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CALIFORNIA ENERGY COMMISSION

LEAD COMMISSIONER WORKSHOP

In the Matter of:	) Docket No.
	) 16-AAER-2
Appliance Efficiency Rulemaking	)
	) PUBLIC MEETING
	)
	)
California Code of Regulations,	) RE: Appliance Efficiency
Title 20, Sections 1601 through	) Rulemaking for Computers,
1609	) Computer Monitors, and
_____	) Signage Displays

**LEAD COMMISSIONER WORKSHOP ON
COMPUTERS, COMPUTER MONITORS, AND
SIGNAGE DISPLAYS**

CALIFORNIA ENERGY Commission

THE WARREN-ALQUIST STATE ENERGY BUILDING

FIRST FLOOR, ROSENFELD HEARING ROOM

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

MONDAY, OCTOBER 10, 2016

10:00 A.M.

Reported by:
Kent Odell

APPEARANCES

<u>Commissioners</u>

Andrew McAllister, Lead Commissioner, Energy Committee

Ken Rider, Commissioners Office CEC

<u>CEC Staff</u>

Leah Mohney, Appliances Efficiency Unit CEC

Kristen Driskell, Appliances and Outreach and Education Office

Harinder Singh, Appliances Efficiency Program CEC

Soheila Pasha, Appliances and Outreach and Education Office

<u>Others Present</u>(* Via telephone and/or WebEx)

Christopher Hankin, Information Technology Industry Council (ITI), TechNet

Shahid Sheikh, Intel

Humberto Fossati, Hewlett Packard, Inc. (HP)

Pierre Delforge, NRDC

Gregg Hardy, Northwest Energy Efficiency Alliance

Charles Kim, Southern California Edison

*Chris Granda, Appliance Standards Awareness Project

Bijit Kundu, Energy Solutions

*Mark Cooper, Consumer Federation of America

Vojin Zivojnovic, AGGIOS

I N D E X

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 1                      P R O C E E D I N G S

 2   OCTOBER 10, 2016                              10:05 A.M.

 3           MS. MOHNEY:  Good morning, welcome to the initial

 4   study and negative declaration for computers, computer

 5   monitors and signage displays.  We'd like to open with a

 6   Commissioner McAllister's opening remarks.

 7           COMMISSIONER MCALLISTER:  Good, thank you

 8   everyone for being here.  This is a big step forward here

 9   today.  We're looking forward to a robust discussion about

10   the concrete proposal that's out there for monitors,

11   displays and computers, so the first couple in the morning

12   and the computers in the afternoon.

13           I just want to put a little bit of context here

14   briefly.  Obviously, our Appliance Efficiency Standards are

15   our bread and butter here at the Commission.  We've been

16   doing it for a long time.  We've got a process, I think,

17   that works.  And in this case, as in the most recent both

18   Building Standards and Appliance Efficiency Standards, I

19   think we've really worked hard to set up a process that

20   involves all the relevant stakeholders in a way that they

21   are heard.  And that their views really get built into the

22   process in a very integral way and are reflected very much

23   to the extent possible in the final outcome.

24           And I think that's really important.  We have a

25   big project here in California; we have a big state and a
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         1   big economy. And what we're talking about today is a core

         2   part of that economy. I think we all appreciate the scale

         3   and magnitude of this particular product, these particular

         4   product areas, really central to the life blood of

         5   California.

         6   And to get to our long term carbon and energy

         7   goals, we must do as much as possible moving forward to

         8   garner all the efficiencies we possibly can. So it's

         9   really fantastic, actually, to be in a state where there's

        10   really no controversy about that point. And we all know

        11   why we're doing this. We all know that it's important and

        12   really the question is what's our path from A to B? How

        13   can we do that in an optimal way?

        14   And so I see today as a really core, a really

        15   very important moment, for defining how that's going to

        16   happen to help us define how that's going to happen in

        17   computers, monitors, displays.

        18   So with that, I'm looking forward to having

        19   discussion. I probably won't talk too much today, more to

        20   listen to what folks have to say. I want to thank staff

        21   for all of the hard work on this. This has obviously been

        22   a long time coming, and because it's very important we want

        23   to get it right. And I also want to thank all the industry

        24   reps, all the participation. I know it's not easy. I know

        25   it's a lot of effort and just a lot of coordination

1 internally and with the Commission and everybody else. So

2 in particular, ITI, TechNet and the -- I think that

3 marshaling all the industry participation has really been

4 great work and very necessary.

5   So any last issues or any sort of other critical

6 issues that we're going to talk through today, I want to

7 just encourage people to bring information to back up what

8 they're saying. Market-based information is really sort of

9 the gold standard, you know, where is the marketplace

10 headed and we need to talk about that so we can take that

11 into account in context.

12   So with that, let's get started. So thank you

13 very much. Thanks everybody for being here, both in the

14 room and on the phone or online.

15   MS. MOHNEY: Good morning. My name is Leah

16 Mohney. And I'm the Supervisor of the Appliances

17 Efficiency Unit here at the Energy Commission. I'd like to

18 go over a few housekeeping items first before we begin the

19 meeting.

20   There are two exits to the room. Please exit

21 those doors. There's a bathroom in the back to the left as

22 you exit. Please do not go out the double glass doors over

23 here, unless there's an emergency. If you exit those doors

24 an alarm will sound. There is -- the door that you came in

25 to the right, that's the best way to exit. If there is an

1 emergency, use either exit and please follow Energy

2 Commission staff to the park across the street.

3   Bathrooms are located outside and to your left.

4 On the second floor there is a snack bar where you can

5 purchase drinks and food, it's under the white awning.

6   If you would like to make a comment please get

7 one of these blue cards that's on the front table and give

8 them to Kristen Driskell here.

9   Our agenda today, after the opening remarks staff

10 will make the presentation on the computer monitors and

11 then we will have stakeholder comments. We'll have a break

12 from noon until 1:00 for lunch. And at 1:00 o'clock staff

13 will present the computer presentation, which is followed

14 by the stakeholder comments at 1:45. And we will adjourn

15 at 4:00 o'clock.

16   As you can see, this rulemaking began in 2012

17 with the invitation to participate for collection of data.

18 In the meantime, we have had a lot of meetings, workshops,

19 staff reports and other opportunities for you to

20 participate in the development of these proposed

21 regulations and standards.

22   On September 9th the proposed regulatory language

23 and Final Staff Report were released and as you can see, we

24 are here where the green arrow is. The proposed Negative

25 Declaration was released September 14th and discusses the

1 environmental impacts of these proposed regulations. There

2 are no adverse regulations associated with these. In fact,

3 the proposed regulations will result in reduced CO2

4 equivalent and a reduction of approximately 524.5 tons of

5 criteria air pollution. If you have comments on the

6 Negative Declaration they are due by October 24th at 5:00

7 p.m. Pacific Daylight Time.

8   The presentation today will focus on highlights

9 of the proposed Standards. So we encourage you to read the

10 full Standards that are available on the website.

11   Documents for the Negative Declaration, as I

12 said, are available on the website at the top. If you

13 would need assistance in contacting and collecting them,

14 you can also contact staff here at the phone number or the

15 email listed.

16   If you have clarifying questions about the

17 presentation today Harinder Singh can be contacted for

18 monitors and Soheila Pasha can be contacted for computers.

19   Written comments are due on or before October

20 24th at 5:00 p.m. Pacific Daylight Time. You can upload

21 your comments at the top website. You can mail a hard copy

22 to the address in the middle. You can submit comments to

23 the docket. If you submit comments to the docket, please

24 include 16-AAER-2 in the subject line. If you need

25 assistance in commenting, please contact our Public

 1   Adviser's Office at the link at the bottom of the page.

 2   Does anybody have anybody have any questions?

 3   (No audible response.)

