have 76 channels worth of bandwidth that are suddenly going to become available. So there's tremendous opportunity for use of that bandwidth.

In any case, beyond 2009 existing televisions will require a DTA. California has established a mandatory standard. And that standard is 8 watts on, and 1 watt in standby. And this standard is applicable solely to the DTAs. However, in the course of study, eventually over time, obviously there will be interest in other ways in which energy is consumed. But, again, the standard is not applicable to other set-top boxes, such as those found in satellite receivers and cable set-tops.

And as I said, some point between now and 2009 there'll be a cliff when there'll be a, suddenly there will be consumer demand for this kind of a product.

In any case, what I did was as part of the primer process was look back at cable and satellite type set-top box designs. One thing we noted is that the majority of set-top boxes that are in use today are really quite old technology. And, in general, they use a fair amount of power.

The other kind of interesting thing is that when these boxes are put into standby mode obviously they pretty much stay on. And one of the requirements is, of course, in satellite networks is that you want to acquire the satellite and keep updating the program -- and provide network control related issues, especially in terms of security, the various security algorithms that are used.

In general, these designs are really quite feature rich. They support everything from these days, certainly in the satellite world they're supporting recording devices, so you have disks that are running full time. You're constantly looking at the stream and making sure that the user is an authorized user, so you have security in management-related issues, as well.

And in general, the structure, the enclosures that are used are physically large. If you look at the typical home, now you'll see four or five of these boxes stacked on top of the television. So they're all physically, you know, many of them are 19-inch rack even sized. And that's also something that we'll point out in here is, in the case of the DTA it's not really requisite.

This is kind of an interesting slide because it tells a little bit about how many kilowatt hours are actually consumed annually by relatively, in terms of designers, a relatively small amount of power consumption. And you can see that, for example, once you have a DVR, that is once you have that disk spinning all the time, all of a sudden you're nearly 30 watts consumed, which represents a fairly significant number of dollars per year in terms of your electricity.

The 8 watt standard is about an $11 a year number, computed at current PG&E rates. I just went and looked at my PG&E bill and came up with that number.

The -- oh, dear, this is going to be a problem.

(Pause - technical adjustments.)

MR. RUDNICK: The previous picture was actually an attempt to show you a -- it's a block layout of a typical set-top box with all of its ancillary devices and network connectivity and operative option for infrared for remote control functionality and all.

In any case, what I wanted to do was

give some examples of what a DTA might look like. And I went across the market and basically found that there are people that make DTAs, primarily DVBT, which is, of course, not the standard here in the United States.

But in any case, there are such boxes available. And one thing that's quite remarkable is the level of complexity of these devices that have come down considerably to where you can have a relatively small form factor and have a fully compatible receiver.

There's a smaller one that I have ordered. Unfortunately, it didn't arrive. It's the Miglia TV Mini. It is completely USB powered and it's less than 1 watt. It uses a solid state tuner chip. And the only functionality that it does not provide is, of course, the transport stream decode, that mpeg-2 decode. However, that's a relatively straightforward function. It's available -- cord and many of the current technologies.

The proof points for DTA in terms of what can actually be accomplished with current designs are that it's relatively straightforward to get below a 2 watt energy power. This is, of course, accomplished with, again, single chip tuner, single chip demods. Eight VSB single chip demods are now readily available. And I actually have some examples.

The other thing is that the enclosure can be physically small, less than four square inches. And then finally it appears that meeting the CEC standard can be accomplished. And, in fact, we're going to propose an alternate, as well. And it can be done at relatively low cost.

If you look at perhaps setting some design goals, and none of these are really stretch goals here. A power consumption of 2 watts inclusive of the power conversion process. That is, this morning I understand you had an extensive presentation and series of comments about the voltage converters that one finds in the home.

Of course, looking around, the proliferation of these things in the house. I'm personally guilty, I think I have 11 I counted the other night when I was putting the final draft of this presentation together.

But to get these devices down so that a good goal is that 2 watt power consumption, a bill of materials cost today of $24. Now, this is not sharpening one's pencil. This is calling up vendors and getting pricing information based on providing relatively small numbers of units per month, on the order of 10,000 units a month.

So this is, you know, clearly a manufacturer would easily be able to get under this goal. So this is not a stretch.

And, again, older materials, we've done tear down costs on a number of satellite boxes and cable boxes, and those numbers are way up there in terms of cost and in terms of total number of components.

Our recommendation is that the CEC stand firm on its mandatory standard for 8 watts on 1 one watt standby. Looking at that from a purely fiscal issue for a homeowner it would be about $13 per year per DTA. And, again, California homes have way more than a single tv in them, so that does represent a cumulative savings of a fair amount a year, $33.

We're also going to propose for the CEC to review that a tier two standard be established. And we suggest that because a 2 watt active on means that you can leave it on all the time and there's really not much reason to go to a standby mode, auto powerdown or standby modes typically are not so popular with homeowners because of their concern about delay times. However, the various solid state tuners that are now available have very quick acquisition times. I had asked Steve to come up and make a -- to give just a couple slides on their solid state tuner, their 30-28 product. Unfortunately, they weren't able to come.

But, the point is that these products are available; they're much less than a watt; and they're certainly quite significant, allow you to get much less footprint and a significant amount of power savings.

And then just to fill in some of the detail, I put hotlinks in here so that you could actually go and look at the specific data sheets for these various parts. And I can provide the contact names of the various sales groups if anyone's interested in looking at pricing or interested in -- they have various evaluation designs, as well, that they can provide.

So that's the recommendation of the consultant.

PRESIDING MEMBER PFANNENSTIEL: Thank

you. Are there questions from the other participants? Yes.

MR. MARKWALTER: Do you want me to do my presentation and then we come back and discuss --

PRESIDING MEMBER PFANNENSTIEL: I think that might be a good idea, sure. And then we can have questions for both.

MR. MARKWALTER: While he's getting that started, again this is Brian Markwalter with CEA. I think we have maybe just one point of agreement with Paul's presentation, and that's consumers will not like auto power-down features. But we'll see where we go.

(Pause.)

MR. MARKWALTER: Okay, again, I'm Vice President of Technology and Standards at CEA. I happen to have done a lot of work in the video area. That's the part of the standards that I cover, including our standards activity on background energy consumption and video set-top boxes that Noah's part of and others have joined.

Okay, so for digital television, actually I should say television adapters, however there is a good point here. This is about terrestrial DTV, and so I think we're all aware of that.

I think that it is safe to say, until I saw Paul's slide, that regulators, ourselves, manufacturers and energy advocates now seem to agree that 1 watt standby and 8 watt active power are not feasible right now. I'm not saying we won't get there, but the output of the Seoul conference and everything else I hear, and the fact that we've never seen them here, tells me that it's not achievable.

To the point of whether any exist, I think maybe the biggest issue is what exactly is a DTA in CEC's regulations. We do not know of a product that is a DTA according to your definition and the rules that have been adopted.

The DTA, as described, is a product that takes United States HDTV signals and converts them to NTSC analog signals. So there's a report of something like 46,000 set-top boxes DTAs in the market in California.

I have to believe that those are full-featured HDTV set-top boxes that do more than simply convert to analog NTSC. Those boxes also produce high def outputs and maybe do other things. But we do not know of a product that meets the definition that is applied for DTAs.

And so because of that we don't know how to compute a cost increase. I mean we know the chips and the kind of technology that goes into it. We have suppliers here, we have people who build these things, but we simply don't know about one of these products.

Next slide. Okay, and actually, John, you already said this, these were proposed in, I think this was probably the Paris meeting, and subsequent discussion. I was not at the meeting, but all the feedback I got was that it was clear the 8 watt/1 watt was not achievable for U.S. HDTV systems.

And then we believe, the best we can figure is that the 1 watt/8 watt numbers were related to the EU's voluntary code of conduct. And so that's going to be driven by their DTV system which is not the same as ours.

Next. Okay, so just to point out some of the differences besides the name. The name happens to be DVBT, the T is for terrestrial. Europe did theirs as a family of standards for cable, satellite, terrestrial. They have DVBh for handheld. Ours is the Advanced Television Systems

Committee, and that's been enacted into FCC regulations. That is the U.S. standard for HDTV.

Europe uses -- DM modulation. We use VSB modulation. Europe is essentially what in the U.S. we call standard definition; ours is high definition. So an HD stream, what actually comes through the air to a digital television in the U.S. has five times the data array of a standard definition. And that's got to be processed by whatever is making this picture for these old analog tvs.

So the ATSC system is actually 19.3 megabit per second stream. That's got to be demodulated, decoded. First of all you have to take apart the transport stream; find the part that has to do with the channel you're trying to watch; and then decompress. And then now you're in an HD, but digital world. You're decompressed. Now you have to convert it to analog and output to one of these older tvs.

Next. Okay, so at least one retailer indicated to us, and actually I think we've seen others, and Paul's, I think, does correspond with this. Something like 15 watts on power seems to be state of the art. We haven't seen anything drawing less than 10 watts.

And these, I guess I need to stress, these are not DTAs. These are existing full-featured set-top boxes. But it's not going to change significantly because most of the processing is the same, it's just that it's going to have a limited output.

So, looking at that, and knowing that there's no reason, either engineering or economic, why these existing products will use more power than they absolutely need to in the active, when they're decoding and presenting a picture. There's no reason for them to. They go straight to cost for the manufacturer and for the consumer.

As far as we can tell, unless we misunderstand something about the regulations, we think you've, in effect, outlawed DTAs. And we're talking about the ones that are needed for this retrofit of analog tvs. Particularly the ones, and maybe I need to address this, but for the Californians who might rely on a federal subsidy to keep their older tvs operating.

We've already heard that there is a, now there's a hard cut-off for the analog transmission. Part of that debate in Washington centered around, in effect, maintaining the value of the existing installed base of analog tvs. And there's likely to be a form of a federal subsidy for these DTAs.

And what they're talking about is exactly what I believe you described in your regulations, products that are specific to taking HDTV broadcast signals and converting them to NTSC analog. And there will be some kind of needs test for that program.

Go ahead. Okay, so we kind of feel like there's a whole bunch of hysteria around this sudden rush of these products. I think that it's starting to diminish now that people understand better how the system works, the timeline. And in particular, how many households are likely to be affected.

The numbers, ours and others, seem to hover around 13 percent of U.S. households that rely on over-the-air service. And then there's another debate about how many tvs, even if those households we have some data that indicates some of them just don't choose video of any kind. That seems to be a significant number. And then there's some percentage that watch over the air, by choice, either economic reasons or otherwise.

Another significant point is that there is a tuner mandate in place by the FCC that forces us to put ATSC or DTV tuners in every tv long before the shutoff. They're already in the mid-range size, 25 to 36 inches. And before the 2009 cutoff every single television product will have had DTV tuners in them. There's already a replacement cycle under way.

We believe that the DTA boxes are just going to have a limited life. And that kind of sole-purpose box is linked to this government action of preserving the analog tvs that are out there for the customers who need them. And so we don't see this as a long-term market.

Go ahead. Okay, so cost. And this is going to be about cost for those boxes. There's been a lot of discussion of this, a lot of debate on Capitol Hill because what they're going to do is take auction spectrum and fund these subsidies for the needs-based users of them.

And everybody's estimates are in that kind of $60 range of what's needed. So we need to be very careful about premature regulation that will affect that price point for Californians.

Okay, at this time we don't know, we think it wasn't justified to begin with, but it needs to be removed. I guess we can talk about when it can be cranked in. I don't think we know enough to give that limit yet. I'm curious what the Australians are doing. Maybe you know directly, John.

But we think 1 watt/8 watt is kind of discredited at this point for the U.S. market. Maybe it's fine for Europe, I don't know. But it doesn't make sense in the U.S. market for our transmission system. And I've already said the thing about the federal subsidy.

So, I think that's it.

PRESIDING MEMBER PFANNENSTIEL: Brian, before you sit down, I just want to make sure I understand something. You talked about the fact that you think that the California standard would effectively preclude DTAs in the California market.

But I'm not sure whether it's because the 8 and 1 can't be met, or because it's so expensive to be met that people won't buy it. Or the third choice is it will be available; many customers will buy it, but then they won't -- the federal subsidy won't be enough to pay for it. I'm not sure where you were going with that.

MR. MARKWALTER: Okay. All right, I'll clarify. And actually, at this point it's the first. it is that it can't be done, as far as we can tell, with the technology that's there.

We've seen no examples of it. So the second point of is it economically justifiable, we don't know, because we don't know how to compute a cost differential for one that we don't see exists yet.

So we do not see any products that can accomplish this function with 8 watt on-power.

MR. WILSON: Well, obviously I'm hoping that you and Paul will have some dialogue here because this is quite a different viewpoint.

In fact, Paul, why don't you just come to the table.

MR. MARKWALTER: We need to -- do you want to put your presentation back up? There's some --

MR. RUDNICK: Well, unfortunately, the slides that I really need are the photos of the specific devices. Because, for example, the Pace device was actually built in 2000. And --

PRESIDING MEMBER PFANNENSTIEL: Paul, --

MR. WILSON: Paul, we need the microphone.

PRESIDING MEMBER PFANNENSTIEL: -- would you sit at a mike, please.

MR. RUDNICK: Yeah, I'm sorry. The Pace device was built in 2000, and is, yes, it's DVBT and yes, there's a difference between coFDM and (inaudible) side band. The computational complexity is identical. And the components that are available are one for one, they're isomorphic. So it's easy to see how they get to that 8 watt standard. The Pace box is 8 watts with 1 watt standby. And that was using 2000 technology.

So, replacing it with current tuner technology, and current device technology will certainly get you well under that.

MR. MARKWALTER: Okay, so we disagree. I think DVBT isn't HD, it's not what we have here. And we've had HD set-top boxes on the market here for awhile, and all of them are in 10 to 15 watts. And it's not because they have some need to burn more power than they have to. It's a different system here. And it doesn't meet 8 watts. It's that simple.

MR. WILSON: Paul, do different broadcast signals require different power?

MR. RUDNICK: There is no difference in the -- okay, the question you asked is a little bit complicated specifically because there are completely different methods for decoding. But the computational complexity of each is the same. Therefore, the number of gates is the same. Therefore the power consumption is the same.

And Broadcom makes a chip today that does 8 -- as well as DVBT. And it does all that and it's less than a watt. It does both.

MR. WILSON: And Brian has made the point that these DTAs don't exist today. But what's the status of the availability of these chips that you're talking about?

MR. RUDNICK: They're available; they've been on the market since -- the earliest ones were January 2005, single chip solutions.

Now, for example, if you take and look at AV Media, they make an external USB connected card that does the ATSC standard. And so if it's on USB it's less than 2.5 watts absolute maximum. It's supposed to be less than 2 watts.