 4   Seeing none, I will turn the podium over to

 5   Harinder Singh, our Senior Electrical Engineer.

 6   MR. SINGH: Good morning. My name is Harinder

 7   Singh. I work for the Appliances Efficiency Program. I'm

 8   presenting the computer monitors today and signage

 9   displays. This is an overview of my presentation. First I

10   will have the overview of the proposed regulations and then

11   technical feasibility, energy savings and cost

12   effectiveness, statewide energy savings and at the end

13   stakeholder comments or clarifying questions related to

14   this presentation.

15   Battery chargers, we are modifying the current

16   regulations to exclude the battery chargers. The Energy

17   Commission, in 2009 Rulemaking for Battery Chargers

18   unintentionally resulted in the regulation of certain non-

19   consumer products that would qualify as rechargeable

20   batteries or the battery charger systems, but were not

21   intended to be covered. These products are not capable of

22   complying with the battery charger system's test procedure.

23   So we are excluding these.

24   So an exception is provided for the following

25   battery chargers. In Section 1601(w) in the scope, a

battery charger system that provides power for data storage

or for continuity within volatile cache or memory systems.

Second is the battery charger system that maintains

information for system use, and the battery charger that is

not capable of powering full operation of the product when

AC mains power is removed. So this type of battery charger

is not going to be included in the current regulations, so

we are just modifying our current regulations to exclude

this product.

Secondly, in the scope of 1601 we are modifying

the current language to include computers, computer

monitors to the existing television and consumer audio,

video equipment.

We have also added definitions in Section 1602,

so we defined the computer monitors and exclusions stating

what are not covered as computer monitors, so this is what

we are adding as the definitions and there are a number of

other definitions. The definition of enhanced performance,

EPD, defining the contrast ratio, native resolution, and

color gamut size and limits, so these are some of the

definitions we have added into the proposed regulations.

The following definitions are added to the

proposed regulations. Gaming monitors, keyboard video and

mouse, or keyboard mouse and monitor for computer monitors

that are designated to be used in server racks for use in

1   the data centers.

2   And also we are adding the definition of organic

3   LED monitors. So gaming monitors, KVM or KMM, and organic

4   light emitting diode monitors, we are adding these

5   definitions to the proposed regulations.

6   Proposed regulations also we included definitions

7   for sleep mode, off mode -- off mode and sleep mode and

8   native resolution and also monitor screen area.

9   We have also added clarifying definitions for

10   signage display, which means an electronic display that is

11   composed of an area greater than 1,400 square inches,

12   composed of two or more display panels, each with a

13   diagonal size greater than 12 inches. Third, they are

14   designed to be operated by an external data controller and

15   designed and marketed for viewing by multiple people in a

16   non-desk based environment. Examples of such environments

17   include stadiums, airports, and convention centers.

18   And also we clarified signage display means an

19   analog or digital device designed primarily for display of

20   computer-generated signals that is not marketed for use as

21   a computer monitor or a television. So we added that

22   definition.

23   The next section is the test procedure. So for

24   the signage displays the test method for the signage

25   displays is the television test procedure, which is in the

1 10 C.F.R. Code of Federal Regulations Section 430.23(h).

2 And this test procedure is dated October, 2014. That's the

3 test procedure, which is currently used for the televisions

4 and signage displays.

5   Test method for the computer monitors, the ENERGY

6 STAR Program requirement test procedure for the displays.

7 The final test procedure that is available at the ENERGY

8 STAR website is dated September 2015. We have made the

9 following modifications to the test procedure for the

10 monitors. Number one is on mode measurements shall be made

11 using the IEC 62087:2011. And the computer monitor sleep

12 and off mode measurements shall be made using IEC

13 62301:2011, as specified in the ENERGY STAR Program

14 requirements for displays.

15   So we have run into one of the issues with this

16 IEC 62087:2011, because IEC has withdrawn this test

17 procedure, so we are looking into and seeking comments.

18 And there is a 2015 IEC 62087:2015 that is available,

19 because that has replaced the 2011, so we are seeking

20 comments on that particular test procedure for the on mode.

21   So the computer monitor, the difference between

22 ENERGY STAR and our test is that the proposed test

23 procedure is we are seeking the energy consumption for the

24 on mode, sleep mode, and off mode separately, whereas the

25 ENERGY STAR is the total energy consumption in all these

1 three modes.

2   For a product to test the computer monitors, all

3 product features and functions not specifically addressed

4 by the test method shall be turned off, or disconnected

5 including built-in speakers. They shall be muted or turned

6 down to their lowest volume setting for the on mode power

7 consumption test when the on mode power consumption test is

8 done. So speakers needs to be turned off or turned down.

9   Before starting the test procedure for a

10 measurement of on mode power consumption, any features

11 unrelated to the display of the images, for example USB

12 hubs, webcams, speakers, LAN connections and SD cards, they

13 shall be turned off.

14   Computer monitors, the regulations for the

15 computer monitors. For the sleep mode allowance is 0.7

16 watts. And for the off mode it's less than equal to 0.5

17 watts or 1.2 watts, less than equal to 1.2 watts combined

18 allowance for sleep and off mode. So this is the sleep

19 mode allowances that are given here that are in the

20 proposed regulations.

21   So the monitors shall be shipped with a screen

22 luminance less than or equal to 200 plus cd/m2 ± 35

23 percent. A manufacturer may ship with additional features

24 enabled, even if they were turned off in testing.

25   Computer monitors with a touch screen capability

 1 are allowed an additional 1 watt allowance per mode in on,

 2 sleep, and off modes

 3   Table V-4 here shows the allowances for different

 4 diagonal size as well as resolution. So the first column

 5 gives the resolution for less than equal to 5 MP or the

 6 second row on the first column is resolution of greater

 7 than 5 MP.

 8   And the second column is the sizes for each of

 9 the monitor types.

10   And the third column has the formulas, which is

11 for the -- for example, in the first row it's 6.0

12 multiplied by the resolution plus 0.25 into the area of the

13 screen plus the additional allowance of 3.7 watts. So this

14 is where the Table 4 provides the allowance for the

15 monitors.

16   So this Table V5 has applicable allowance for

17 enhanced performance, gaming monitors, OLED and curved

18 monitors. Manufacturers shall apply no more than one

19 applicable adder from Table V5 to determine the maximum on

20 mode power wattage. So V5 is the additional allowance for

21 these special types of monitors.

22   Again, the monitor type is in the first column

23 and the allowances for Tier 1 is column one and Tier 2 is

24 in column 2.

25   Exceptions to Section 1605.3(v)(4), "The

1 following computer monitors are not required to comply with

2 Section 1605.3(v)(4) but shall comply with the test

3 procedures in Section 1604(v)(4), the certification

4 requirements in Section 1606, and the marking requirements

5 in Section 1607."

6   These monitors are keyboard, video, monitor, KVM;

7 keyboard, mouse, and monitor, KMM; computer monitors that

8 are classified for use as medical devices by the United

9 States Food and Drug Administration and very high

10 performance monitors. So these four kinds, the Standard

11 doesn't apply to them, but we require them to be tested and

12 certified to the Energy Commission.

13   Table 1606 here is Table X. which is the for the

14 certification that the second column here is the monitor

15 type and the third column is the permissible answers such

16 as what type of backlight unit such as CCCFL, LED, OLED,

17 Quantum Dots and the monitor types and other things when

18 the monitors are tested. So the manufacturers need to

19 certify those and provide the permissible answers. So this

20 provides a view of the certification requirements.

21   Proposed regulations for the signage displays,

22 signage displays are currently covered under the

23 Televisions Regulations, but we are clarifying the signage

24 displays. All televisions and signage displays

25 manufactured on or after the effective dates shall meet the

1 requirements shown in Table 3 now, it used to be V2, but

2 it's V3 now, so we have proposed a change to make a change

3 in the table from V2 to V3.

4   In addition, televisions and signage displays

5 manufactured on or after January 1, 2011 shall meet the

6 requirements shown in Sections 1605.3(v)(3)(A) and all the

7 rest of the requirements that are in the current

8 regulations for the television and signage displays. So

9 we're just clarifying it, making sure that manufacturers

10 comply with the current television regulations. The

11 signage displays are covered under the current regulations.

12   And here is the table for the televisions and the

13 signage displays. Here we added the words "signage

14 displays" to make sure that manufacturers comply with the

15 current regulations.

16   And also I'd like to mention that professional

17 signage displays are exempt. They are not included in the

18 television standards and we just wanted to clarify that.

19   This regulatory proposal for the computer

20 monitors is based on the ENERGY STAR version 6.0 framework.

21 Standards are based on the on mode, sleep mode, and off

22 mode energy consumption of the unit.

23   ENERGY STAR version 7.0 specifications requires

24 total energy consumption of the unit. Proposed standard

25 levels are similar to the ENERGY STAR version 7.0. There's

1   a little bit of difference, but they're very similar to the

2   current ENERGY STAR Version 7.0.

3   As of July 2016 about 15 to 20 percent of the

4   total monitor market already meets the proposed standards.

5   About 80 percent of the monitors in the market meet the

6   proposed sleep and off mode power requirements.

7   Proposed standards are technically feasible, cost

8   effective, and save significant energy statewide. Detailed

9   analysis related to the feasibility is available in the

10 Staff Report.

11   The following technical feasibility pathways are

12 available to manufacturers to comply with the Standard.

13 These are the use of higher efficiency LED backlights,

14 reflective polarized films, higher transmittance screen

15 technologies, efficient power supplies, and emerging

16 technologies. So it's technically feasible and cost

17 effective too, as the Staff Analysis found it, to propose

18 these Standards.

19   This slide provides the computer monitors cost

20 efficiency improvements over time. This is an older slide

21 that we are using from IOUs, Investor Owned Utilities, who

22 provided us this information. And this is 2013 to 2016,

23 the data there.

24   Incremental cost by efficiency measure showing

25 the decrease in incremental cost from 2013 to 2016 for 22

inch screen size monitors. So it shows the average cost to

improve is about $5 to improve inefficient monitors to

efficient monitors.

Computer monitor power consumption is calculated

as a weighted average based on the shipment and size

weighted average consumption. Power consumption

calculations take into consideration on mode, sleep mode,

and off mode power consumption. And at the last column of

this table it shows the annual unit energy consumption for

non-qualifying and qualifying units.

You can see that the noncompliant monitors use

60.58 kWh/year whereas the compliant units use 32.83

kWh/year. So that's approximately a 49 percent reduction

in power consumption after the Standard takes effect.

Life cycle cost and per unit savings are provided

in this slide. The life cycle cost or design life of the

monitors is about seven years is based on the Fraunhofer

and Navigant study. Staff analyzed technically feasible

and cost effective strategies for life and cost estimates.

Analysis of the current data shows most strategies to be

cost effective and feasible and would result in significant

energy savings.

So also the design life is 70 years and the life

cycle costs or average incremental cost is $5 to improve

the monitors to make them from inefficient to an efficient

1   unit. So the estimated energy savings per unit is $31.08

2   and the life cycle dollars savings are about $26 per unit.

3   Statewide energy savings, proposed standards

4   would result in significant statewide energy savings in the

5   first year statewide savings, and total statewide savings

6   after stock turnover are provided in the table below. So

7   the first-year savings would be $15.38 million.

8   And the total statewide energy savings after the

9   stock turnover is 1527. Currently, the monitors use 1527

10   GWh/year and the proposed standards would reduce the energy

11   consumption by 696 GWh/year. And that way the energy

12   consumption for the monitors would be 831 GWh/year after

13   the Standard takes effect.

14   Statewide savings over the life cycle after a

15   stock turnover, total savings after the stock turnover

16   would be $657 million a year. And the proposed standard

17   would reduce the greenhouse gas by 0.218 million metric

18   tons.

19   I'm going to move to the signage displays, they

20   are covered under the existing television standards.

21   Market data shows that not all manufacturers have been

22   compliant with the existing standards for the signage

23   displays. Clarification to definition and harmonizing

24   current definition with industry-accepted definition, the

25   expectation is that there will be greater compliance with

1 the existing standards.

2   And that concludes my presentation. Here is the

3 comment process. Comments are due on or before October

4 24th, 2016 at 5:00 p.m. And you can submit the comments on

5 the following website by clicking "eComments" or you can

6 also send it hard copy to the Energy Commission at this

7 address. And please don't forget to put the docket number

8 16-AAER-2 in the subject line.

9   Any questions? I'll take the questions at this

10 time, so if you have any clarifying questions please come

11 forward.

12   (No audible response.)

13   Okay. Thank you then, we go to the comments

14 after this.

15   (Colloquy regarding comments procedure.)

16   MR. KUNDU: Okay, a clarifying question. So just

17 to clarify, for the test procedure you have a --

18   COMMISSIONER MCALLISTER: Could everybody please

19 identify themselves first?

20   MR. KUNDU: Oh, yeah.

21   COMMISSIONER MCALLISTER: Thank you very much.

22   MR. KUNDU: This is Bijit Kundu, Energy

23 Solutions, on behalf of the California Investor Owned

24 Utilities.

25   For the test procedure I just want to be clear,

        1   so you can disable features that aren't related to the

        2   display for the testing and then enable them after the

        3   testing for shipment out to the consumer; is that clear?

        4   MR. SINGH: Yes.

        5   MR. KUNDU: Okay.

        6   MR. SINGH: Because the proposed standard is

        7   mostly focused on the backlight unit consumption and some

        8   of the electronics. That is part of the monitor itself and

        9   not the additional features that are not part of a --

        10   MR. KUNDU: Okay, so even if it's a feature that

        11   a consumer couldn't turn on or off? Like I understand for

        12   cameras or something like that, but if it was a networking

        13   capability where a consumer theoretically wouldn't be able

        14   to turn off, that could still be turned off for the test,

        15   but enabled in shipping, right?

        16   MR. SINGH: Yeah, but one of the things about the

        17   network capability is it is mostly in the computer. You

        18   know, we haven't seen monitors that have a network

        19   capability unless it's a KVM or something, you know, an

        20   exempt class.

        21   MR. KUNDU: Okay. Thanks.

        22   MR. SINGH: Thank you.

        23   I think that next is the comments, so...

        24   (Off mic colloquy.)

        25   MR. HARKIN: So first, as a personal note there

1   are folks in this room that I have been working with on

2   this rulemaking since an initial meeting, I think, in the

3   NRDC Offices in San Francisco, in February of 2012. I

4   didn't used to wear bifocals, wasn't this gray, and it's

5   all because of this regulation.

6   Anyways, so ITI and TechNet will have three

7   speakers today. Two of us speaking this morning, myself

8   and Humberto Fossati, as part of the displays conversation

9   although my comments apply to both. And then Shahid Sheikh

10   will speak this afternoon on computers.

11   First, both on behalf of ITI and TechNet, but

12   also personally after four-and-a-half years of this

13   negotiation a thank you to Commissioner McAllister and the

14   CEC staff for the collaborative and constructive process

15   that has occurred, especially at the last workshop and

16   since the last workshop. It's very appreciated.

17   ITI and TechNet support the standards proposed.

18   We've issued a press release saying that exact same thing.

19   I'll come back to the asterisk.

20   Our oral and written comments will address

21   certain omissions, clarifications, and adjustments that

22   we've discussed with CEC staff. The other two speakers

23   will go into these in more detail. Indeed, this is my only

24   slide.

25   A general comment about our companies, and this

1   process, and how it fit in -- our companies are innovating

2   and creating solutions to the challenges posed by climate

3   change. Indeed, as ITI we've adopted a policy statement

4   back before the last COP on climate change and our efforts

5   in that regard. Improving the efficiency of our products

6   is an example of this work. And these proposed standards

7   will help drive an industry-wide effort to innovate and

8   create new technologies that both meet our customers'

9   needs, hopefully delight them, while also helping to make

10   our society more sustainable.