MR. MARKWALTER: All right, so let's go to those, then, which are another unrelated device to a DTA. So, the first one was the Pace DTA, which I think doesn't meet your feasibility test because it's not our system.

The next two or three you showed were these cards that are available for pcs to decode, actually let me be more specific. They demodulate, but they don't decode or do anything else.

I know there's a specific statement in there that the VBox had no impact decode. That's what's in a DTA. That's probably where the bigger part of the power is, is in the signal processing to do the -- well, demod and decompression.

So what you're talking about are devices that demodulate and run the stream over to the pc for it to do the rest of the work. That's not a DTA. A DTA has to do both what's in those little Miglia tv minis, and what's going on inside the pc to make an NTSC signal that is the definition of your DTA converters. It's not the same product, not even close.

MR. RUDNICK: Well, I don't disagree with you in that the transport stream does have to be decoded. However, that is a very minor functional block in terms of the overall context and technology requisite to complete a DTA.

The most difficult part was to do the, first of all to get a single chip tuner. Single chip tuners have been available since about 2000. And to get a single chip AVSB demodulator and a single function that does all of the demodulation, error detection, correction, coding and produces the mpeg-2 transport stream.

And the transport stream, itself, is de minimis in order to reduce it to NTSC or VGA or whatever. It's done on the most minimal processors in the pc.

PRESIDING MEMBER PFANNENSTIEL: I was not, trust me, going to get involved in that discussion.

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: My question was actually somewhat different, and it gets to the question of how many DTAs are going to be sold in California over what period of time.

Clearly over some long period of time they won't be needed because new television sets will all be digital. And so the need for the adapter will be eliminated.

But I'm trying to get a sense of when that will happen, how many there will be in the interim, the concept that, I think, that because so few, or 13 percent, I think you said, of California families already have some kind of -- or don't have some kind of pay television. I assume that those are the only ones you're thinking will need this?

MR. DuBRAVAC: If you don't mind I'll step into this question. My name is Shawn DuBravac. I am the Lead Economist for the Consumer Electronics Association.

And as you can imagine this has been a very important issue for us, and one that we have focused on greatly in the last few years.

We've also performed much research in this category and have testified on several occasions before Congress. Ultimately it's our data that has driven that debate in Congress. And I believe our data will also drive what ultimately comes out of the federal subsidy.

So we estimate, as Brian pointed out, that approximately 13 percent of households receive over-the-air transmission, rely solely on over-the-air transmission. So while they may have two tvs or 2.5 or six or ten, those tvs are often hooked up to just a VCR and they're relied solely upon for gaming or to watch movies, or they're connected to a satellite dish or to cable.

Of the approximately 338 million tvs that represent the installed base, about 11.5 percent of those tvs rely on over-the-air transmissions.

So, in California, if we assume 11 percent of that in California, we're looking at a little over 4 million tvs that will need to either be upgraded, or will need a digital, a DTA converter.

And that's also really two to three years down the road. And we see that cable and satellite subscriptions continue to grow about 2 or 3 percent each year. So that's if the transition were to happen today. We expect that number to --

PRESIDING MEMBER PFANNENSTIEL: Okay, so that's for today. And that is then not allowing for the fact that some period of time before 2009 the tvs being sold in the stores will be already digital.

MR. DuBRAVAC: Correct, correct. And, in fact, we've already --

PRESIDING MEMBER PFANNENSTIEL: So there will be a natural transition there.

MR. DuBRAVAC: We've hit that point where we now sell more digital tvs than we sell analog tvs. So we've already hit that point where people are naturally upgrading. And I expect that to accelerate in the coming years as people begin to, and we saw this happen in '05 as people upgraded to plasma tvs and to LCDs, as they upgraded their primary viewing set.

So while they have other tvs in the house that perform other tasks, their primary viewing set, the one in their tv room, their main viewing room, has begun that process. And, you know, in an industry with deflation like we have, where we lose about 30 percent in tv prices every year, and that's been the case since 1950, the price of those plasma tvs and those LCD tvs are going to continue to decline.

So, over the next three years, before the analog is turned off, we expect, you know, that number to be much smaller.

PRESIDING MEMBER PFANNENSTIEL: Can you

tell me about what percent of televisions get turned over? And I know it's not quite the same thing, because I think a lot of people end up with just adding a television set to their home.

MR. DuBRAVAC: Right.

PRESIDING MEMBER PFANNENSTIEL: But assuming that there is some percentage that goes somewhere to television heaven, and I wish I knew what to do with them, but some go away and some just get added.

But how do you think about the turnover?

MR. DuBRAVAC: Well, we know that, as I mentioned, about two -- the growth rate of subscription for satellite and cable is 2 to 3 percent, so we lose right there 2 to 3 percent of the tvs that will need to be converted each year, because that's the number of people that begin to subscribe to a separate source of their television.

We have the research. I'd have to double check the figures on all and provide you data --

PRESIDING MEMBER PFANNENSTIEL: Okay, I would sort of just like to know, of the given number of new televisions that are sold, presumably more than half will be digital, and then an increasing percentage until 100 percent will be digital, given that how many of the analog are being taken off. Kind of what's the sense of that turnover.

You don't have to give it to me now, but if you can provide that --

MR. DuBRAVAC: Right, we can definitely provide that. And, you know, I believe that we expect really by 2009, you know, we're beginning to see that transition increase greatly as people begin to move more towards, you know, their digital television sets.

MR. TUTT: Brian. Sorry, I'm up here. You mentioned a number of 11.5 percent of tvs receiving over-the-air. It sounded like a national number. Do you know if it's any different significantly in California versus the rest of the country?

MR. DuBRAVAC: It's not much different, if it is different at all. We could double check that. I mean, again, if we focus just on California from the samples that we have, then we begin to get larger errors, larger errors. So we don't like to talk too much, but if we just assume that California looks like the rest of the country, then we're talking about 11 percent.

If we assume that California consumers and residents are actually not like the rest of the world, and we might assume that they actually have more subscriptions to cable or satellite, or they've already upgraded their main viewing, then that number will be smaller.

And I think this also speaks to some of the energy savings, you know, that we assume. We assume that every set, if it were, you know, if we threw a DTA converter on every set, then we're going to save $33 per household in California. That's 2.5 tvs times this 13 percent.

What we see from our research that we actually are not going to upgrade every set, because we have that set that's tied to our XBox or our PlayStation. And we just use that for gaming. We're not going to put a DTA converter onto that set. We have on intentions to watch tv off that set.

PRESIDING MEMBER PFANNENSTIEL: John, did you have a question?

MR. WILSON: Yeah. It seems to me that one of the exciting things about the chip technology is that, of course these chips aren't just being developed for DTAs. Probably the largest motivation is to put them in digital tvs, which also need tuners.

So, there's going to be a huge market for these chips, which means, I think, the costs are going to be very low. And this is for a product that you're saying really won't be needed until 2009 anyway.

So, we have three years. It seems to me like this is a great opportunity to use 21st century technology, and not, you know, older can tuners with components that people are going to move away from anyway.

Why shouldn't we take advantage of this opportunity to put them into digital tv adapters, even though it's going to be, you know, limited time market. Seems like if you can save $13 a year, and the device could well cost less than what you're quoting as being the price, $60, why wouldn't we want to do this? What have I said that's wrong?

MR. TAYLOR: John Taylor from LG Electronics. We build digital television sets and set-top boxes.

You're exactly right. The price of the chips is driven by volume. And the fact that the majority of television sets today are digital. And by March 1st of next year they will all be digital will help continue to bring the cost down.

But I can tell you my company testified before the U.S. Congress a year ago next week and made a commitment to bring out a low-cost digital-to-analog converter box for those analog television sets that depend solely on over-the-air broadcasting. And we have 400 engineers working full time in Korea and in Chicago on this project.

And we're struggling to get to that price point, but we're going to get to a $50 price point in the 2008. And that is based on the fact that we're going to have the economies of scale of the chips, and the additional development work.

To get to a lower energy consumption is still a big challenge, and it's something we're focused on. But with all due respect, it's apples and oranges to compare a DVBT box and an ATSC box.

I think it's also important to point out the dynamics of the market. Every year one in four households buys a new television set. And as the costs of digital television continues to decline, the need for these set-top boxes is going to continue to shrink.

It's a very short-term market. If you look at the -- Brian referred to the subsidy program. This Wednesday the Congress is expected to finalize the legislation that will set the hard date for the cutoff of analog broadcasting, expected to be April 17th of 2009.

And they will likely set the details for this subsidy, likely to be $40 per box, two boxes per home, for those homes that need them. There really won't be a means test anymore, that's off the table.

It'll be a first-come/first-served. There's a concern because many of these consumers that require this box are lower income consumer, older consumers who don't subscribe to cable, and they will require this box for their old analog television set.

My company's committed to building the most energy efficient box possible. But we also think it's really important to hit that price point. A $50 price point would mean a $10 co-pay for the consumer with the $40 subsidy from the federal government.

MR. WILSON: Are you using can tuners or integrated circuits for tuning in your tvs?

MR. TAYLOR: We have chip tuners today.

MR. WILSON: So what will the power level be for the DTA you're designing for $50?

MR. TAYLOR: Above 10 watts.

UNIDENTIFIED SPEAKER: What's the standby?

MR. TAYLOR: Not sure what the standby is yet.

MR. WILSON: So you're using chips. And what kind of a technology are you using in that DTA? Is it components or ICs?

MR. TAYLOR: I'm not an engineer. It's all ICs.

MR. WILSON: So why wouldn't you use it in the -- you're saying you're using single chip --

MR. TAYLOR: The same tuner that we use in our television sets today will be in the set-top boxes in 2008. This is a product that hits the market in mid 2008 and goes off the market by mid 2009.

MR. WILSON: I just, I can't quite, you know, frankly, understand the difference between 2 watts and 10 watts. Paul, can you shed any light on this?

MR. RUDNICK: Well, I don't understand their design, so I don't know how they've implemented their design. I do know that actually LG does have a family of products that are focused on the ATSC market that they use for their television sets. And the energy consumption on their ATSC demodulator is well under a watt.

So I'm not sure how they get to 10 watts for a set-top DTA.

PRESIDING MEMBER PFANNENSTIEL: Brian.

MR. MARKWALTER: I believe we're incorrectly focusing on the tuner as the main power consumer. I'm not convinced at all it's the tuner, and that a switch to a silicon tuner is some great savings. So I think that needs further analysis. But --

MR. WILSON: Where's the power going?

MR. MARKWALTER: I suspect it's in the digital processing. There's more than just tuning, finding the signal and demodulating. There's decoding, decompression. There's always a processor in there, because you have to have user interface. You have to have V chip, you have to have closed captioning, you have to have setup functions. You have to parse streams to find program information.

There's a lot of other things. There's emergency alert signals that are embedded in DTV signals. There's a lot of processing that's going on. So it's not simply a tuner, swapping out a can tuner versus a silicon tuner. And a single chip solution from broadcom or wherever. I mean I'd like to see those, but to say you have a data sheet that says there's a silicon tuner with 1 watt, and a demod decode that's 1 watt, and therefore you ought to have a 2 watt product is just a wrong leap to a conclusion. It's not a finished product.

PRESIDING MEMBER PFANNENSTIEL: Noah.

MR. HOROWITZ: Hi. Noah Horowitz with NRDC. I've been at this consumer electronics side of things, looking at DTAs more complex set-top boxes and tvs.

And I'd like to kind of reframe the initial discussion, whether it's 4 million, 3.5, 4.1 million, there are going to be several million of these DTAs purchased. I fully agree that the window is relatively short, sometime early before

2009 for people who shop ahead. And then, oops, April 18th I can't watch my tv. There'll be a lot of people running to Best Buy and Radio Shack buying those. It's at three months, six months, nine months, who knows.

Some people may no longer be able to afford cable or satellite, and then nine or 18 months there still will be a demand for the smaller ones.

So, I don't think the discussion is -- it's not 4 million, it's 3 million, so we shouldn't have a standard. Instead I think we should be focusing on did we pick the right numbers. If not, let's figure out a process to come up with a better number.

I went to the meeting in Seoul, Korea; and I left there thinking oh, 8 watt/1 watt might have been a mistake. Other countries are saying the number should be higher.

So, I personally didn't feel I had the technical horsepower to open up a box and see whether it should be 10 watts, 2 watts, or some other number. And to John Wilson and the CEC's credit, they quickly found a technical expert. Paul is the VP of 3Com, and has been a serial startup individual. I mean that as a compliment.

And so it's not like one of us pretend engineers is doing this. So I think there needs to be a forum after today's meeting.

Paul came up with a bill of materials. Real chip companies and ABC, you know, it's LSI, Broadcom, these are big companies with commercially available chips. And he came up with a design and a price list that comes in at much lower power levels at the same or lower cost.

So I think the discussion is not whether we should have a standard; I think we all agree we need a standard. It's just how many tvs will actually have a DTA we can discuss over beer.

I think the question is if it is 2 watts, and he's right, and the price is competitive, what do we do. Do we erase 8 watt/1 watt and just come in with a 2 watt standard or something like that. Or should there be a tier two standard possibly that the CEC could set at mandatory. Or EnergyStar could come in -- Andrew Fanara was here -- and that could be the role to put up a voluntary level that's more stringent.

And we heard loud and clear this morning we need lead time. Earlier, the prior presenter said, hey, how can you even have a standard when there's no product in the market.

This is a unique case where it's the changeover in 2009 that's creating the demand for the market. The reason you can't buy one today is nobody needs it.

So I guess what I'd encourage further discussion, hopefully in as collaboratively a basis as possible, take a look at what he put on paper; maybe even build out a prototype. Maybe there's a way for PIER to quickly fund the development of one of these. And then see if the 2 watt number is close to being right.

If it clearly meets the 8 watt/1 watt hurdle, then you can leave the standard alone and nothing more is needed. Or you could ratchet it down if there's such a desire to do so.

In closing I'm hoping that if that approach seems successful and it's not just on paper, those savings, we take a look at the more complex boxes, so the Tivo boxes and the similar ones are spinning at 30, 40 watts. And those are going to continue to be demanded. Their curve is going like that, so, what's the appropriate role for EnergyStar, for the CEC and others to apply this technology.

PRESIDING MEMBER PFANNENSTIEL: thank you, Noah. Good thoughts. Brian, do you have a comment? Other questions or comments? I don't think we have any more blue cards on the subject. Gary.

MR. FERNSTROM: I have a quick question. I've been listening to this discussion about the external box that receives the digital signal, demodulates it, processes it, converts it to analog and then sends it into the set.

In the new sets that have a digital tuner receiving a digital signal directly and processing it and using it, I guess my question is how much more power does it take for that digital processing with the digital tuner and digital reception capability in the new set than it did with the old analog set.

What change can we expect in the power consumption of tv sets in general? Would we expect them to be more than 10 watts greater? Or is it significantly less on account of the fact that this digital reception is built into the television as opposed to in a converter box?

PRESIDING MEMBER PFANNENSTIEL: Thanks.

Brian, can you take that?

MR. MARKWALTER: Sure, I'll take a shot at it. That's a tough question because it's hard to compare where you have one tv of an identical technology that's exactly with and exactly without.

I suspect what we'll see is that overall the tvs are more efficient. I know we've showed this before that there is always a downward trend in energy consumption. So, I suspect these digital tvs, as compared to an equal size older analog tv, even though you've added in more chip power consumption, as a whole product probably consumes less, would be my guess.

Because there's always been a trend down, and actually Dave Kline showed some slides before from JVC that shows us a long downward trend of overall power consumption of tvs.

MR. FERNSTROM: Okay, well, that's good news for the tv in general, that's great. What I was wanting to try and do was compare this function outboard --

MR. MARKWALTER: Oh, I --

MR. FERNSTROM: -- converter to this function inboard.

MR. MARKWALTER: Yeah, that's a good question. Well, generally if you have a separate function with a separate power, that's probably going to be more power than integrated.

So the benefit of having the tuner mandate in these integrated tvs being for sale for years before that analog cutoff is that people have already bought replacement tvs that are at whatever the state of the art efficiency is.

So, I think to your point is it's worse efficiency-wise to disaggregate functions into separate boxes.

PRESIDING MEMBER PFANNENSTIEL: Any further questions, comments in this area?

MR. MARKWALTER: I have a question. Does the CEC believe that one of these DTAs exists today? Are we misunderstanding something?

MR. WILSON: No, you're not.

MR. MARKWALTER: Okay.

PRESIDING MEMBER PFANNENSTIEL: But I think as, I think Noah Horowitz from NRDC, I think, commented that nobody has bought them today because they haven't been needed today. So, people aren't buying them because there's no reason to right now. I think that was kind of the --

MR. MARKWALTER: Correct. I'm just trying to understand whether we misunderstood the report and kind of the state of affairs today. I think we agree with Noah, there needs to be dialogue on it.

I just don't think we need to write that down today. There's more to be done. I personally don't believe that 2 watt is even in the near horizon for what this product needs to do as a rendered product. Taking all these chips and doing everything it'll need.

By the way, if we pursue something like Noah talked about, NAB and MSTV put together a great request for information and quotation on one of these DTA-like things. They specified what it should do. And if you want to pursue this concept, look at it. And I suspect these equivalent products don't, you know, won't do it.

But we'd be happy to engage in that debate. In fact, we'd be happy and prefer to work on standards within CEA like we're doing for the set-top boxes already.

MR. WILSON: I have a few --

PRESIDING MEMBER PFANNENSTIEL: Go

ahead.

MR. WILSON: -- thoughts. I think we need to keep talking, but I guess just to express my thoughts, I went into this with a question of did we need to raise the 8 and 1. I'm not quite confident we don't need to raise it.

I'm also not of the opinion that we need to lower it at this point. But I am quite interested in talking to EnergyStar about, you know, they're supposed to be the top 25 percent of the market. In this case we're trying to project 25 percent of something that doesn't exist.

But it seems to me like there's a technological opportunity here to create much greater efficiency that could be a juicy target for EnergyStar.

And, you know, I just don't see why, given that we have three years to get ready for this, that why we shouldn't, you know, continue this dialogue and move in that direction.

MR. KLINE: If I may, one comment about the EnergyStar program. The only program that EnergyStar has ever withdrawn is the set-top box program. Withdrawn just recently for lack of participation, lack of focus. I wish Andrew was here to tell us all about that, but the only thing they've failed at is set-top boxes.

MR. WILSON: Yeah, and I don't know the history of that, but for multiple reasons EPA is about to get back into that business. And the numbers that were thrown around last fall for the qualification for receiving the federal incentive to me just seemed to be, you know, absurdly high.

And I would hope that EPA would be, you know, more aggressive than that.

MR. TUTT: I have a quick question. I don't know if anybody knows, but what's happening in this arena in Australia and around the world, other states, do you know? Because I think it stemmed from Australia that you started thinking about talking to others about higher standards to some degree.

MR. WILSON: Right, yeah. Just to answer the question Brian asked during his presentation. In Seoul Australians were talking about numbers like 14 on and 2 watt standby if I recall correctly. I don't know if they published that. There's been a lot of talk about it.

New York is going to be setting a standard for DTAs, and that's the reason Priscilla

Richards is here from the New York Energy Office.

No other states have gotten into the DTA business yet.

Noah, do you want to add something?

MR. HOROWITZ: Yeah, if I can. What became clear was the representatives from various countries, Australia and representatives from the EU all felt 1 watt standby was the really hard part; it should be raised to 2 watts. There was fairly wide agreement on that.

This is all prior to the discussions with Paul. And then what number above 8 should it be, 8, 10, 12. They have a ala carte menu where it started at 10, and depending on the functionality, it went higher.

Along with that discussion, which is, I think, later on in the agenda, the voluntary or the EnergyStar equivalent in Australia also had a auto powerdown requirement.

Many of these boxes will continue to stay on if the consumer doesn't hit the button on front, or just hits the remote on their tv, and not on the DTA.

So if you're at 8, 10 or 12 watts, which is the direction that was going, yes, you could have a wonderfully low standby power level of 1 or 2 watts, but you may never get there. So your 24 hours times 12, not 24 times 2.

So I was one of the people advocating for, to the extent we could find a way that wouldn't be too cumbersome for the consumer, the user, is what if after four hours of no activity nobody hit the remote; or at 1:00 in the morning a screen comes up and says, hey, unless you hit the remote in ten minutes, unless you're really watching tv, I'm going to go automatically into the low power mode.

So that was part of the Australian proposal, as well.

PRESIDING MEMBER PFANNENSTIEL: Thanks. One more comment on this subject.

MR. JOHNSON: Doug Johnson with the Consumer Electronics Association. It was mentioned a moment ago about other state actions on this subject, and I felt it was important for the Committee to know that approximately six states have rejected the idea of digital television adapter standards. And I can provide exactly which states, for the record. Thank you.

PRESIDING MEMBER PFANNENSTIEL: Please

do. I think perhaps we should move into the next subject on the digital -- if there are comments -- on digital television adapters. And specifically the question of the auto powerdown. Noah just raised it, and I think it's sitting here.

I don't know whether there are comments from people here about that. Yes.

MR. CAMPBELL: Dwayne Campbell, Radio Shack. We've been following this DTA issue all along and have a lot of concern about where the regulations are going.

When we first heard about the auto power-down we had a lot of concern about that. Consumers don't like things that they can't control or can't anticipate.

The DTA box can be used for multiple --

MR. WILSON: I have to make a joke about VCRs here. I still can't program mine.

MR. CAMPBELL: Thank you. But you think about a consumer who's gone and bought a DTA box. They have it hooked up to their television; it's also hooked up to the VCR now. And they're trying to record that program at 1:00 in the morning. And your DTA box automatically turns off. And it's going to turn off every morning because you can't stop it from doing that.

That's going to result in a returned product to Radio Shack, or to any other retailer, for customer dissatisfaction.

That's my comment.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Yes.

MR. MARKWALTER: I'll be quick. Brian with CEA, again.

The only thing I'd add is that this is a good debate for our industry to have in a forum that we can support, because there's lots of very clever people. So I hope rather than regulation top down in this case, we can talk about this and come up with a solution that works.

There's a lot of issues like recording, like program guide updates, emergency alerts and other things that are happening that we really need to think through carefully before we just decide that auto power-down is the best answer.

MR. WILSON: Brian, while you're up there, you know, one of the things that annoys efficiency advocates so much is -- and I just did this. The reason I'm grabbing my kilowatt device here, because Commissioner Pfannenstiel got a new set-top box in her office, and so, you know, we tested it. It was 15 watts on and 14 watts off.

MR. MARKWALTER: What kind of box?

MR. WILSON: I think it says Comcast on it, I don't know.

MR. MARKWALTER: Okay, so that's --

MR. WILSON: But, the --

MR. MARKWALTER: -- I think you already said that, right? So cable and set-top boxes, when they're in standby are typically doing just about everything because they're processing -- I'm not here to speak for their industry, by the way -- but they're processing all their data streams and extracting what are called the entitlement messages, doing program guide updates. Sometimes they're loading new firmware to the box.

They're basically running all the time. It's even worse for satellite because they have a one-way path, so they can't play any games with trying to poll or anything else.

So that's why, I believe, you see those numbers. But that's not my industry, per se, so.

MR. WILSON: Well, the threshold question here, I think, is to get standby or even off to mean something. So that, you know, when the consumer pushes the button that says off all the lights go out. But, in fact, nothing really happens inside the box.

MR. MARKWALTER: Yeah, well --

MR. WILSON: You think you're saving money, but you're not.

MR. MARKWALTER: Okay, this may be -- we have a whole other discussion on that. In fact, Noah's up to speed now on this one because he's been part of our standards committee that's dealing with these exact same issues.

So, for DTAs, which I guess is the subject of this particular regulation, that's not the case because we are -- I don't think anybody's advocating that there be no standby power limit. We just need to be really careful about it.

So I was not privy to the 1 watt, 2 watt debate in Seoul. I'm actually glad to hear that; the 2 watt thing tells me that they may be trying to wake up the tuner on occasion to extract some information out of the stream. But it's not like cable and satellite.

Doug handed me the list of states. Do you want me to read it for the record?

PRESIDING MEMBER PFANNENSTIEL: Yes,

please.

MR. MARKWALTER: These are ones that have declined DTA regulations. Arizona, Maine, Massachusetts, New Jersey, Oregon, Rhode Island, Vermont and Washington.

PRESIDING MEMBER PFANNENSTIEL: Thanks. All those New England states. And you'll be glad to know that John made me unplug my tv set in my office.

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: So, it doesn't use any power.

Any other comments on the auto power-down? Okay, let me then ask whether there are any comments on the whole audiovisual equipment area. Any that hasn't already come up. And John, are there any other blue cards that people have not yet been asked to come up?

MR. WILSON: Yeah, I think -- well, certainly the CEA folks have several cards here. And maybe I'll just turn this over to Doug and if you wanted to organize your speakers and presentation.

MR. JOHNSON: Doug Johnson, CEA. Thanks, John. I'd like to introduce Dave Kline again, with JVC.

(Pause.)

MR. KLINE: Okay, thanks. I'm Dave Kline from JVC. My job is General Manager for Strategic Product Planning. I work for JVC Americas Corp, which is the head holding company for 17 corporate entities across North and South America.

My job for JVC is three- to five-year mid-term plan. I have a great crystal ball on my desk.

(Pause.)

MR. KLINE: Thank you, first of all, for the opportunity. Part of this is a dialogue. One of the issues that we, as an industry, are facing is that this is our first time to be regulated. We're not normally appliances, we don't consider ourselves normally to be appliances. We are consumer electronics products. So we appreciate the fact that we are able to work with you guys and to speak and present our information. Thank you.

I have three projected suggestions to the regulations. First, to eliminate the current 230 volt testing requirement. Second, we're requesting a new implementation date for these EPS regulations. And third, we would like to suggest exemptions for specific product categories.

First, omit the 230 volt testing. First of all, the physical shape of the plug defines the voltage at which that product is to be used. Manufacturers ship products into the U.S. market with plugs, the two prong with one wider than the other; or the three-prong plug that we're all familiar with. Those only fit into 120 volt sockets.

Conversely on the other side of the equation, consumers by the National Electric Code, have specific configurations of power sockets, or receptacles, as they're called in the NEC.

The NEMA, National Electronic Manufacturers Association, has created plug and socket configurations which are specifically designed to prevent the connection of 120 volt products into a 230 volt source. Obviously, it fries.

So even if we wanted to there are only two ways to get this 230 volt test current into a U.S. market product, and both of those are bad.

First, you can circumvent that

manufacturer's design and connect some nonstandard homemade, plugged up, wrapped in adhesive tape type of power cord; or you can insert that standard power cord into some type of an adapter. We see both of those as not using the product as it was really designed by the manufacturer.

Here's your National Electric Code. You see on the left the three-prong standard thing; there's your two-prong. And you see on the right the two sockets for 120 volt. There is a difference between 15 amp and 20 amp circuits.

For example, a 20-amp circuit would be used in a bathroom. My wife and I constantly blow out our old wiring because her hot curlers going at the same time as my hair dryer is about 17 amps, and the 15-amp circuit breaker doesn't like that.

However, there are 20-amp circuits which are available, on the far right, but those have a different plug configuration. Those are, again, designed to prevent cross-connection. You don't want a 20-amp product into a 15-amp receptacle.

Here's examples of these NEMA plug configurations. The three that are in yellow highlighted are 120 volt, they say 125 volt, but that's their testing voltage or nominal voltage that they consider.

As you can see, those three configurations will not fit into any other known receptacle. You hope that your electrician has done wiring according to the NEMA and to the National Electric Code.

So, paraphrasing Johnny Cochran, a famous California person, if the plug don't fit, you must omit.

(Laughter.)

MR. KLINE: Number two.

(Applause.)

MR. KLINE: No, I didn't mean that facetiously. But it's true. How can you -- if it -- anyway. The plug don't fit, you must omit.

It's an irrelevant, as my Japanese product planning general managers over my humble American general manager position tell me, one of their favorite phrases is meaningless. Why are you doing this? Meaningless. Thank you very much.

We'd like to request a delay in the EPS tier one to July 1, 07. It gives the consumer electronic manufacturers one complete product cycle to comply.

A couple of things about the industry here. CE product introductions are done once a year, typically in the spring or the summer. Retailers, some of our partners in the room here, don't like to add products after September because they're preparing their sales staff, they're preparing their literature, they're preparing their promotions and their marketing campaigns to focus on that three-month holiday selling season, which is where they do the majority of their annual business.

Our engineering development cycle is normally 12 months. And the procurement cycle after that engineering development cycle is 12 months. And shipping by boat from the Far East, I use Malaysia as a specific example, is four to six weeks just for shipping that product, or shipping the components manufactured in the Far East to their final assembly here in the NAFTA trade zone. I'm speaking specifically of tvs in that particular instance.

Second big factor, rush orders and shorter engineering development times cost more than regular business cycles. Anything outside two-day shipping at FedEx costs less than one-day shipping at FedEx. Boat shipping from the Far East costs a lot less than air freight from the Far East.