11   The asterisk that I mentioned is a new issue that

12   came up, that surprised us in the new documents and

13   Humberto will go into those in detail. Commissioner, we're

14   hopeful that we can find a solution here that is agreeable

15   to all parties.

16   One final comment, in Slide No. 13 of the staff

17   slide set there's reference to the rechargeable battery

18   subsystem's language that's in the rule. That correction

19   is a vital one. Indeed it's vital that it occur before

20   January 1, 2017. And that the proposal fully aligns with

21   the conversations we've had and we appreciate the action

22   being taken by the CEC. It just needs to get done this

23   year and I'll stop there.

24   MR. FOSSATI: Good morning, my name is Humberto

25   Fossati from HP, representing the industry. After our

1   review of the latest regulatory language we have discovered

2   one item that we need to bring up to the firm. We want to

3   explain our rationale for asking for this one change. And

4   we hope that we can have a good discussion on the topic.

5   The item of question was the sentence that got

6   added on the 45-day regulatory language. It states that,

7   "Manufacturers shall apply no more than **one** applicable

8   adder from the list of Table V-5 to determine the maximum

9   on-power (sic) wattage."

10   The concern from the industry is on the use of

11 "one applicable adder," as it is not a standard with other

12 regulations or our own site regulation on the computer

13 side. Let me explain that.

14   During all of our industry presentations and

15 feedback for monitors and computers alike, we have

16 emphasized that in cases an allowance is needed, an

17 allowance is additive to other additional power.

18   Initially, the industry had proposed to exclude

19 from the regulation many types of monitors due to their

20 specialty status or due to their low market share, in

21 California. As a compromise to those, instead of excluding

22 them, it was agreed that instead we would have a system of

23 allowances similar in fashion to what was done on the

24 computer regulation, and similar in fashion to what was

25 done by ENERGY STAR 6.0 and ENERGY STAR 7.0.

1   So for example, in the computer regulations, it

2   is understood and accepted by the CEC that the industry

3   will get capability-based status for attributes on that

4   computer. For example, if the computer has more system

5   memory or it has one of those powerful discrete graphics

6   cards or additional hard drives or additional add-in cards,

7   all of those get added into the suitability score and

8   eventually provide a increased amount of power for that

9   system to be tested against.

10   The same situation exists in monitors where we

11   have a difference in individual allowances that should be

12   additive and for things that incorporate more capability or

13   technology. And normally those are not included on the on

14   or base power limit.

15   For illustration purposes, this is an excerpt of

16   the ENERGY STAR 7.0 Regulation. It's a little bit

17   different than ENERGY STAR 6.0, because ENERGY STAR went

18   into their own decision for absolute power numbers to the

19   total energy consumption numbers.

20   But you can see on that regulation how they also

21   add the different capabilities that a monitor in this case

22   could have. So for example, to the base power they add the

23   extra power for an enhanced performance display, which we

24   also have on the CEC regulation. They also allow extra

25   power for automatic brightness control, for network

1 connectivity, for occupancy sensors, for touch, etcetera,

2 etcetera.

3   So like on that regulation when we are working

4 the regulation for the CEC, we have some of those

5 allowances. And then again as I mentioned before, in order

6 not to have to exclude or take out of scope some product,

7 we agreed that we were going to provide some additional

8 allowances to other categories of displays.

9   The area that we want to emphasize, and also to

10 be fair to the industry and the advocates, is that there is

11 some instances where we do agree that the allowances are

12 mutually exclusive. For example, in the category of the

13 enhanced displays we get an allowance for meeting the

14 minimum of an sRGB level of a color gamut. And we get a

15 different allowance for meeting the minimum spec for an

16 AdobeRGB type panel.

17   We do not expect to get both allowances. It's a

18 situation where it's either one or the other.

19   So the way that we are proposing to structure the

20 table in the regulation is add one more column where we

21 would put a category, and we would bundle those two

22 together into one single category.

23   The same thing is expected for gaming monitors.

24 We have two different allowances there, one for monitors

25 that included additional hardware for a hardware-assisted

1 performance, and has mentioned one that did not. In this

2 case, we do agree that those two also would be mutually

3 exclusive, so you would not get an allowance for both. You

4 get one or the other.

5   The other categories are emerging technologies

6 that we're starting to see more and more and we hope that

7 we are going to be able to provide products to California

8 and the rest of the world. And those include things like

9 OLED, Curved or Touch.

10   The way that we are proposing to structure the

11 table is to simply add that category and then change the

12 wording on Section E to say that, "Manufacturers shall

13 apply the applicable adder(s) from Table V-5." And that,

14 "Only one adder can be applied from each," of the five

15 categories shown.

16   And for completeness the original table did not

17 have the last category. The last category was just

18 described in wording, in a previous page. But we wanted to

19 make sure that all of the allowances were comprehended in

20 the same table, so we added the one watt allowance for

21 Touch as the last item on this table.

22   And then to clarify, like we did in some of the

23 definitions we just put this clarifying statement here that

24 says that for example, if you were to have a gaming monitor

25 that were also a Curved monitor, that in that case you

1   would get the allowance for the additional hardware needed

2   for the gaming solution. And you would get an allowance

3   for the additional power needed for the less efficient

4   Curved solution, just as you were getting individually.

5   With that we have a minor correction to Table V-

6   4. In Table V-4, the formulas were specifying that you

7   would multiply the adders. You should just add them. If

8   you multiply them you carry the probability that you have

9   additional error, because you will be compounding the

10   adders. We do not need that. So the suggestion is to just

11   change the multiplier to a plus, on the Table.

12   That concludes the comment on the additional

13   requirement put on this last version for the regulatory

14   language. That's all we have for displays.

15   (Off mic colloquy regarding presentation.)

16   MR. FOSSATI: Well, I didn't know whether we were

17   going to cover that separate. Okay.

18   So this one was a question that we were having in

19   general and it applies in a sense to both displays and

20   computers. It's been requested that we test on, sleep, and

21   off modes.

22   The request from industry is that product that

23   does not meet ENERGY STAR or does not meet the CEC; we

24   don't even bother to send it for the labs, for testing. So

25   the proposal is for us to have the exempted monitors

1   exempted from testing. That there is no need to go through

2   the expense and through the expense and through the book

3   keeping of all of the product that we will not be able to

4   qualify for sale in California or we will not qualify for

5   ENERGY STAR.

6   And I think that's it. Thank you very much.

7   MR. SINGH: Thank you very much, Humberto and

8   Chris.

9   One of the things I want to mention related to

10   the testing list. The standard doesn't apply but we'd like

11   to collect the data on those monitors. We don't know what

12   the market size is, so if we see the market grows on those,

13   then we can always come back and regulate those. But we'd

14   like to collect data on it, so that was the purpose. There

15   is no standard for it, but we would like to see how much

16   energy consumption those monitors use. And also in the

17   future if the market grows than we can come back and take a

18   look at them.

19   And the other thing I want to mention, is that

20   the Commissioner mentioned in the beginning that if you

21   could provide us the data for the changes you're proposing

22   as soon as possible, that would help us to determine the --

23   or make some recommendations to the Commissioners. So if

24   you could please do that we'd appreciate that.

25   And with that I think the next presentation are

1   the comments from Pierre from the NRDC. Thank you.

2   MR. DELFORGE: Good morning, everyone. I think

3   we are waiting for the presentation. Well, let me get

4   started by saying -- oops. So I wanted to get started by

5   thanking --

6   COMMISSIONER MCALLISTER: I hope that doesn't

7   mean things are going to go sideways here?

8   MR. DELFORGE: Well, I might, we'll see.

9   I want to start by thanking the Commissioner and

10   staff for all this hard work over the last four-plus years

11   to get us to this point. This is, as you've noted, a

12   significant rulemaking, an important rulemaking, with

13   significant savings potential with three quarters of a

14   million tons of carbon reduction potential annually by

15   stock turnover. That's a few non-trigger (phonetic)

16   contributions to California's efforts to reduce carbon

17   emissions and address climate change.