And in order to develop over a more rapid timeframe you need to throw more engineering manpower into that project.

Secondly, by the timeframe that is in the current regulations, these do not feel that the EPS supply chain can supply enough EPS units, which are compliant with these current CEC regulations, to meet the total industry demand.

What are our development cycles? In the spirit of collaboration we'd like to tell you folks how we work so we can work together within this process. This is not something we've invented last year. These are industry cycles that have come to evolve over the last 25 to 30 years. I've been with JVC for 15 years and they've always been in place. And I started as a television product planner for our tv factory. It was in Elmwood Park, New Jersey. It's now currently a NAFTA product in Tijuana, Mexico.

Once-a-year model introductions. That's a core of the CE industry. The pc world, the IT world use much more rapid product introduction cycles. They'll do two or three a year. There's always 2.0, model XYZ 2.0, or a product 2.0. That comes much more rapidly, but is not typical of the consumer electronics industry.

Second, we have a two-year product development cycle. We're planning what should we do; we're thinking about that two years out from product introduction. Once we decide what we should build, or we feel would be most marketable, or meets our business goals within the industry, then we go to engineering. How do we best do it? What are we going to do? What's the circuit board going to look like? What are the technical requirements of the individual components?

Once you get through that engineering development cycle you work with those product procurement partners. And we consider them partners. How can we reduce costs and how can we speed up the delivery time.

One of the problems that I've seen in today's, and pardon me if I go off my printed slides here, one of the issues is that there's a plethora of new suppliers, many of whom we have never worked with before.

Typically when we, JVC, and I'll speak specifically of us, when we work with a new partner we give them one small project. For example, remote controls. There was a company who did about 80 percent of our business. Another company came to us, also another Japanese company, and they said, let us do some of your remotes for you. Here's our pricing. Fine, pricing looked good. But we're not really sure that you guys can deliver on time.

One of the cores of modern manufacturing technology is called just-in-time parts delivery. In our tv factory, even though we were producing between 5000 and 7000 televisions a day, we only had three days worth of parts. If that manufacturer of that widget is a day late, I have 650 people sitting twiddling their thumbs on the assembly line because we don't have the widgets to make the tvs that we had planned.

So reliability of delivery of that component is at core paramount importance to an effective manufacturing operation. And that comfort level with a vendor only happens over time. We don't know how well that person -- they may very well deliver on time on schedule on cost.

But my very conservative management does not believe it. Even though they're Japanese, they have a lot of Missouri in them. Show me.

In the prototyping or evaluation stage, that's another four-month process. If we build it, does it really work like we think it would work on paper. So then there's prototyping then of valuation of that prototype.

And then finally we go to a two-month process of what we call pilot production, which is where we take actual parts that have been sourced from the actual production component suppliers and put them through typically a 25- to 50-unit run. In our tv factory in Tijuana we run typically lots in the 2000 to 5000 unit range. So this is a tiny, small test run to make sure all of our machines put the parts in the right place. We assemble it all together, and the product actually works as we think it did, and as we found out that it did in a prototype situation.

The actual production is only one day. After two years of work and slaving and sweat and tears, one day is all it takes to build a tv or any of our JVC products.

And then, of course, there's shipping,

if the product is from the Far East. Or components which come from the Far East, which could be of the old typical slow-boat-to-China, the old jazz standard from the '40s. That you have a two-month lead time in that point.

So, a final thought, as I said before, rush orders cost consumers money.

Now, to our third point, infrequent use products. We brought this up at our meeting on October 12. What's an infrequent use product? One that's not used daily; it's used typically once a month or less; and it's used for infrequent gatherings or for special events like birthdays, weddings, graduations, holidays or vacations, even.

If a product is used infrequently, a camcorder, for example, it's usually not left plugged into the wall socket 24/7/365. It's used infrequently. It's stored in a drawer, put in a closet, under the bed somewhere. And it's brought out to be charged jus before each use, whether it's a vacation, before the birthday party or the holidays.

I'll go to camcorders. How many, to back up these usage models, because usage models are central to the concept of how much power does PSE&G -- have to make. How many 500 megawatt power plants do you have to build in the next ten years is really about usage patterns.

Of these video recorders or camcorders, 69 percent of the CEA market research report said they used their camcorder one hour or less per month. Per month. There was a second and you see the group, and there are folks, thank god bless them, who use it ten hours or more and they buy them every other year because they wear out. Thank you; we appreciate your support and your business.

But for 70 percent of average consumers they never buy another camcorder because it doesn't wear out. Why are you going to replace it; still works; been working since 19-whatever-87. You don't need a new one because you've only used it an hour a month or less.

Segment that market. This is also a part of CEA's market research. And we have some numbers here for California households, the .9 million, 4.6 million, casual users. Less than one hour per month, that's 69 percent of the market, that's roughly 4.6 million California households.

Steady users are two hours; six hours for the power users. But those are a much smaller segment of the market, so we need to take those actual consumption figures into consideration.

Digital photos are another example; a digital camera may not be left in 24/7. Where do you take those digital photos, digital cameras, camcorders. Many of our JVC camcorders are dual mode. They take both stills and moving video. Many digital still cameras also will capture a 10- to 15-second moving video clip.

Wireless phones. My son has a very expensive phone that he lost the other week, but nonetheless, it's a camera phone. Nondigital camrecords, and then PDAs also have camera functionality built into them.

They are growing, but not at a great rate. It's more of more households are using these digital cameras rather than the users taking more digital photos. And so we segment the market here. And you see again, 50 percent of the market is casual users who are going to be taking less than nine photos a month. That's probably two uses. Take three or four photos at a birthday party, at a gathering of friends. And so that nine photos works out to probably two uses per month.

And here's some additional infrequent use products. We have portable radios, walkie-talkies that have FRS GMRS. That means walkie-talkies. Marine radios for the boating enthusiasts. Hand-held CBs for when you're taking a road trip and you want to talk to the truckers, yeah, smokey's on the way, look out for the highway patrol.

Those, if you're serious about CB you're going to have it installed permanently in your vehicle. These are casual, recreational use products that are not used 24/7/365.

Portable nav devices. You probably know where you're going in most of the local places you go to every day or every week. So you infrequently use these navigation devices. Do you need a nav device to tell you how to get from your home to you work and back, and again the next day, and again the next day? Probably not.

Chart plotters. Another boating recreational type of a product. And then we've already talked about medical devices which I won't dwell on further, but I think they're important because they're meant to monitor, diagnose and communicate that patient's medical condition, and to report their treatments.

So, these are all infrequent use devices that we feel don't generate enough usage to justify their regulation.

Again, my three conclusions. Eliminate the 230 volt testing requirement. We're requesting a new EPS implementation date of July 1, '07. And exempt infrequent use products.

If I may go back one point to number two, why the July date? Several of our colleagues from AHAM have mentioned January 1. Our industry changes models in the second and third quarter. January 1 is a very difficult date at retail. It's right between the Christmas rush and the Superbowl. That's a big selling time; to have to transition is a very inconvenient time.

Secondly, it does not coincide with our normal product planning cycles which are typically for product introductions in the second and third quarters of the year. So, hence, we feel very strongly that a July date is very much, would be very helpful to the CE manufacturers in minimizing cost to the consumers.

And last, questions, comments, positive suggestions. And my contact information if you want to get in touch with me personally, directly.

PRESIDING MEMBER PFANNENSTIEL: John.

MR. WILSON: Dave, regarding July 1, just want to remind you that the meaning of the effective date is the manufacture date is what counts. Not the date it's sold. So you can have an effective date of January 1, but it only applies to products that are manufactured after January 1. If you're planning for your Christmas season you've obviously, you know, built them before January 1.

MR. KLINE: Yeah, unfortunately our retailers only stock three to six weeks worth of inventory from us. And that means that in the middle of January they're going to run out if they've only got three weeks of supply on hand of those products.

MR. WILSON: No, because on January 1 you're going to start manufacturing a new product that you'll ship in January. And it takes four months for it to get there from China anyway, right?

MR. KLINE: Two months, but -- or in

Mexico, they're fairly quick in. No, the issue is more that there's -- it's the date, it's whether that fits into the annual product cycle. And that retailer is not going to continue buying products. I would -- I'll defer to our retail partners, I don't want to put words in their mouth about how they buy and how they maintain their inventory of their products.

We'd love to sell them all sorts of stuff, but they're only going to take three to six weeks.

PRESIDING MEMBER PFANNENSTIEL: Go ahead.

MR. CHAMBERLAIN: Bill Chamberlain from Cobra. Basically there's two major resets in the retail calendar. One's in April; that's where most of the products are changed over, from April through May. And then there's another one in August/September timeframe. That's kind of like the last ditch effort for the Christmas season.

So if you take that September timeframe and you start working back it's basically up till around the July date. That's the reason.

PRESIDING MEMBER PFANNENSTIEL: Noah.

MR. HOROWITZ: Noah Horowitz. A little

bit of history. There's already been one extension granted on the external power supplies. It seems like a lot of people, for various reasons, didn't participate in the first rulemaking where we said this, and it's unfortunate we're having all this good discussion now rather than months ago.

So there was an 18-month lead time that was already granted by the CEC. It was originally 12 months, and it was bumped up to 18.

Another benefit of July versus January, the back-to-school season and the holiday season, hopefully a July date would positively impact those two key seasons, so that's some of the pros and cons of July.

PRESIDING MEMBER PFANNENSTIEL: Other questions, John?

MR. WILSON: Dave, going back to your product cycle, and how long it is and so forth. I don't quite understand why it would be so relevant in this case because with tvs and DVDs and so forth, what we essentially did was take the out-of-date EnergyStar specification levels and make them standards. And so these are not new levels in the sense that, you know, clearly you'd been making EnergyStar products.

MR. KLINE: Yes, and in fact --

MR. WILSON: And they exist.

MR. KLINE: Yes, exactly. And I hate to brag, but we at JVC had 57 television products that are now listed on the CEC website. All of our tvs, and I underscore all, of our tvs are EnergyStar compliant.

In fact, there was one model suggested to us by an outside manufacturer that did not meet EnergyStar compliance. We refused to build that product. That's the only product that was dropped from our product plan this year. And the only reason it was because it did not meet EnergyStar.

So, 57 JVC tvs are there on you all's website. And we've been real positive about supporting. We're an initial member. I was a part of the group that negotiated the original tv/VCR standard with EnergyStar. And we've been supporting that.

We have a global corporate environmental commitment to support those regulations worldwide. EnergyStar is one of those. And we take that -- took that responsibility seriously. That was one of the reasons that we were, I'd say, the first large major manufacturer of televisions to be listed on the CEC website, is because all our stuff was already there.

There are other manufacturers in the rest of the industry, I hate to break ranks here, guys, but they weren't as prepared or compliant with EnergyStar. And perhaps they're having more difficult issues, but that's just one manufacturer speaking. And I'm trying to put on my other hat as an industry spokesperson and say there are other manufacturers who have not achieved that compliance level.

PRESIDING MEMBER PFANNENSTIEL: Thanks. Doug, were you going to maybe speak to the other manufacturers?

MR. JOHNSON: If the Commissioners are ready I can introduce the next speaker.

PRESIDING MEMBER PFANNENSTIEL: Yes, thank you.

MR. KLINE: Kurt Roth with TIAX.

(Pause.)

DR. ROTH: Thank you. I'm glad to have this opportunity to speak this afternoon here. We were approached by CEA to perform an independent assessment of the analyses which were performed for the California regulations for the consumer electronic products under this, which are being discussed today.

And what I'm going to do today is I'm going to present the results of the independent study that we did.

Just to give a little background on who we are. TIAX used to be part of Arthur D. Little in Cambridge, Massachusetts. We do a wide range of technology development, product development and technology assessment. And really we're kind of the original Arthur D. Little. Also with a California presence in Cupertino, California.

We've done a lot of things over the past century, a lot of technology development efforts; a wide range of different areas, just kind of to get a feel for what our company's been doing over the years.

And I'd like to highlight briefly some specific things that we've done which are a bit more relevant to what we're going to discuss today.

Specifically, we've done a lot of work with the Department of Energy building technologies group in support of appliance rulemaking. A lot of this work, couple things mentioned up here, commercial AC rulemaking, residential furnace and boiler. A lot of analyses which involve prioritization analysis, which kind of products have energy savings opportunities where their magnitudes were issues. A lot of things like that.

Also we've done a lot of characterization of energy consumption in buildings and of buildings appliances; a lot of, you know, electronics, IT equipment, and done technology assessment efforts where we've looked at energy savings opportunities. And also we've looked at not just the energy savings opportunities, but assessing the economics, things related to commercialization of new technologies.

And I think particularly and I've drawn this in our presentation, our experience in the rulemaking support for DOE, which is a very comprehensive process. I think it will come to bear in some of the things we'll discuss today.

And as I mentioned, CEA came to us and asked us if we would perform an independent assessment of the analyses that were used in support of these different regulations. And this is what we're going to present.

Specifically in the consumer electronics area of the televisions, compact audio products, DVD players/recorders, DTAs, basic DTAs which were discussed earlier, as well as external power supplies. I'm going to kind of go through on a product-by-product basis of all of our findings from our study.

And there's a report which the Commission's now received. And I assume, Doug, it's going to become widely available?

MR. KLINE: Yes.

DR. ROTH: Okay. It's the preliminary final report. There are a couple things we need to tweak, but they're minor, before it becomes a final report.

And, you know, in each case what we did is we really looked at what are the key assumptions which underlie the different analyses. Fundamentally, what you're looking at is you have to demonstrate that there's a net savings to consumer for the regulation on average.

So that means the net present value of the energy savings minus incremental cost is a positive number.

And so the key components of that are one, what's the incremental cost; how much more does it take to have a typical noncompliant device come into compliance, what's that incremental cost to the consumer. So, after all the markups.

And then we're looking at present value savings. And that's a product of how much energy are you saving in mode, in the different modes. So, looking at what's typical new noncompliant relative to the standard level, what's that power difference times the number of hours you spend in those different modes per year. And then you sum it over all the different modes. And then you multiply times the energy savings, and you discount the energy savings out in the future. So that's the basic approach. And we're really focusing on the numbers that go into there.

So the power draw by mode numbers as well as the incremental cost values and the hours by mode.

Now, looking at televisions, just to start with televisions. We looked at the data which were used for the television calculation. And, you know, the shipments were pretty similar. We updated the values a bit to reflect 2005 shipments to California of the tvs which were covered by the regulation.

Then we looked at standby power draw values. The original analyses used a value of about 7.3 watts, a bit over 7 watts, and cites DOE 2002 as a source. And the original source for this appears to be a Rosen-Meiers study which was done in 1999; it came out in March of '99.