18   And we actually, as we've commented on before at

19   previous workshops, we're actually seeing that these are

20   low estimates. If you look at the Energy Information

21   Administration's estimate of computer and monitor energy

22   use it's nearly twice as high as the Commission's

23   estimates, so it makes it even more significant.

24   I'd like to note my appreciation of not only the

25   Commission and staff's work to get us to this point on this

1   rulemaking, but also our industry colleagues and their

2   constructive and collaborative attitude and engagement over

3   the past four years. And I know we don't always see eye-

4   to-eye on everything, but I think we've been able to

5   achieve compromises and I appreciate that approach.

6   I also want to recognize the IOUs and their

7   consultants for all the investment in research and analysis

8   that has been made over the past four years, that have been

9   instrumental in getting us to this point.

10   We're close to the finish line, but we're not

11   quite there yet. And at this point as it is, unfortunately

12   NRDC is not able to support this proposal as it currently

13   is. We don't think we're very far and we're hopeful that

14   we can find solutions to be able to get to a position that

15   we can support. And what I'd like to do today is walk you

16   through some of the major concerns that we still have. Can

17   you go the next slide, please?

18   (Off mic colloquy regarding slide presentation.)

19   Okay. Thank you, so I was talking to this slide

20   anyway.

21   The main issue that we have with the proposed

22   standards is the timeline, the extended timeline, which is

23   much longer than originally envisioned. And with that

24   timeline comes a risk of major loopholes developing if

25   things which are not common today -- no allowances or

1 exemptions are given for emerging features or rare

2 features, which make sense compared to today's market or

3 even last year's when we collected most of the data for

4 this rulemaking -- become very significant and effect many

5 products and would potentially wipe out a large part of the

6 savings that are being projected here.

7   (Colloquy regarding slide presentation.)

8   So looking at the timeline we have, assuming

9 adoption by the end of the year -- and looking at when the

10 data that was used for the analysis for this standard was

11 collected, which was mostly in 2015 and early 2016 -- we're

12 looking at a three-to-four years timeline between data

13 collection and Tier 1, and five-to-six years between data

14 collection and analysis and Tier 2.

15   And this is a really long timeline in computer

16 technology terms. You know, we're talking about several

17 generations of product. If you think back to where

18 computers were six years ago they were very different from

19 what -- at least in terms technology. The form package may

20 not be that different, but the technology inside them was

21 very different to what it is today. So let's project

22 ourselves and see where we're going.

23   A lot of the things that today may be emerging

24 features are likely or is actually a high probability that

25 they will be much more common, if not standard, by the time

1 Tier 1 and particularly Tier 2 go into effect.

2   So if you have a significant lot allowance or an

3 exemption given to a feature, then this feature becomes

4 common and your allowance is no longer warranted because of

5 the time -- it has been integrated into silicone and

6 doesn't need to be or now doesn't require any extra power

7 -- then you end up having a large loss of savings in the

8 standard. And that's one major concern and I'm going to

9 point out a few of those.

10   But before we do that I want to emphasize this

11 issue of allowances, because it is a little bit arcane if

12 you haven't been involved in the detailed negotiations. So

13 I want to take an example of a monitor of a 27-inch

14 diagonal size, 2 megapixels so fairly standard would get,

15 under the proposed standards a 21 1/2 watt on mode

16 allowance. So that corresponds right out to 50 kWh/y.

17   If this monitor met the AdobeRGB enhanced

18 performance display threshold it would get an extra 60

19 percent in Tier 2 and a 75 percent in Tier 1. I've just

20 done the math for the 60 percent here in Tier 2. That

21 means an extra 30 kWh/y allowance. And that 30 kWh/y, we

22 know that the technology trend are towards increased

23 display quality at no additional power requirements.

24   And if within four years this becomes much more

25 common -- so again I don't know for sure, but let's just

1   for the sake of the argument imagine that it is -- it gives

2   an extra 30 kWh/y for the displays. And this is pretty

3   much what we're hoping to save on the displays. I mean, we

4   know we're saving 30 to 50 percent energy and this is 30

5   percent energy, so these could wipe out savings for all the

6   monitors that achieve this functionality.

7   So that's what I call the loophole here. For

8   those who watched the debate last night know they talked

9   about loopholes as well. So here we are.

10   So and this is not about one or two of these

11   issues. This is the six areas that we have identified and

12   that actually reminded me of the seventh one, with the

13   Touch, which wasn't on this table where we have very

14   significant allowances or weaker requirements or an

15   exemption.

16   What we're talking of here in Tier 2 -- and I'm

17   focusing on Tier 2, because I realize that for Tier 1

18   there's a limited time for industry to reengineer products

19   to be able to meet stringent requirements. But for Tier 2,

20   we have four-and-a-half years from adoption -- depending on

21   computer and displays -- between four and four-and-a-half

22   years from adoption to reengineer products and achieve

23   these levels.

24   And giving 35 percent, you know, 20 or 35 or 60

25   percent is potentially a high risk of loss of savings. And

1   the problem is I don't know which one -- I don't know for

2   sure myself, which one of those are going to become common

3   across the market. But what I know is that the law of

4   probability is if any of those has a 20 percent chance of

5   becoming much more common that gives a 75 chance of or

6   probability of at least one of those becoming common, just

7   compounding all probabilities.

8   All right so we have a very high chance here that

9   at least one if not several will become common. And I'm

10 going to take this opportunity to respond to Humberto's

11 proposal that these should not be additive or they should

12 be additive. And I can't agree with that when there's such

13 a risk that at least one or several of those would happen

14 because these are already extremely high. If you end up

15 being able to add those levels, then you don't have any

16 settings left. So I might be able to agree with that with

17 much lower allowances, but not with the current levels.

18   Let me just dive down just in the first two and

19 in written comments we will provide more details on each of

20 those. But just for the -- given the limited time, I'm

21 just going to focus on gaming monitors and the enhanced

22 performance.

23   Gaming monitors, so these are functionality which

24 allow the display to adjust the refresh rate to that of the

25 graphics card in order to smooth out a display,

1   particularly for motion sync and gaming. Given a 35

2   percent adder in to Tier 1 and 20 percent in Tier 2, the

3   problem is the test method for displays doesn't use

4   variable content, variable rate content. It's fixed. If

5   you read the test procedure it's fixed content.

6   So why should there be an allowance given for

7   content that's not being -- full functionality that is not

8   being used? You know, I mean there is absolutely no reason

9   for it.

10   In addition, if we look at the two technologies

11   that provide this from the two companies, AMD and DDR

12   (phonetic) that are represented here today. One of them is

13   software based. The other one is hardware based.

14   The software version doesn't require any

15   additional power in a display. It's basically adjusted to

16   what the GPU sends to the display, so we don't see any

17   reason why technically it needs to be an extra power, even

18   if the content were variable in the test method, which as I

19   said is not.

20   And this is a performance-based standard, so we

21   have two different solutions to do the same thing, which we

22   think should be held to the same standard. It shouldn't be

23   a technology-based standard. It should be a performance-

24   based standard with two solutions having the same benchmark

25   to meet.

1   And lastly, if we've looked at the ENERGY STAR

2 Version 6.0 list of qualified products, which represents

3 pretty much all the market. And so now we're on Version 7,

4 so Version 6 just before it, the end of its life had pretty

5 much all the market. And we found that 75 percent, 73

6 percent, and 57 percent of freezing monitors already comply

7 with no adder. So if today they can comply with no adder,

8 why are we giving them an adder for two and four years from

9 now? To us it doesn't make sense.

10   This is a high risk, because especially for the

11 software based solution where there's no additional

12 hardware cost to make these products. We don't know, but

13 there's a pretty good probability that these will become

14 common by the time the standards go into effect. So to

15 just run that little loophole test with three criteria, how

16 many products are affected by effective date, or a high

17 risk that many products will be, what's the impact for

18 product?