And EnergyStar program for tvs only was launched in 1998. Things have gone forward since then. About 22 percent of the market share of tvs in 2004 met that level. In addition, there are more tvs which had, I believe, met the old levels well.

So, if you look at it, the number of devices which are -- there's a significant portion of devices which do fall well below the standard right now.

A more recent estimate for the typical power draw in the standby mode for televisions was done by Ostendorp, et al, 2005. They found about 3.9 watts. And that's, you know, it's not completely clear that it's typical new, but it's reasonably close it appears. And it's a mix of digital, analog, variety of different devices;

although analog tvs are really, their market share's really declined and digital is going up. So there could be some changes going on here. But we used this 3.9 value for our study.

In terms of looking at the number of annual hours in standby, the original study used about 6200. Again, this kind of seems to trace back to Rosen and Meier in 1999. We've gone to a more recent value, again from Ostendorp, you know, uses pretty similar methodology to Rosen and Meier. We used this value; it essentially reflects that there are more tvs in homes; not all of them are being used that often. So number of hours that they're in standby mode increases a bit.

So, when you kind of sum it all up and say how did the energy savings compare, and what it appears is, you know, the original analysis, this is the PG&E study, estimates something around 68 gigawatt hours per year in the first year, based on sales.

We estimated something probably closer to around 20 gigawatt hours per year. And there's no savings for at least 22 percent of the market, possibly more because there's a substantial number of devices which do not, which are also below the 3 watt threshold, as well.

Now, looking at incremental cost. Now, this is a very tough thing to estimate. We looked through the data which was presented in the analysis. There's a $3 or less value. And the authors mentioned that, you know, this is difficult to quantify, but they expect it to be very low. But there's no citation for where the value came from.

There's no design path presented, which is how a noncompliant tv becomes compliant, so you can't analyze what components were added, what's changed, what's been altered. And there's no manufacturing cost analysis that appears to be performed to come up with this number.

So what we conclude is that value lacks a solid foundation for really getting at the incremental cost. It's really difficult to understand where that value comes from.

And so, because you can't estimate the incremental cost, or there doesn't seem to be a solid estimate for that yet, it's really tough to determine yet now, at this point in time, whether the proposed standard is, you know, is it -- are they really cost effective, or are they not cost effective. You really need better incremental cost data above all.

Now, I appreciate how difficult it is to get this kind of information. It's really really challenging in some cases. I mean this is just what we've done in supporting DOE rulemaking processes. We've done manufacturing cost analysis studies where you do, you find a baseline-kind of device. You take it apart; really understand what's going on; develop -- materials; understand the differences between what's going on in the baseline device, which is noncompliant in this case, and one which is compliant.

And therefore you can start analyzing what are the differences, costing it out. And you do this in a whole context of a manufacturing line of how -- produce these things. We visit the factories; we see the processes they're using; we dig into it in a lot of depth.

And then from that you can start adjusting for manufacturing volumes, age of equipment, all those different kind of things to get, you know, incremental cost efficiency data to understand what the cost effectiveness of different standard levels are. And this is what we've done.

And to take another look at this, you know, for example, this would be something we would do for television where you have, you know, all these different sub-assemblies. We really break it down a lot, structured build materials, to dig into what drives these differences.

And if you want to look at it from another aspect, you know, there are a lot of things that go into this, as well. It's not just all the different parts. There are a lot of different fixed and variable costs which you can see here in the factory costs.

Then there's corporate markup in everything. And then that's kind of the price which is the equipment cost, which is then what it is sold to, say, a retailer at; things like that. And eventually, you know, then it has to be marked up again to the end cost to the consumer.

And those factors -- get into this a little bit later, but there are a lot of things that go into that. But there's a lot of detail which goes into doing a very, an accurate manufacturing cost analysis.

Moving ahead, DVD players; it appears that there's some issues with the -- well, I would say, based upon our analysis, the power draw values used for the DVD player and recorder analysis seem to be out of date. And there also seem to be some issues with how accurate the usage assumptions are in terms of annual hours spent in standby mode.

For instance, if you look at where the standby power draw value comes, the original value is 4.2 watts. This is from another Rosen and Meier study which came out in December of 1999. Actually, it's from the same one, it's from the one that came out in March of 1999.

It reports DVD player power draw in standby mode from 20 measurements. So it has to be 1999 or 1998 units, earlier, say. And well, since that point in time DVD player sales have increased, on the installed basis, increased fifteen fold. So there's been an awful lot of change in the market.

And that includes the fact that EnergyStar's really become a mainstream program. At least, you know, 62 percent of DVD players sold in 2004 were EnergyStar units with a mean power draw of about 1.1. If you just take the mathematical average of all the units that are in that database.

So, clearly, you know, there's probably been a very large shift in the market since this original data came out.

And what we did was in our re-analysis we assumed that other typical new units, these were the noncompliant units, drew 4.2 watts. But again, this has, you know, a reasonable amount of uncertainty with it, too. You know, don't know.

The annual standby power hours, the original analysis uses 6300, something like that. Again, cites DOE 2002; appears to go back to Rosen and Meier.

And what they did is they -- this is based upon usage for VCRs -- and they went ahead and developed an estimate based upon, you know, usage of VCRs, how much time people are recording information. And then there's the rest of the time which is when it's either idle, it's on but nothing's happening, or it's off and it's just, you know, standby mode.

Well, the authors in that situation had a tough choice to make, you know. They didn't have any data to go on basically, is what they, as they explain in their report, and they used a rough estimate based on their experience to apportion 25 percent of that remaining time into idle mode, and the remaining 75 percent into a standby mode.

Well, you know, it's one estimate, but it's, you know, it's not supported by data. If you look at a more recent survey, this is, I think, circa 2001, got it from Bob Harrison. They surveyed 300 people in the UK and they asked them essentially, when you come home at night is your VCR on or off. Just, you know, kind of a proxy for, you know, do you leave your VCR on a lot of the time or do you not.

What they found was 60 percent of the VCRs roughly were left on. So, you know, that's a data point. Again, has some confounding factors. It's UK, but at least it's based upon actual data.

So in our re-analysis we go ahead and use that 60 percent of that portion tied into an idle mode and would assume the other 40 percent is in the standby mode. Which yields a total number of hours per year of around 3400 hours.

So now we kind of get to the bottomline

in terms of energy savings. Original estimate was about 12 gigawatt hours. If we do a re-analysis, the typical new product, none. Overall there's some portion of the market which is noncompliant. That would be around 4 gigawatt hours if you got those units in compliance. But that's based upon, you know, a rough estimate of 4.2, the original value there. You need a little more study would be warranted for that portion of the market.

Looking at incremental cost. Again, a key portion to assessing the cost effectiveness of the analysis. You know, again, there's $1 put out, there's a value. And, again, it was stated, you know, this is difficult to quantify, but it's expected to be low. You know, understand it's challenging to come up with estimates where there's no citation to support this estimate, and there's no design path to really lay out what's done to take a noncompliant unit to make it compliant.

So therefore it's really difficult to assess does that value make sense or not. You can't tell. There's no solid foundation for that estimate.

So, based on that we conclude again for

DVD players and recorders that at this point in time it's not possible to determine whether the regulation would be cost effective or not. The data are just not there.

Compact audio. Interesting category. This is an analysis where there seems to be, you know, a couple common uncertainties here. One is the power draw data for the typical new or baseline kind of unit.

It's assumed from the original, you know, the original analysis assumes about 9.8, you know, around 10 watts or something like that. Cites DOE 2002. This goes back to Rosen and Meier 1999. This is the December 1999 study that they did.

And what they did was they measured 19 units primarily found in retail shops. And as the authors of that report stated, to their credit, you know, give you a feel for the uncertainty, the measurements were taken randomly, no conscious effort was taken to select a representative sample of manufacturers or quality levels. So the data are just, they're somewhat random data points that they were able to access. You know, helpful for getting a feel for generally if it might be an issue, but not very conclusive.

Well, since then EnergyStar for audio products has come into existence, and about 28 percent of the compact audio products on the market in 2004 were EnergyStar. And these drew, I believe it's 1 watt for EnergyStar units.

Limited other measurements. There's some LBNL measurements from 2004. Theirs suggests saying around 3 watt might be more typical of kind of an average value. And we're making that rough assumption that it's about 3 watts for a typical new product. Again, this has a good deal of uncertainty. It's something which we call for further research to investigate. But the value around 10 watts seems quite high, and also it's quite dated. It's probably from -- it's from 1999 or earlier.

So, another issue here is the original analysis assumes about 65, 70 hours in standby mode. This cites DOE 2002. Very close to the Rosen and Meier report, presumably that's where it came from.

And they did not have, you know, very little data to make that 20 percent -- essentially there was time when it was playing; they knew that pretty well from listening habits and data on that, because advertisers are interested in that. They apportioned the time, remaining time, 20 percent to idle, 80 percent to standby.

But this is something where, again, to their credit they admitted, this is something highly uncertain. Little reason to believe that it's an accurate estimate. It's very tough to say.

We, you know, used the analysis of value which is slightly lower than that, which adjusted for how they're used with tvs which increased their usage hours a bit. But we think that value is still very uncertain. You know, there's a lot of uncertainty around it.

So the original savings, the first year of savings was very, you know, substantial, 56 gigawatt hours. The re-analysis finds a much smaller number, around 5 gigawatt hours. But, again, it's quite uncertain. A lot of that deals with the baseline power draw value going from 10 down to 3. Probably more research needed to really dig into where that value actually is.

Looking on the incremental cost side, I hope I'm not sounding completely like a broken record, but $1 was the estimated cost. It was estimated to be, you know, not very much. But difficult to develop. There's no citation for this value, no design path laid out to get a noncompliant device to be at 2 watts or less, which is the level for the standard. And no manufacturing cost analysis appears to have been performed to dig into what, you know, where the values come from.

So, based on that, you know, the incremental cost is really tough to evaluate. And really it's a value without foundation, and we're really not able to conclude now that the standard is either cost effective or not cost effective. The data just are, there's a lot of uncertainty, and there needs to be more work on that.

Basic television adapters. I won't go into this too much. We've actually had, you know, there was good discussion about that earlier today. You know, it's difficult to determine what's an appropriate baseline for something which hasn't come onto the market. You know, it's going to be based on conjecture in some cases.

The original analysis assumed an active draw power value of around 19 watts, I believe that's what we backed out from the usage pattern, which were shown, and the standby value which was shown. And it's based upon units from UK and Australia.

We were able to get some data from 2004 for the entire market of these kinds of basic DDTAs in the UK. And they indicated values based upon their actually weighted market shares and power draw values of something on the order of 8.5 watts active, 6.5 watts standby for those values. So it suggests, you know, again, first cut baseline might be a bit lower than what was used. But, again, there are a lot of factors, and, you know, I'm not going to wade into the -- you know, there's already an ongoing discussion upon what those values should be.

I guess what I would say, though, is the baseline is very important for assessing how much is the standard actually going to save because you have to save relative to something, and a clear baseline is needed for that.

You know, original analysis, you know, gigawatt savings, gigawatt hour savings, nothing being saved yet, no products out there.

And because they're, you know, one point which wasn't really brought up in the discussion earlier, but I think is an important one, is it's always the incremental cost difference which makes a difference in terms of assessing the cost effectiveness of the regulation.

And, you know, you can talk about different units priced at different points, and their performance, but I think you really have to get down to what's the incremental cost and therefore compare that to the incremental cost savings from energy saved.

And so I think that is really key in terms of going ahead. I guess what I would recommend is thinking about these things in terms of when you're setting levels. What are appropriate incremental costs; what are appropriate baseline units and incremental savings.

But, you know, at this point in time, based upon the information we received we could not develop a credible, you know, determination of whether it was cost effective or not.

External power supplies, I'd like to get into those for a little bit. You know, the annual shipments in the original analysis were about 27 million units. Re-analysis we estimated around 38 million, and that's based upon an updated version of a industry report which was referenced in the initial study.

And, you know, one basic assumption that we made was the external power supply lifetime was equal to the lifetime of the device that it was serving. And so we weighted values based on shipment and energy consumption. Got something in the 4.1 to 4.3 year range; used 4.3 years for our calculations for our analysis.

And for uses by mode, the original analysis, you know, assumed similar usage by wattage bin. We went ahead and used those values for, you know, our initial analysis. And, you know, there's one important assumption in here, and that's that, you know, this usage doesn't really vary with the type of device served by the EPS; but, if incremental costs satisfy to go from a noncompliant unit to compliant unit vary significantly with product type, i.e., if it's not just a device which can be, you know, switched between different units without any appreciable change. If there are differences between using in different applications, then this kind of interaction starts to become more important. And then I think, you know, the assumptions need to be modified in terms of doing an overall analysis.

Now, one thing we looked at was, you know, the original data set. It appears that the data set data used for the EPS analysis looks at really outdated energy performance of EPSs. It seems to over-sample linear external power supplies.

If you look at it, the original analysis mentioned that the market share in 2000 was about 46 percent for linear EPSs, about 50, 54 percent for switch mode.

Well, Darnell Group projected that in 2005 that grew to 75 percent switch mode, and about 25, you know, decreased to 25 percent linear. Obviously, as we've been talking about, this is important because of the ramifications for energy consumption. The range, you know, linears 25, 60 percent, that's what's quoted in the PG&E study; you know, 60 percent to 90 percent for switch modes. So very significant impact in terms of the overall energy consumption. Very large paradigm shift.

And if we take a look at the data, we

didn't have access to all the data that went into the original analysis, but what we did is we did take a look at the efficientpowersupplies.org data, which was developed by Ecos. And compared it to the -- we compared the efficiency values in terms of percent from there to the values that were presented in the Fernstrom report, the PG&E 2004 report, to see how the efficiencies compared.

And as you can see, generally they're quite much in the same range. The NC means noncompliant devices. So that's the average efficiency of the devices which, for either efficiency reasons, or no-load power draw reasons, did not comply. And the all-units one is all the units, taking their average in terms of efficiency.

And what you see is generally they're very quite similar. And this is important, because looking at the external power supplies which are in that database, 70 percent of those devices were linear. However, the market reality is in 2005 only about 25 percent of the external power supplies sold, according to Darnell Group, were linear power supplies. Switch mode has really taken over a lot of the market. So this tends to decrease the energy consumption in savings estimates a lot.

Now, another key portion of the analysis is to look at the incremental cost. A lot of discussion this morning about incremental cost and external power supplies. Again, this is challenging to get your hands around on. There are a lot of confounding issues.

And, you know, I list some of them right here. Manufacturing volumes, sales volumes, purchasing volumes and sourcing, purchasing negotiations, product line maturity. If someone's amortizing the cost of a product line and the producers line. There are a lot of factors. It's very very challenging to get, you know, a good cost.