19   It was 20 and 35 percent. That's very

20 significant. That's most of the savings that you can get

21 for each product. And then is it warranted by effective

22 date? Well, it's not warranted today, so we don't see why

23 it's warranted by effective date. So that's a high risk of

24 a loophole.

25   Recommendation is no adder at all for Tier 2. We

don't think we need an adder for Tier 1, but we're open

just for the spirit of compromise and given no further

timeline to have a low adder, a 10 percent adder if

necessary, although again we don't think it's necessary.

Also, I want to caution the Commission against

exempting those. I agree that there should be an adder, at

least for Tier 1 and not an exemption, because that would

make a loophole even bigger.

The second point is on enhanced performance

displays, so those are displays that have higher color

quality, color gamut contrast, resolution and that requires

more power today to do this. The proposed adder that we've

seen before is between 20 and 30 percent for standard RGB.

And standard RGB is actually a fairly low bar. It's not

very far from where we are today and it's not very

difficult to meet them within two or four years.

We know the technology is evolving towards better

quality. It's actually fairly likely that this will be

achieved. AdobeRGB is a higher bar, but still not that --

in terms of in four years it could also easily be achieved.

And if we look at the market penetration today,

we run against ENERGY STAR Version 6.0, we found 63 percent

of standard RGB and nearly 50 percent of AdobeRGB, able to

meet the Tier 2 level today. So four-and-a-half years

before effective date we already have two-thirds and half

1   of the market meeting these two levels.

2   And Version 7.0, which is the basically the

3   latest products on the market at the moment is 100 percent.

4   I mean, still it's a recent spec, but it's 100 percent

5   today that meet it. So in four year's time it's very

6   likely that every enhanced-performance display will meet

7   the levels with absolutely zero problems as they can

8   already do it today.

9   And market share, as I said, it's a pretty high

10   likelihood that this is going to become very common.

11   So our recommendation is to for standard RGB is

12   to have a lower adder of 10 percent in Tier 1 and zero in

13   Tier 2. And for Adobe RGB, 50 percent in Tier 1 and 25

14   percent in Tier 2 and again, avoid the exemption.

15   The last one, I don't have a slide for this, but

16   I wanted to respond to Humberto's comment on testing. We

17   think it's important to test and list all products, even

18   those which are exempted from TEC (phonetic) requirements,

19   because it's important to see where the technology is

20   going, and whether these products have the potential to

21   achieve standards that they have been exempted from.

22   And if these are truly exemptions and low volume,

23   there shouldn't be a significant burden on the industry.

24   And if it's a high volume they should be covered. So I

25   think there's a trade-off here. If they warranted to be

1 exempted then it should be a low volume and shouldn't be an

2 issue for industry to test them.

3   So let me conclude here, so in terms of what we

4 asking CEC to do, which I think would address these issues.

5 First is to tighten or close the loopholes or all the

6 potential loopholes that we've identified as recommended in

7 this presentation, and in our comments, even though we only

8 covered two loopholes in this presentation.

9   The other thing, which I think is really

10 important, because nobody knows -- and you know I don't

11 know and Commission probably doesn't and the industry may

12 have a better idea in terms of road map -- but doesn't know

13 where the market is going. So we don't know where the

14 technology is going.

15   And I think it's important that we can adjust the

16 standards as the market evolves. And as we have new

17 information on how this market is evolving, to see that if

18 some of these loopholes emerge and develop to be much more

19 common than expected. And they are at risk of wiping out

20 most of the savings from the standard or significant share

21 of the savings on the standard, the Commission should

22 reopen a sub-rulemaking and phase out the adders or

23 allowances or exemptions that are causing the loopholes in

24 the standards in order to preserve the savings and make

25 sure that Californians do get the benefits as expected.

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1              I think a lot is at stake here if then here if
2     half of the projected savings do not materialize of course
3     both computers and monitors due to various loopholes.
4     We're talking about $1 billion over six years, because
5     roughly the expected life of the standard and two million
6     tons of unnecessary CO2 emissions.  So it's really
7     important that Californians do get the benefits which are
8     being projected in this rulemaking.
9              And just a final word, we are not here
10    challenging -- even if we don't agree with everything and
11    where the levels have been proposed -- we're not
12    challenging the overall framework and the core pillars of
13    the standard.  We only asking for reasonable minor tweaks
14    that would ensure, that would guarantee that we don't lose
15    the savings by the time the standards go into effect.
16             Thank you and I'd love to continue the discussion
17    with the Commission and stakeholders.
18             MR. SINGH:  Thank you, Pierre, I appreciate your
19    comments.  You know, I want to mention one or two things.
20    That we have looked at the market sales data and also some
21    of the data related to all the monitors such as enhanced
22    performance, gaming and all those monitors.  And we find
23    the market size was small and the energy savings number
24    were really small, two or three gWh/y or 4 gWh/y
25    altogether.
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 1   So, you know, because these are technologies
 2   coming to the market fairly new, so we were not sure.
 3   That's why we have in the Staff Report, we have that in
 4   case there is a surge in the market of certain types of
 5   monitors, then there is a petition process for redoing the
 6   standards for some of these products. So I just wanted to
 7   mention that. It's in the Staff Report we have included
 8   that provision.
 9   Anyway, thank you very much and we appreciate
10   your comments.
11   The next comments are from Gregg Hardy. Thank
12   you.
13   MR. HARDY: Hi. My name is Gregg Hardy and I'm
14   here representing Northwest Energy Efficiency Alliance. I
15   have one set of comments that actually applies to both
16   computers and monitors, generally in support of NRDC's
17   considerations. And I'll present those later today if
18   that's okay?
19   MR. SINGH: Thank you. Next is Bigit. (sic)
20   MR. KIM: Thank you. Thank you, Commissioner.
21   I'm Charles Kim. I'm with the Southern California Edison
22   Company. Edison Company has been leading the advocacy
23   effort for computers and displays for the last four years,
24   since 2012 with the support from California IOUs.
25   And I want to extend my gratitude to NRDC,

1   Pierre, for providing technical support on this one. And

2   even though we have some differences on what level the

3   standard needs to be set, but I want to give you credit.

4   As an advocacy group that you are really champions leading

5   the effort. So thank you very much.

6   We cannot get to at this point without the

7   visionary leadership of the CEC. And the extraordinary

8   effort put by the staff, led by Kristen and also her staff.

9   I want to mention only a few people, sorry if I don't

10 mention everyone. Harinder, Ken Rider and Soheila, and

11 Leah recently added to the team and I deeply, deeply

12 appreciate it.

13   Extraordinary effort has been taking place:

14 discussions, meetings, that sets an example of rulemakings.

15 And I want to say thank you for all the industry to show

16 up. Not just opposing it, but bringing technical experts,

17 market data and all other things to the table.

18   And I want to thank you Chris Hankin of ITI for

19 leading.

20   MR. HANKIN: And my gray hair.

21   MR. KIM: Yeah, I have gray hair too. Maybe we

22 have the same faith, but we have the same cause. Can we

23 negotiate it? Can we reach a common ground that we can all

24 live with? And then also we need to protect our

25 environment as well as our businesses in the context of

1 sustainability. And in that regard I really, really thank

2 you for showing up and for also bring lot of things on the

3 table as well.

4   So reflecting back four years of effort, but then

5 the question comes to my mind, can we do better? And the

6 answer is yes. Can we go for the higher standard? The

7 answer is yes. Is there a technology that is out there who

8 can fulfill the market? The answer is yes. Is it cost

9 effective; some of them are today and some of them are not?

10 And one other thing that we have to do is this IT

11 technology, computer and displays, is evolving so fast it's

12 very difficult to predict what's going to happen in two

13 years, four years or even six years later.

14   I'm not here to ask for more, but I'm standing

15 here to honor all the negotiation things that have been

16 done and we put all of that on the table. It has been

17 negotiated. We had our discussions. Yes, we can push this

18 a little bit more for our advantage. Well, some of them

19 for other peoples advantage, but we have the same goals.

20 That is, can we achieve something greater here for the

21 benefit of Californians and benefit of our future

22 generations?

23   We are establishing minimum standards. I want to

24 emphasize the word minimum standards. Industry has a

25 choice to just meet the standard or go beyond that, knowing

1   that there's technology out there.

2   My belief is the fortified Express Terms and I

3   hope and I believe portray all the terms that we haven't

4   discussed. There are some clarifications that have been

5   made; there are some minor tweaks that need to be done.

6   But I believe that it has been reflected, so can we honor

7   what is on the table?

8   And industries, can you not just meet the

9   standard, but can you go beyond that? Instead of waiting

10 four years and sixty years, can you do that all year for

11 the benefit of Californians?

12   And also, I haven't seen any industries who are

13 opposing the idea of being a green company; will you will

14 be a leader of a green company? I know that there are

15 certain companies who are already achieved the level that

16 is proposed here. Even the year 2012, some of the

17 companies already achieved that. I know products are

18 different, classification is different, but the intent is

19 there. Technology is there.

20   So once again, I'm standing here to honor what is

21 on the table and be thankful to CEC, various stakeholders,

22 NRDC and all the California IOUs. And in my thankful heart

23 extend to all staff, our consultants who worked very

24 diligently for the last four years pushing, pushing for

25 more and more data.

1   So once again, Commissioner, thank you so much.

2   MR. SINGH: Okay. Next is Bigit, please. Are

3   you here? Do you have a comment? Okay. I've got your card

4   anyways.

5   Next is Chris Granda. Okay.

6   MR. GRANDA: Hello, can you hear me?

7   MR. RIDER: Yeah. Yes, we can.

8   MR. GRANDA: Great. Thank you very much and

9   hello again. This is Chris Granda with the Appliance

10 Standards Awareness Project.

11   ASAP commends the CEC for its work on this

12 rulemaking, and commends all of the stakeholders for their

13 consistent efforts in support of the process. ASAP is

14 particularly interested in this rulemaking, because we

15 believe that it will have a substantial impact on the

16 energy consumption of computers and monitors in California,

17 and also across the entire country.

18   We support the proposed CA standards for

19 computers and monitors, with some adjustments. We do not

20 challenge the overall framework, dates or efficiency levels

21 in the proposed for either computers or monitors.

22   I'm (indiscernible) glad I'm here, because given

23 the time difference, I'm calling from the East Coast I'm

24 happy to be available during the comment period for this.

25   However, for both types of equipment we recommend

1   minor adjustments to the proposed standards to reduce the

2   risk that their effectiveness will be significantly reduced

3   by changes in technology and in the market before natural

4   revision cycle and adjustments.

5   And computers and monitors like consumer

6   electronics in general, are challenging for energy

7   efficiency standards, because the technology evolves so

8   rapidly that it is difficult to project what products and

9   features will be in the marketplace over the relevant

10   standards development limitation before revision.

11   As we saw in Pierre Delforge's presentation that

12   three to four years for Tier 1 and five to six years for

13   Tier 2, during that period we should expect technology for

14   both monitors and computers to change significantly.

15   The risk posed by the currently proposed adders

16   and exemptions, and the potential effects of the proposed

17   categorizations for computers specifically, allows

18   significant growth in power consumption. And that would

19   have a significant cost to both consumers and the

20   environment.

21   As Pierre noted, if those adders, exemptions and

22   categorizations ending being that half of the projected

23   savings are not realized, Californians would spend an

24   additional $1 billion over six years, and there'd be an

25   additional 2 million tons of CO_2 emitted for California.

1   And the effect on the national level would be, of course,

2   much greater.

3   So for specific recommendations on how to address

4   these concerns are in line with NRDC's and I won't repeat

5   them here. Pierre's done a great job of that, but in

6   summary we ask that the Commission take reasonable steps to

7   ensure the success of the proposed standards.

8   You know, the industry, monitor and computer

9   manufacturers have demonstrated an excellent ability to

10 simultaneously improve both the performance and the energy

11 efficiency of their products. We have no doubt that they

12 will be able to bring out the next generation or two of

13 their products under standards that a bit more constrained

14 with regards to the adders and exemptions, and for

15 computers with adjustments to the categorizations, as

16 proposed by NRDC.

17   Thank you.

18   MR. SINGH: Thank you, Chris.

19   I think next is Humberto, please?

20   MR. FOSSATI: Hello, my name is Humberto Fossati

21 again, representing HP and the industry.

22   I just wanted to give a few comments to the

23 previous presentations and express that we will take a

24 detailed look into all of the suggestions that were made

25 and prepare written comments for it.

1   The one thing that I wanted to emphasize is that

2   industry is also looking at the long term. And we're

3   trying to look into our crystal ball and to what things may

4   happen, but it's not that good. And there has to be a

5   certain amount of leeway in our attempts to have as much

6   product as possible available for California.

7   One of the things that we have explained before,

8   for example, is that just it's likely that we will not be

9   able to invest too many resources or money on the low end

10 of the monitor product line, because there is no room for

11 cost additions to those products. That we have to also be

12 knowledgeable that we don't have infinite amounts of

13 resources or money to invest on all of the technologies

14 that are coming over the next five-to-seven years, so part

15 of the decision on industry has to also be into where is it

16 worth investing the most to get the most return on that

17 investment?

18   And the goal that we have stated from the

19 beginning is that we're going to try to be compliant on as

20 much as we can on the mainstream, on what represents the 80

21 to 85 percent of the product line. All of these specialty

22 products are going to get attention too, but if need be

23 we'd rather have the bulk of the mainstream product line

24 that effects the most Californians available for sale here,

25 than to put all our eggs into to one, let's say gaming

1   monitor basket, and make it not pan out.

2   One of the things that I wanted to also clarify,

3   and the reason why we had requested and agreed on some of

4   these categories, is because during the next five-to-seven

5   years, there may be other technologies that could fall into

6   some of those categories as well. That's, for example, why

7   on gaming monitors we had the case for hardware-assisted

8   versus non-hardware-assisted. Because even though today we

9   have two large companies that are supporting one or the

10   other type of technology, we are already seeing other

11   companies that are going to try to get into the market with

12   other new technologies that could fall into one or the

13   other. And those are things that we have to evaluate.

14   As regards to some of the comments on enhanced

15   displays, we should note that enhanced displays are not

16   just being sRGB or AdobeRGB. The requirements for an

17   enhanced display include other factors that will shrink the

18   market size even more. And that's why, when we were

19   proposing and discussing about the different allowances, we

20   were taking that into account -- the projections from

21   independent research industry that projected from 2016

22   through 2019 and 2021. That's where we showed that for

23   example, the small-sized monitors are going to keep on

24   decreasing in size, while some of these other new growth

25   areas are going to, yes increase some, but not

1 significantly.

2 We are still pressured on a business, where

3 desktops are selling in smaller quantities. People are

4 moving to notebooks and tablets. And monitors are trying

5 to find their way somewhere in between.

6 So with all that, as I said, we will take all

7 those comments in stride and we will provide detailed

8 written comments in response to some of the proposals made.

9 Thank you.

10 MR. RIDER: So, I'm going to go ahead and check

11 the -- if you're online and you would like to make a

12 comment, the most orderly thing to do is to raise your hand

13 or to write in chat. We only have one call-in user that's

14 not hooked into the chat, so I'm going to mute them real

15 quick. If you have -- well, I don't know if I can -- I

16 don't have power.

17 MR. KUNDU: I've got a few question here, so

18 Bigit Kundu with Energy Solutions on behalf of the

19 California Investor Owned Utilities.

20 I just wanted to make a clarification during

21 Humberto's presentation. There was talk about adders and

22 the ENERGY STAR specification. I think I just wanted to

23 make it clear that ENERGY STAR, both in Version 6.0 which

24 is now outdated and Version 7.0, there are no additional

25 adders for gaming or curved monitors as well as OLEDs and

1 some of the other features. So I just, for clarity's sake,

2 wanted to point that out.