The three sources which are referred to for incremental cost estimates in the original analysis, you know, they're listed as citations in the report. The first one is personal communication from two employees of an EPS manufacturer, okay. Second one's a leading manufacturer of switch mode power supply integrated circuits. And the third one's, you know, an anecdotal comparison from two power supplies with similar characteristics sold by the same electric supply vendor.

These, you know, we believe that you can learn something by going to these sources, but these biases, these things which can affect the numbers greatly still remain. And it really, it's tough to get meaningful data out of these kind of sources.

The way to really -- we feel the best way to get this kind of information is to do engineering-based manufacturing cost analyses to really understand what's going on with incremental cost. And it can really, by doing these detailed bill material kind of analyses, understanding the processes involved, you can start stripping out the effect of these different effects that bias the values one way or another to develop meaningful incremental cost estimates. And it's not clear that this was done in the case of the original analysis.

Now, we did a little preliminary analysis and it's rough, but I thought we should present it. What we did was we talked to the people who did the Darnell Group report 2005. And said, okay, and, you know, linear power supplies are really concentrated in the lower wattage bins, you know, 10 watts and under.

And we said, okay, what kind of incremental cost do you see for the OEM prices between linear and switch mode supplies. Now, this is assuming, again, that they're commodities, that there's no difference, they can just directly compare them.

They were estimating something on the order of 17, 18 percent, in this range. Now, if we take a look and we take the typical prices for external power supplies in this kind of range, we look at the difference, okay, you know, it's not that different than what they get from the initial analysis.

However, there are two things which are important to keep in mind here. First of all, this represents just the cost to go from a linear power supply to a switch mode power supply. And it does not -- there's additional cost to go from a switch mode power supply in many cases to a compliant external power supply that will meet the CEC tier one and tier two standards.

At efficientpowersupplies.org database a large portion of the EPSs did not meet the tier one standard, and even larger portion did not meet the tier two. I think it was about, I want to say about two-thirds did not make the tier one.

The other issue which comes up and which we found is that there does not appear to be appropriate markups applied to the OEM price values. These are devices which are sold with a product. This product is essentially, you know, it comes in part of the product. The product, as I was showing in the earlier discussion of where costs come from, there's kind of a factory cost, and then there's corporate overhead and all that on top of that. Then there's a cost markup from the retailer to the consumer.

Now, you know, this is not easy to get data on. There are a lot of different variables which impact where markups specifically are. It varies a lot from different kinds of consumer electronics equipment, very challenging.

What we did do is we looked at a prior study that was done for televisions. This is done by ADL, Arthur D. Little, and what they did was they're looking at an interesting issue which kind of is, it's kind of interesting that it comes in here. They were looking at what was the incremental cost impact of adding a digital tuner to a television set to kind of provide input to the FCC.

And what they did was they used two sets of markups. One was a low markup range, and one was a higher markup range. This reflects the range of products sold. And again, this is, you know, 2001, but this gives a feel for what kind of ballpark we might be talking about. In addition we added on California sales tax that's required.

So, you know, then you're looking at markups between 1.9 and 3.6. Again, this is just one case, the specific investigation for a specific applications. And this would apply not only to the external power supply analysis, but also to the analyses for the other consumer electronic products.

So, I think this is an area which it's not clear that it was incorporated. If it was incorporated into the initial analyses done, the PG&E studies, then it appears that the incremental cost estimates there were very low.

So, our basic conclusion after all that is that the OEM costs, because of a couple factors, the data shortcomings in terms of the large over-sampling of linear power supplies relative to switch mode power supplies, and also the fact that if you're going from a linear to a switch mode there's additional costs, and the markups on top of that, as well, this leads us to believe that at this point in time it's premature to arrive at a conclusion that the standard is either cost effective or not cost effective for external power supplies.

All right, conclusions. So, this is kind of wrapping it all up. We look at, you know, it's going to sound a little old, but again, the original analyses in most cases rely upon outdated power draw values that really do not appear to reflect the performance of typical new products.

Again, typical new is the important baseline for these because that's what you're buying a product, you're buying a typical new product, not replacing your -- that's what your energy performance is relative to, your savings is relative to, because that's what's being bought as kind of as a default.

And also besides these outdated power draw assumptions, you know, the incremental cost assessments we would characterize as tenuous.

There really needs to be more analysis, we believe, to get at the incremental cost estimates for the products we've analyzed.

And just, you know, looking a bit at specific cases, tvs again, power draw data, they don't seem to reflect what's new. We recommend newer data, that data point. DVD players, again, data is taken from 1998 or 1999, which, you know, volumes of installed base have increased dramatically since then.

Also the number of hours spent per year in standby mode appear to be very uncertain, because they might be left on more than was estimated by Meier and Rosen.

Compact audio products. The power draw assumptions for the baseline units, again 9.8 watts; that seems to be outdated. Also, the standby hours per year seems to be, there's a lot of uncertainty around that. Basic television adapters, touched on that again.

And then finally, the incremental cost. Because there really aren't sources provided for the incremental cost estimates, or the design path to develop the standards, you really can't tell what is needed to be added. Really, there's just no solid foundation for those estimates. So it makes it very challenging to assess the incremental costs, and therefore assess whether the standards are cost effective or not.

External power supplies, again. Just went over this but I'll highlight it again. Outdated assumptions for baseline energy performance. This is again the number of linears versus the number of switch mode devices. The incremental cost values, again, very large uncertainty here. And, you know, they don't appear to be done in a way that takes into account the many factors that can bias estimates, such as purchasing volumes, manufacturing volumes, wide range of different things. And really need to be ferreted out from a manufacturing cost modeling approach.

So, again, also for external power supplies we conclude that the data presented, it, to this point in time, is not possible to conclude that a tier one or tier two standard is cost effective or not.

Now, in terms of recommendations, you know, we though, okay, well, what kind of data would you really need to get to go ahead, and how can these gaps be filled. Because, you know, I'm sure the Commission wants to do something.

And looking at incremental costs, you can do -- their design option analyses for the products, based on manufacturing cost modeling, where you do costing and you try to break out all these other factors to get truly at what are meaningful cost differences.

Also evaluating the markups associated with these different paths. So you understand how a price which comes from a bill of materials, how that actually translates into a price delta for the consumer, which is therefore the incremental cost of a noncompliant product to make it compliant, which is used in the net present value analysis.

And one thing which needs to be done, too, when external power supplies are selected for the analysis they need to be selected from product categories that account for significant portions of the overall energy consumption by external power supplies, and also from devices with large market shares. So they need to take into account what is actually sold, what's the market reality.

Measurement of power draw

characteristics. Again, outdated data for compact audio; 19 units back in 1998 or 1999. That's, you know, the market's moved, EnergyStar's gotten an appreciable market share since then. New data need to be measurement, and they need to be representative of what devices are actually sold in the market.

Looking at external power supplies, largest categories, but also need to understand they need to be associated with the product types that we're talking about that have significant market portion -- significant portion of the energy consumption associated with those. And also what is actually sold a lot in the market. And represent the real split between linear and switch mode devices.

You know, it's changed a lot, but it's, I think to do a meaningful analysis that's what needs to be done.

Also, a few other side notes here. Usage patterns for DVD players were mentioned. There's a lot of uncertainty there. There are ways to gather data to get a better feel for how much people leave on their DVD players, in which case they'd be in idle mode instead of standby mode.

Same thing for compact audio. There's a reasonable amount of uncertainty. I have enough friends who leave their stereos on. I turn mine off. I don't know what the split is there. It's a rough estimate. We're finding it has an appreciable impact potentially on the result either way.

And usage patterns could also be refined for external power supplies assuming that, you know, analysis of the cost is a function of the main application, shows appreciable variation in the features of the external power supply that need to vary with application.

Discount rate on -- the CEC, this is somewhat of a minor point but CEC used an assumption of 3 percent real interest rate. The DOE rulemaking analyses, the last two that I've been involved with, the residential furnace and boiler, as well as the commercial unitary AC and heat pump rules, they both used discount rates of around 7 percent, so we would suggest using that as a discount rate.

And finally, the external power supply test procedure, we recommend eliminating the 230 volt test requirement. A few reasons for that. Obviously 115 volt power is only used in California. So 230 volt performance is not relative to California energy consumption, energy performance.

Also this is a point we think is valid. Including a 230 test requirement that prevents the development of optimized designs for the 115 volt requirement. There's some things that are involved in terms of tradeoffs, which are discussed a little more in our document. But, you know, if you have to design for both, you either have to -- you have to increase costs typically. And so we think essentially having this requirement increases the cost of compliance with the regulation.

So that's the end of my presentation. I'd be glad to discuss any part of this further.

PRESIDING MEMBER PFANNENSTIEL: Thank you. That was quite a lot of information. And being the first time that I think any of us up here have seen it, it was new, something that we need to digest.

But I do think that we need to have some discussion now about the points you made. I think specifically the critiques that you offered of the work that had been done that certainly this Commission relied on in drawing the conclusions that we did.

So, let's see if there are those who want to engage in that discussion.

MR. WILSON: Jackie.

PRESIDING MEMBER PFANNENSTIEL: Let me start with John. Go ahead.

MR. WILSON: Thanks, Kurt. I think I do want to replay this at normal speed as opposed to the 78 rpm that we were listening to in that.

One question about the way you approached incremental costs, because you had pretty much the same critique in every case. You wanted to see analysis taking a noncomplying unit and making it comply.

DR. ROTH: Yes.

MR. WILSON: And that to me seems kind of odd because I think in every case here we have complying units. So you don't take a noncomplying unit and re-engineer it, you just use the complying unit. So how do you deal with that?

DR. ROTH: Well, still, presumably there is some cost premium involved with going from a noncompliant unit to a compliant unit, right? That's what the, you know, the assumption is, right? And that's --

MR. WILSON: No, I don't make that assumption, Kurt.

DR. ROTH: Okay.

MR. WILSON: I mean --

(Parties speaking simultaneously.)

DR. ROTH: -- and maybe there's not. I mean if there's no -- then you can just take, you can do a manufacturing cost analysis of the noncompliant and then the compliant and look at it.

MR. WILSON: But there's -- yeah, --

DR. ROTH: I mean you have to really do that kind of level.

MR. WILSON: But it seems to me that your criticism is a little off base. You're asking a question that nobody asked. And they didn't ask it because they were complying units.

Now maybe you could ask a different question.

DR. ROTH: Well, no, you have to get at the incremental cost. And to understand the incremental cost you have to understand what's the cost of the baseline option, and then you have to understand what's the cost of the baseline noncompliant option and then what's the baseline compliant option.

MR. WILSON: Or, well, to me a more reasonable question is to say, go to BestBuy and see how much an EnergyStar unit costs and how much a non-EnergyStar unit costs --

DR. ROTH: The problem is if you look at an EnergyStar unit and a non-EnergyStar unit, there are often many factors which are confounding this. Their features, you know, there are several different things which become involved typically. It's very difficult to say find one unit and have -- and another unit and have the only difference between those two units be this one is performing at this level efficiency and this one's performing at that level efficiency with consumer electronics. That's at least my impression.

I mean if you can find things which differ only in terms of what the efficiency -- you know, their energy performance, and there are no other feature differences or where they're manufactured differences, all those other kind of things, then, yes, you could look at them.

But I mean comparing store prices I think that's fraught with all kinds of uncertainty. I mean that's -- I would counsel against that. That deals a lot with the retail chain and how things are sold, and how old manufacturing lines are. I mean, I don't think that's -- in a lot of cases I think it's very questionable if that would get a reliable incremental cost estimate.

MR. WILSON: Well, I think I learned, if I learned nothing else from your presentation, it was that a lot of this stuff is really difficult and confounding. And I agree with you, it's hard to get an apples-and-apples comparison. But it seems to me that's such an obvious first thing to do, is to see what prices are in the retail market, and do the best apples-and-apples you can.

(Parties speaking simultaneously.)

DR. ROTH: Sure, if you want to pursue that route, I think you can. I think you have to be very careful in terms of making sure other variables don't come into play.

MR. WILSON: Sure, sure.

DR. ROTH: I mean you're an economist, right?

MR. WILSON: Right. Long ago. You criticized the Ecos database on energy, external power supplies for not being representative. And I think you have to acknowledge that they never asserted that that was representative database. It was the power supplies that they could get.

And you heard Chris say that this morning, in fact, that, you know, a lot of those power supplies were of unknown vintage. And so --

DR. ROTH: I guess, you know, if you're trying to figure out again what's an appropriate baseline and you're estimating -- that was essentially used as a baseline to estimate what is the performance without a standard of external power supplies, correct?

MR. WILSON: Yeah, for --

DR. ROTH: Right.

MR. WILSON: -- yeah.

DR. ROTH: So, you have, what I'm saying is the baseline should actually reflect what the market reality is in terms of its energy consumption characteristics.

MR. WILSON: Sure.

DR. ROTH: So, if you wanted to -- an assessment of how much you're going to save in terms of gigawatt hours per year, or you want to do a per-unit energy savings, which is, you know, part of the net present value calculation where you do that and, you know, you discount it over several years, sum it up and then subtract incremental cost, that baseline becomes very important.

So that's why, when we looked at the issue it seemed like the baseline did not correlate that well to what was actually sold in the market.

MR. WILSON: Right. And several points you criticized the analysis for relying on outmoded data. I guess I'd point out, acknowledging this is kind of a snotty comment, but this analysis was done two years ago which is when we were making the decision on these standards.

Your analysis is two years too late. So, sure you have more recent data, but in many cases, you know, it's not really relevant to the decision that was made over a year ago.

But also related to that is the fact that you're pointing out that in essence efficiency is improving a lot over time anyway.

This is partly a function of the Ecos database, and also the fact that you're relying upon more recent Darnell report data from 2005, which wasn't available to us when we made the decision.

But, in fact, the good news is the market's moving anyway for a lot of different reasons. These external power supplies are lighter; they have very low cost; the price of copper and steel is going up, which you didn't mention. So there's a lot of reasons why the market's getting better.

So, you know, -- but the way you approached the problem that makes it harder for us to justify the standard, because the baseline is lower. So, is this good news or bad news? You're saying it's bad news; I'm saying it's good news.

DR. ROTH: I'm not saying it's good news or bad news. I'm just saying this is how, if we go about the analysis, this is how we would do it. And you need to rely upon values which are meaningful in terms of how things are, have a meaningful baseline.

MR. WILSON: Right, but if the baseline is getting better, shouldn't that also mean that the incremental costs are getting lower?

DR. ROTH: They may well. And, you know, I think it's -- I'm not in a position to really honestly say that, you know, what the incremental costs are, though.

I mean, look, I think one thing we know from the discussions going back and forth today on external power supplies, is that I think it's challenging to get a meaningful incremental cost estimates. They depend a lot on the manufacturing volumes, the purchasing volumes, the product volumes, the characteristics. There are a lot of things that go into that.

And I agree, you know, the incremental costs may have decreased; it probably has. But, I mean I'm not disputing that, and I'm not disputing the fact that things have gotten more efficient. That's exactly -- our data says that.

MR. WILSON: Okay. You mentioned discount rates, but I think you also acknowledged that discount rate differences when you have product lives that are as short as this, it's really not a particularly relevant factor.

DR. ROTH: You can use -- I mean, it's not going to have a very large -- it's not going to have as large an impact as it would over a 15-

year product.

MR. WILSON: Okay.

DR. ROTH: I would agree with that, yes.

MR. WILSON: And on the 230 volt issue, this may be a nuance that maybe you didn't come across yet, but that requirement for 230 volts only applies for products that are labeled for 230 volts.

If it only labels for 115 volts, they only have to meet the 115 volt standard.

DR. ROTH: Okay. But if it's labeled for 230 volts I would submit that they still have to meet the 230 volt standard then, in which case it would prevent, or you know, make it more challenging to optimize it for a standard which is set for 115 volt only.

MR. WILSON: Well, you know, this is something else you probably haven't come across, but, you know, these are international products, and so I don't know if these companies, these manufacturers really optimize for one or the other. They're trying to meet international markets.

DR. ROTH: I can't, I don't know, either.

MR. WILSON: Yeah.

PRESIDING MEMBER PFANNENSTIEL: Art, did you --

MR. WILSON: Oh, I'm sorry, one more question. I didn't see a discussion of the cost of the electricity that you used.

DR. ROTH: We used the value which was presented in the CEC standard, was 11.5 cents per kilowatt hour. So we used that value.

MR. WILSON: And that was from the 2003 analysis?

DR. ROTH: that was in the document published in either November 2004 or 2005.

MR. WILSON: Okay.

DR. ROTH: That was essentially in the summary of the net present value calculations for all the different standards.

MR. DiGIROLAMO: Excuse me, just one comment about the labeling. You know, a lot of people buy the external power supplies with a IEC input jack, and a lot of them put the cords of the country that it's shipping to. And it will drive their cost up if -- they like to buy one product that you ship to any country, so the labeling is always, you know, 100, 230. And if they have to start buying a different label product for California it's just -- well, essentially it will drive the cost of having to now stock the unit that's marked 115, and another unit that's marked 230. So that's my only comment about the labeling.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Ted Pope.

MR. POPE: Ted Pope, Energy Solutions, here on behalf of the PG&E technical team. John stole my thunder a little bit. I did want to, in feeling a little defensive, point out that these analyses done by our team were done in 2002, 2003, with some updates in 2004. So at the time we were using the most current data that was readily available to us. So it does feel a little unfair to come in in 2006 and say, gosh, you guys used old data.

My other point is a number of critical points made in the analysis talked about the increasing share of EnergyStar products, and therefore the market share of inefficient products were decreasing over time. And again, I think that's a good news story. And I'm not sure I'd debate it; I can't argue the particular numbers offhand.

But the point is the cost effectiveness is not calculated based on the total statewide gigawatt hours savings, it's based on the increase in efficiency from that less efficient unit to a qualifying unit.

So while the overall gigawatts may be going down as a function of improving baseline over time, your cost effectiveness is still based on the per-unit basis and whether that's cost effective to the customers.

And just taking a look at the analysis here, the present value of energy savings for the different products here, four of them are all, you know, 26 times the incremental cost. You know, it goes from five to ten, the margin is huge.

So even if we're way off on our multiplier and the market, and I'm not sure we're off that far, and even if we're overstating the efficiency of specific units, and that is, let's say, all products since the three years that passed between his analysis and the one we relied on, you know, the efficiency fell in half. You're still talking about big incremental net present value benefits, whether it's 3 percent, or I'd hazard a guess even 7 percent over the short year of the life of the product.

So, again, I feel frustrated because I feel a lot of the industry coming here today says, you know, gee, if I'd only known, or I'd love to work with you, let's study this going forward, and again, you know, we were crunching our numbers back in 2002, 2003. All the while saying, gee, we need input from industry. This is the best we know based on the sources we have. You guys have all the data, let's share. And it doesn't happen. We keep hearing, oh, I'd be happy to talk to you about it, I'd be happy to talk to you about it.

And here we are three years later, they're still happy to talk to us about it, but we still don't see a lot of data sets yet. And I see the industry analysis here. Basically his answer is, gee, this is hard, we don't know.

DR. ROTH: Excuse me, this is an independent analysis, it's not an industry analysis.

MR. POPE: Fair enough. Commissioned, I presume, by industry and paid for.

DR. ROTH: Yes, they paid for it. It was, however, done independently. The values in the report are all publicly available.

MR. POPE: I stand corrected, thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Ted. Wait a minute. No, I think there was somebody before -- I'm sorry, before you. Sir.

UNIDENTIFIED SPEAKER: Jim, go ahead.

MR. HAYNES: Oh, I just wanted to make a question about, you know, people coming to us for data and stuff like that. I haven't -- I've answered every call I've ever received. I never got any call for data, myself. I mean I'll just speak for myself, but I mean, cordless telephones were never really brought up, as far as this. And if this is new, I have to go back to EnergyStar, because I've been talking to them about this problem since 2002, I believe.

MR. WILSON: Well, you know, I want to say, through the magic of forwarded email I got the data request that TIAX sent to industry. And I'm kind of curious to know, you know, -- you have some interesting questions here, Kurt. Did you get data from industry?

DR. ROTH: We got some data from industry, but we did not get enough input in the timeframe that we had to really get further beyond the values that we were able to develop from other sources.

MR. WILSON: I mean you asked industry all the questions you're asking us to answer, and did they answer the questions?

DR. ROTH: That's a kind-of-depends answer. They did not -- the key thing we were hoping to get were incremental cost estimates. And within essentially a month kind of timeframe, which included Christmas break when I was out for a week, and also the week of the consumer electronics show, we were not able to get an appreciable amount of data to get at a better estimate of incremental costs.

PRESIDING MEMBER PFANNENSTIEL: So, -- I'm sorry, I just wanted to clarify that. So the data you used in this report that you just walked us through was all from publicly available sources, not from industry sources?

DR. ROTH: Yes.

MR. WILSON: So you didn't get any response to your data requests?

DR. ROTH: I did not say that. What I said was I got limited response. I did not get enough to develop a statistically significant data sample.

MR. WILSON: Fair enough.

DR. ROTH: I will correct. There's one piece of industry data I did use. I did show the approximate average tv standby power draw for tvs sold by one retailer during one week in December of 2004. Otherwise, it's all publicly available data.

MR. WILSON: Jim Haynes, did you get this data request? I mean you say you've never been asked these questions before.

DR. ROTH: No, that's -- again, we --

MR. HAYNES: I responded.

DR. ROTH: -- we received limited data. To draw broad conclusions, again when we're talking about incremental cost estimates, there's several confounding -- you know, say Jim Haynes gives me data. He's one manufacturer. It's one data point. I don't know the context of, you know, what all his operations are.

To develop meaningful incremental cost differences you need to have more information than that. You need to have it for multiple manufacturers, and you need to really dig into things.

From a limited data set I think it's very dangerous to start drawing broad conclusions.

MR. DuBRAVAC: If I may, again Shawn DuBravac from CEA. In TIAX's defense we wish that they would have drawn some broad conclusions, and that they would have made incremental cost estimates and said that all these net present values are negative, and, you know, then our numbers refute this other study that shows positive net present value numbers, and kind of the end of the story, at least at that aspect of it.

And they wouldn't go that far to make these broad conclusions based upon the limited data that they did receive during that busy month for our industry. Again, remember that fourth quarter is crucial for our industry, and we do most of our sales in that quarter.

Furthermore, the discount rate, 7 percent, 3 percent, again, as John pointed out doesn't make a big difference. Then why use 3 percent? I mean if it doesn't make a big difference then why not be conservative and, you know, err on the side of that?

ASSOCIATE MEMBER ROSENFELD: I can

answer that one. When Warren and Alquist created the Energy Commission they told us to use intergenerational discount rate of 3 percent real. Luckily it doesn't make any difference for a four-year product.

MR. DuBRAVAC: Right, right. And when I looked at the study I mean I polled actually PG&E's weighted cost of capital, which is their discount rate, which is closer to 7 or 8 percent. And so, you know, I put a big question mark on that part of the data which made me go, is there other things in this that I should question.

And as TIAX pointed out, you know, we are presenting more recent data, and it is not fair to say, well, you know, your study two years ago. But the study that they cite for 2002 is actually a study done in the '90s, you know, in 1999. So, it looks to me like they're just citing this 2002 report, but they didn't actually really dig into it to realize that it's really just citing this 1999 report.

I mean having published in academia, you can't just publish the most recent, you know, cite the most recent article. You need to go to the actual sources. And I feel like their study misses the actual sources.

So I think TIAX and some of these things they're trying to get at is just to put question marks on some of the results that were deriven.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. DuBRAVAC: Thank you.

PRESIDING MEMBER PFANNENSTIEL: There's a woman back here who had a question.

MR. WILSON: It turns out that the Rosen you referred to numerous times, --

UNIDENTIFIED SPEAKER: She's a Herter now.

MR. WILSON: -- she's a Herter now. She works here. And this is Carrie Webber and she's the new Herter.

(Laughter.)

MS. WEBBER: Sort of. I actually started before Karen Herter did, doing some more work. I started doing work --

PRESIDING MEMBER PFANNENSTIEL: Excuse me, would you put your name in the record, please.

MS. WEBBER: My name is Carrie Webber. I work for Lawrence Berkeley National Laboratory. I have worked in support for the EnergyStar program since 1996 and did a bunch of electronics metering for them when they started developing their tv program.

And so even before Karen Herter was doing data collection I was doing data collection on these products.

And, yes, it's dicey. I won't argue with that. But with respect to the fact that -- basically one of the points you make is that EnergyStar has been enormously successful.

They looked at that old data and they set a specification based on it. And the manufacturers got on board. And I know how high the market penetration has got to, and I can't actually say because there are CEA people here, and EPA swore to CEA that we would not actually give out those numbers.

But let me just say that market penetration of EnergyStar televisions, DVD players, VCRs as of two years ago was remarkably high. And I would really appreciate it if CEA would give me new data, which they haven't for the last couple years.

But, just, you know, amazingly high participation in those programs. And so I would say that, yeah, we don't know really what the baseline is for what the Commission is trying to do now. But we do know that there are a lot of products out there that meet this level.

That's all I have to say.

PRESIDING MEMBER PFANNENSTIEL: Thanks very much.

MS. WEBBER: Yes.

MR. MARKWALTER: Brian again with CEA. I'll follow up with (inaudible) and others' request to provide any fresh data.

I think she just made our point completely that we believe EnergyStar had already achieved the savings that these reports and justification projects is yet to happen. That's the main point of what, I believe, TIAX uncovered here.

PRESIDING MEMBER PFANNENSTIEL: Thanks. Gary.

MR. FERNSTROM: I just have two comments. To be quick, given the broad range of topics that were covered. One has to do with incremental cost; and I'm not an economist, I'm a pragmatist, but let me suggest that if I were making paint and all of a sudden I had to make lead-free paint, the real measure of the incremental cost is the change in retail price.

Because when costs of components in manufacturing or labor change, those can't always be rolled into the price because of competition. So you're never going to get a good engineering estimate or manufacturing-based estimate of incremental cost. The best estimate is retail price. And that's the one that is clearest.

The second thing has to do with the voltage. And it seems to me that if the product doesn't operate at 230 volts, it shouldn't have to be tested at 230 volts. But there was a lot of discussion about the design compromise in making products that operate at both 120 and 230 volts. And I understand that there probably are some design compromises, but these products do work at 230 volts.

So, if they do, it's only fair to ask what their performance is at that voltage. And if manufacturers make them only to work at 120 volts, then they wouldn't be tested at 230 volts, because they'd burn up.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Were you going to respond to that?

MR. MARKWALTER: Exactly.

PRESIDING MEMBER PFANNENSTIEL: Fine. I'm sorry. And then there's some -- then there was somebody else. Go ahead.

MR. MARKWALTER: Gary, it couldn't -- Brian again with CEA. Couldn't tell, I think you may have been speaking in our favor, but I'm not sure.

So the point is we shouldn't be punished because the label says that what's inside the thing can accommodate from 120 to 230 and we can meet. If it's got a plug that only works on 120 then that's where it should be tested. I believe that's all we're asking for.

Products may be --

MR. WILSON: I think that's what the standard --

PRESIDING MEMBER PFANNENSTIEL: That's fine.

MR. MARKWALTER: Okay, then we need a clarification. Our reading is it needs to be tested according to the label, not according to how it can be functionally used. But maybe we can do that offline.

MR. WILSON: Okay, that's a different

question.

PRESIDING MEMBER PFANNENSTIEL: This gentleman here has been trying to offer a comment or a question.

MR. RAINER: Leo Rainer with Davis Energy Group here in support of PG&E. Just a couple of notes on the analysis of consumer electronics and the difficulty of working with moving numbers.

Yes, the analysis was done with the DOE 2002 report. That was done, when our work started in the beginning of 2003 that was the most current report and current data that we had that was comprehensive over all of the products we were looking at. And that's why we decided to use it.

The report was updated in various things, but it wasn't updated for some of those values. And those, you know, could be adjusted.

I looked just quickly at some of the best data I have for current, which is Australian data. Australia does in-store measurements of products over a very wide range of survey.

And some products have come down significantly, like DVDs. Some, like tvs, are still at 6 watts, and we used 7.3. So, yes, we're a little low, but it's been 6 watts for three years, and it's actually coming up a little.

And as Ted had mentioned, you know, we're talking orders of magnitude on our net present value, and so if we're down a little on the estimates, I think it, you know, it could be reviewed, but I don't think it would change the end result.

Also, as far as the EnergyStar market share, we did exclude from our analysis our estimate of what EnergyStar, what products met EnergyStar at the time. And that varies from 40 to 60 percent. We looked only at those products that do not meet EnergyStar, as far as savings in terms of gigawatt hours.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Were there other questions, comments?

Okay, let me ask what other speakers or issues we have from CEA. I think we need to resolve the timing. I know that the court reporter has a preference of trying to wrap this up by 5:00, and I think probably most people here do. So, Doug, perhaps you can fill us in on the timing?

MR. JOHNSON: Sure, we have, I think, at least just two presentations left. I've got a discussion about EnergyStar, then Mark Sharp with Panasonic will follow with some summary comments.

And that, I believe, is it from our side.

PRESIDING MEMBER PFANNENSTIEL: I'm sorry, so there are two additional speakers?

MR. JOHNSON: Yes, myself and then Mark Sharp with Panasonic.

PRESIDING MEMBER PFANNENSTIEL: And do you have a sense of how long we're talking about?

MR. JOHNSON: Can we make five? Yeah.

PRESIDING MEMBER PFANNENSTIEL: That's fine, okay, thank you.

MR. JOHNSON: We may make that 5:00.

(Pause.)

MR. JOHNSON: Doug Johnson with CEA, for the record. We wanted to take a couple minutes and talk about the impact of the California Energy Commission's regulatory action on the EnergyStar program, and also urge the Commission to think of an alternative approach, perhaps more suitable to the high tech industry, for the sake of energy efficiency.

Many know, and I won't dwell on this, but the EnergyStar program has several merits which we wanted to emphasize. Obviously it's market-driven, voluntary and national in its scope.

As a partnership, captures a broad range of consumer audio and video products. It benefits from strong participation by manufacturers. It's well recognized by consumers. And it offers a competitive incentive for energy savings.

As you heard a moment ago, market penetration for EnergyStar products in our industry is significant and has been so for a number of years. This high penetration rate that you've heard about we believe represents an energy savings achievement for this state, as well as the country. And we believe this achievement is a direct result of the voluntary nature of this program, the fact that it's supported by industry, and the fact that it's driven by the market.

This is a slide illustrating some of the energy savings and emissions prevented as a result of the EnergyStar program for two major categories of that program as they relate to our industry. That's home electronics and office equipment. And this is from 2003, so presumably the numbers would be higher than the most recent report.

The EnergyStar program, this was mentioned this morning briefly, but it's, of course, designed as an incentive program to recognize products that are in the top 25 percent for energy efficiency.

The new criteria in this program were phased in gradually. A hundred percent compliance with EnergyStar criteria at any point in time is not an objective of this program.

Over time the program changes the marketplace. It transforms the market toward higher efficiency levels, and this is a cumulative energy savings impact. And more models are used by consumers, in addition to being available at retail.

The next two slides illustrate the successful market penetration of this program, this voluntary program, for our industry. In this chart we compare the Commission's standard with the EnergyStar standards, and alongside indicates some of these figures you heard referred to earlier in terms of market penetration. This illustrates how well this voluntary approach to energy efficiency has worked for the high tech industry.

So the success of this program is, in fact, due to its voluntary nature. And the program criteria on which the program depends are the result of broad industry participation, careful negotiation and the recognition of market and technological facts and limitations. Some of the same issues that were talked about today in concept.

The Commission's impact on the EnergyStar program is this. The California Energy Commission obviously created new and mandatory regulations for consumer audio and video products and external power supplies that are based on voluntary thresholds established within the EnergyStar program.

Though the EnergyStar specifications on which the CEC based its regulations have been superseded by the EnergyStar program specifications, in several cases they were never intended nor negotiated to be mandatory limits after any set period of time.

For televisions, DVD players, and recorders and compact audio products the

Commission's regulations are almost entirely drawn from the EnergyStar program.

And this next slide illustrates the specification in the -- or the EnergyStar specification referred to in the Commission's regulations for each of the categories. The bottom category, there's some differentiation in the audio area, but essentially you find a match-up of the regulation with the EnergyStar specification.

For external power supplies the Commission's mandatory regulations are identical to the voluntary EnergyStar tier one program criteria for this category. And these voluntary criteria had just been negotiated by the EnergyStar program representatives and industry several months earlier.

The EnergyStar program criteria for audio and video products and external power supplies were developed as a voluntary initiative, and a reasonable incentive for manufacturers and their suppliers. And good faith negotiations led to these criteria in the first place.

Prior to the Commission's action to regulate in this area, no state government or authority had taken the voluntary EnergyStar program criteria and made them mandatory.

The Commission's regulatory action threatens to undermine the future success of the EnergyStar program. Once the EnergyStar program criteria are perceived as having the potential to be mandatory, there's going to be increased uncertainty in our industry with regard to how these specifications will be used. And undoubtedly the negotiations leading to the program criteria will be altered.

Based on manufacturer feedback and our membership's views, we believe that the mandatory government standards based on the EnergyStar program will have a negative impact on the future success of EnergyStar as it relates to our industry.

The Commission's standards for consumer audiovisual products and external power supplies are expected to weaken the national EnergyStar program which we certainly believe has an unfortunate consequence for consumers, as well as manufacturers, and energy savings in general.

Rather than take the voluntary EnergyStar criteria and make them mandatory, we urge the Commission to take a look at an alternative approach which we believe has several merits, both, you know, from the standpoint of industry involvement as well as accomplishing the public policy goal of energy efficiency.

We believe there's not only ample reason to take a look at this, but there's plenty of opportunity to work with the industry in this regard. And specifically I'm talking about the industry-led standard-setting process as an alternative to the Commission's mandatory regulations for high tech products.

There's several advantages of this sort of approach for energy efficiency as it relates to our industry. The industry-led, standard-setting process is market oriented, of course. It benefits from strong industry participation. It's credible and flexible and open to all stakeholders.

You've heard some reference to ongoing standard-setting efforts on energy efficiency in our industry, and I want to talk about that in a minute, as well. The standard-setting process in our industry is performance neutral and it's also international.

We have two projects, as I mentioned, ongoing in the area of energy efficiency. One you heard mentioned earlier, the industry is developing a standard for set-top box energy consumption. This is being carried out in one of CEA's working groups. And CEA, by the way, is an ANSI-accredited standard-setting organization.

The second activity concerns coming up with a new method for measuring television energy consumption, and this is an activity that's going on at the international level in the IEC.

We have invited -- the Consumer Electronics Association has invited CEC representatives to participate directly in these industry standards projects.

As an alternative to its mandatory regulations we encourage the Commission to propose new industry standard-setting activities for key consumer electronics product categories that are of interest to the Commission which CEA and other industry-led standard-setting bodies could pursue.

Not only could this approach have a greater potential for energy savings while protecting innovation and consumer choice, it would present an exciting opportunity for industry and California policymakers to work collaboratively on energy efficiency initiatives of mutual interest.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you. I think there was one other speaker.

MR. SHARP: Doug used a little of my time, so I'll be brief. I know the hour is late.

My name is Mark Sharp; I'm with Panasonic Company, although my remarks today will reflect the industry as a whole, CEA's position.

Just want to summarize and wrap up basically why we're here today and what we would like to ask of the Commission. Again, on behalf of the 2000-plus member companies of CEA, we really appreciate the opportunity to talk to you today. I feel like it's been a very good, constructive dialogue for us, and I hope that there's been a lot of value that you've gotten out of the discussion and dialogue from our side. And to the stakeholders in the audience, I appreciate all their input and hope this was meaningful to them, as well.

The new energy efficiency standards that are in place now, and scheduled to go into place by California will greatly impact consumers, manufacturers and retailers, that's clear. And to a lesser extent, we believe, the energy supplies for the State of California.

Instead of saving megawatts of energy, which I know is the public policy objective, we fear that the regulations will instead potentially reduce consumers' choice; it will force manufacturers to offer less featured products potentially in the state. It will lead to higher costs for consumer products, particularly popular products, as well. And as Doug just mentioned, diminish the overall effectiveness of the EnergyStar program. We think there's a better solution and that's what we're advocating today.

The CEA member companies want to contribute to energy savings. I want to make that clear. We are not against regulation. What we are here in support of is working with the Commission to develop better regulations.

We think this can be achieved through a concerted joint effort, public/private, working together we think we can come up with a workable, more feasible solution. And instead of promulgating regulations as the CEC has done, based on -- and I wish I could change this now after some of the discussion -- instead of calling it incomplete data, I think it's just now outdated data is really how we would probably refer to it in hindsight.

But we wanted more -- propose to you to work more closely with the CEC Staff than perhaps we have in the past to develop this more realistic approach that benefits all parties.

Why rework the regulations at this point? We share the CEC's view that efficiency standards must be feasible and cost effective. That's our big objective and what we want to accomplish.

We think the current regulations in place do not meet these criteria. But we are committed, as an industry, to work together with you. And I do mean work, whether it's committee meetings, whether it's conference calls, whatever, coming out to Sacramento. We're willing to do that to get this right, and develop standards that will help meet the vital public policy goals that we both share.

Now, the current EPS regulations, obviously there's been a lot of discussion about that, essentially we're concerned it takes an unproven voluntary specification and makes it into a state law. And this is unprecedented.

It does not allow, and this was our morning presentation by Arian, does not allow for functional limitations at low, no-load power consumption; it ignores technical development realities; it overlooks supply chain constraints; and it does not factor in time to market needs. And these are all critical factors that should be considered, we believe.

Finding a better way. In light of these problems we advocate, as an industry, number one, to delay the tier one effective date to July 1, 2007, a one-year delay. As an industry, CEA will work on an ongoing basis as needed with you and CEC Staff to develop more appropriate, feasible EPS regulations.

Second, we ask that the 230 volt test requirement be removed. It simply doesn't make sense when the products will never be operated at that power level in the state.

Third, we ask that infrequently used products, where potential energy savings are minimal, that they be exempted from the regulation.

And finally, we ask that you consider exempting products where safety and reliability considerations are very pronounced and threatened by the regulation.

Also in the spirit of finding a better way, we think it's important that CEC consider the impact on the EnergyStar program. It's unfortunate that Andrew Fanara had to leave, because I'm sure he would be very happy to stick up for the program.

But quite simply, the regulations would diminish manufacturer participation in EnergyStar, resulting in potential greater overall energy consumption in the State of California.

Speaking on behalf of my company, we've received EnergyStar awards for seven consecutive years. We have over 400 models that qualify for EnergyStar. We think it's a terrific program, and that its success is based on manufacturer participation. If we end up with standards being set at levels that were negotiated as a voluntary program, I think we threaten the future success of EnergyStar.

So we end up with two visions for

California. We really hope that this vision doesn't come to pass, and that is diminished consumer choice. We really think we can avoid this, but we want to work together to hopefully avoid this image.

And instead what we want to achieve, quite frankly, is the same objection that you at the CEC has, and that is energy savings which results in less greenhouse gas emissions and essentially a cleaner environment. And that's kind of the positive message we want to leave you with. And we hope to work together with the Commission to achieve that objective.

And I thank you for your time.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Mr. Sharp. We certainly do share the goal. And I think that what we're trying to decide, of course, is how best to get there.

This has been a really long, I think, fruitful and interesting day. I think, as Mr. Sharp just said, that it was a good constructive dialogue.

But I fear that it leaves Commissioner Rosenfeld and myself with some hard choices, and some decisions that we need to make quickly.

We heard you about a need to move on this quickly. We know that there are some dates coming up that are critical to all of us.

I would like to see some written comments. Clearly, not every word that was spoken here today needs to be memorialized in a filing with us. More succinct would be better. And I think to the strongest points should be the ones that you really want us to read and we will do so.

I would ask that written comments be in by the end of this week. If we're going to try to turn around any decisions that we need to make, we need some time to read the comments and the Committee needs to confer and make those decisions, being as well advised as we can be.

So, with that, let me ask, Commissioner Rosenfeld, do you have any final thoughts or comments?

(Laughter.)

PRESIDING MEMBER PFANNENSTIEL: A long day, nonetheless. Anybody else, though, really before we adjourn, any final thoughts or comments?

ASSOCIATE MEMBER ROSENFELD: There's one.

PRESIDING MEMBER PFANNENSTIEL: There's

one.

MR. MYRICK: I'd just like to make a fast comment. Hopefully a clarification on the 230 volt issue. I'm Wayne Myrick from Sharp Electronics.

We provide universal power supplies. We might use the same power supply globally, but the product we package it with is only introduced and sold in one market. Our flat panel tvs come with a universal supply, 110, 230 volts. But the product and -- the product, the packaging and the instruction manual are marked 120 volts. And the product is only sold in North America. So it's never going to be used at 230.

PRESIDING MEMBER PFANNENSTIEL: Thank you, sir. I think that that is an issue that we realize does need clarification.

MR. MYRICK: Okay, thank you.

PRESIDING MEMBER PFANNENSTIEL: John.

MR. WILSON: I have a couple of questions, if I could. I'll be quick.

(Laughter.)

MR. WILSON: I wanted to ask Doug and Mark, I'm focused on your last slide, Mark, which was your recommendations. And then I'm going back to the economic analysis that Kurt presented.

It seems to me that as we think about your recommendations none of them require us to go back and re-do the economic analysis. And I just wanted to see if you share that opinion.

MR. JOHNSON: (inaudible) slide, I think it's -- you're correct, although it was not part of the slide it's very clear that good analysis is needed for a good decisionmaking. So we stand ready to assist in that effort, as well, build on some of the analysis you heard about today, and contribute where we can.

But we think it's an important exercise, these regulations are reconsidered and potentially amended. It warrants analysis of the ultimate impact. And we believe that's a very important exercise. Obviously the regulations are built upon two main pillars of feasibility and cost benefit. And, you know, we urge the Commission to take a serious look at both.

MR. WILSON: I'm -- okay. No further questions.

PRESIDING MEMBER PFANNENSTIEL: Really, you can.

MR. WILSON: No, that's okay.

PRESIDING MEMBER PFANNENSTIEL: Are there other issues? Jim?

MR. HOLLAND: Yes, ma'am. Jim from here in the Energy Commission. I'd like to request that any slide shows that were presented here be forwarded to me. My email address is in the notice for this workshop. That way I can disburse those presentations through the Commission.

So, if you would please forward those to me as soon as you can.

PRESIDING MEMBER PFANNENSTIEL: Thanks, Jim, that was a good point.

MR. WILSON: And if we could also get an electronic copy of the TIAX report. You gave us a hard copy, but we don't have the electronic.

MR. JOHNSON: We can provide both electronically. Process question about submitting comments at the end of the week. Is this going to be a new docket? Who do we submit comments to? How's this going to work?

PRESIDING MEMBER PFANNENSTIEL: Mr. Holland, how would you --

MR. HOLLAND: Sure. I was just going to say there's no docket for this since it's not a rulemaking yet. But you can certainly forward them to my email address, too, and I can disburse them out.

MR. JOHNSON: Thank you.

PRESIDING MEMBER PFANNENSTIEL: Anything else? Thank you all for your attention and participation. It was a good day.

We'll be adjourned.

(Whereupon, at 5:05 p.m., the Committee workshop was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Workshop; that it was thereafter transcribed into typewriting.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 8th day of February, 2006.