3   And also one of the adders that ENERGY STAR does

4 offer, and I know was pointed out in one of the slides,

5 it's for networking capabilities. But the way the CEC

6 proposal is, is that those networking capabilities would be

7 disabled. So where ENERGY STAR gives an adder for that,

8 for the CEC regulations as far as we can understand at this

9 point, those would be disabled anyway. So they wouldn't

10 need an adder.

11   Thank you.

12   MR. RIDER: I know, I didn't see you, so I'm

13 going to give you the opportunity to talk maybe later, if

14 you missed this one, at the end of the day.

15   COMMISSIONER MCALLISTER: Do we have a way to

16 unmute everybody just to make sure we're --

17   MR. RIDER: I could do that, yeah.

18   COMMISSIONER MCALLISTER: Doing housekeeping

19 while we're all here, so giving people a chance.

20   MR. RIDER: Everybody, you're unmuted. If there

21 is somebody who has not been able to speak, but wants to,

22 now is your chance, on monitors and displays.

23   COMMISSIONER MCALLISTER: Okay, hearing none I

24 think is that it? Anybody else in the room?

25   MR. SINGH: All right, Soheila, you're next.

1   COMMISSIONER MCALLISTER: Let's see, so maybe I

2   didn't see it in the morning, maybe I missed it? Was there

3   a description of sort of, you know, we are in the

4   formalities of the rulemaking: where, when, what happens,

5   what the dates are for 45-day procedure or process, that

6   kind of thing? Maybe we should just make sure everybody

7   knows that.

8   I think the process is going forward, you know,

9   we obviously want to move this forward. We're now in the

10   rulemaking itself and so it does have some formality

11   associated with it in making changes. You know, it has a

12   pretty strict process. So maybe -- I don't know who is

13   best to talk about that -- that's either Kristin or maybe

14   Leah. I'm not sure.

15   But I wanted maybe a little bit of context here,

16   so that people can really understand, if they don't, where

17   their comments are. You know, what moment in the process

18   this comment period is sitting, so maybe talk about those

19   dates, the dates associated with the formal rulemaking

20   there.

21   MS. DRISKELL: So this is Kristen Driskell. I'm

22   the Manager of the Appliances and Outreach and Education

23   Office. I was hoping to get away with not speaking today,

24   but I'm lucky.

25   So we are in the formal rulemaking process. We

1 are in what's called a 45-day language comment period, so

2 called because it's in 45-day comment period. It ends on,

3 I believe, October 24th, 2016. And all comments are due to

4 our docket by 5:00 o'clock p.m. on October 24th.

5   At this point any changes we make to the Express

6 Terms need to be supported in our records. So if you want

7 a change made, you need to submit it to the docket with

8 information about why we should make that change, why it's

9 technically feasible, why it's cost effective. If we

10 decide that we agree with that change, we would make it in

11 what we call 15-day language, because there is a 15-day

12 comment period associated with that language.

13   We would release new Express Terms with the

14 changes made to it. You would have 15 days to comment on

15 it and we would take those comments. And the process

16 continues that way although I don't think we plan on making

17 more than one set of changes to the Express Terms.

18   Then we go to an adoption hearing. It's

19 currently scheduled for November. If there is 15-day

20 language, it would be moved to December and after that we

21 adopt it. And then it goes to OAL for a final approval.

22   Is there anything else that you'd like me to

23 explain, Commissioner?

24   COMMISSIONER MCALLISTER: Well, I guess just

25 sooner is better, because if we do determine that we're

1   going to make some changes it would be good to do that. It

2   would be good to sort of see that coming earlier than sort

3   of the 5:00 p.m. on the last day of the comment period. So

4   that as soon as possible thereafter, we can actually

5   release 15-day language and move on to the next phase.

6   So I think we're in a bit of a more rigorous --

7   this enforces some rigorous deadlines on how we go about

8   things now that we're in the formal rulemaking period, so I

9   just want to highlight that issue for people.

10   I don't know if there's anything Legal wants to

11   say about this. I mean it's a pretty standard process, but

12   it does raise the bar a little bit in terms of how

13   accountable we are to a formal docket. So it's really

14   important that we get everything that needs to be said on

15   to that.

16   MS. DRISKELL: And we provided staff's contact

17   information, so that if you're just baffled by something

18   we've said, feel free to contact us and ask for

19   clarifications. And if we tell you, "Oh yeah, it's

20   unclear," then please comment on that in the record. But

21   feel free to contact us if you have any questions.

22   MR. SHEIKH: This is Shahid Sheikh from Intel.

23   So the 15 days should it come into play, what

24   would be the clock for that? Do you have a pretty good

25   understanding of when that will kick in?

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 1              MS. DRISKELL:  Let's see, the 45-day period ends
 2    October 24th, so we would have 15-day language out within a
 3    week or two of that and then you'd have 15 days to comment.
 4              MR. SHEIKH:  So 15 days would be more like an
 5    early November start and then mid-November finish?
 6              MS. DRISKELL:  Yes.
 7              MR. SHEIKH:  Okay.  Thank you.
 8              MS. DRISKELL:  I'm also considered optimistic, it
 9    might be a little bit later than that.
10              COMMISSIONER MCALLISTER:  Okay, thanks a lot.
11              But again if you have any questions about the
12    adder process, certainly talk to the staff or the Public
13    Adviser.  But I think everybody in this room is pretty much
14    in the know and so are staff for the most part.
15              So anything else?  Rather than get going on
16    computers I'm inclined to break and just maybe come back a
17    little bit early after lunch?  Maybe instead of 1:00, maybe
18    a quarter of 1:00.  Does that sound good to you guys?  What
19    was our -- we were scheduled to start up again at 1:00, or
20    no?  Yeah.
21              MS. DRISKELL:  Yes, and so let's start at 12:45.
22    This will get you in earlier on the lunch crowd, so that's
23    probably a good thing.
24              COMMISSIONER MCALLISTER:  Yeah, so okay.  Great,
25    so we will see everyone here at quarter of 1:00.  Thanks.
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1   (Off the record at 11:38 a.m.)

2   (On the record at 12:51 p.m.)

3   MS. PASHA: Good afternoon. My name is Soheila

4   Pasha. I'm an Electrical Engineer with the Appliances Unit

5   here at the California Energy Commission. I'm going to

6   present the proposed standards for computers today. My

7   contact information is on the screen, so feel free to

8   contact me if you have any questions about the proposed

9   regulations.

10   Here is the agenda for my presentation today.

11   The agenda is that I'm going to give an overview and I'll

12   go on to the proposed standards for computers including

13   their scope, some definitions, test procedures, performance

14   requirements, data reporting, effective dates and limited

15   exemptions. Then I'll go over the technical feasibility

16   and energy savings and costs.

17   After that, you have an opportunity to present

18   your comments.

19   The purpose is to clarify the scope of the

20   proposed Negative Declarations for computers, computer

21   monitors, and signage displays as Leah presented earlier.

22   And I go over to the regulations, and review the

23   regulations for the computers. And allow the Commissioner

24   to receive comments on the proposed Negative Declaration

25   and regulations.

1   So why adopt a standard for computers? Combined,

2 computers and monitors are one of the leading users of

3 energy in California, with about 1.7 to 2.9 percent of

4 electricity consumption in residential and about 7 percent

5 electricity consumption in the commercial sector. In fact,

6 in California computers combined with monitors are among

7 the highest consumers of energy of all plug loads, with a

8 total of 5,610 GWh/y in energy use.

9   Computers spend about half of their time sitting

10 idle and consuming significant amounts of energy while they

11 are on, but not being used. Standards will help save both

12 energy and money while preserving the core functions of the

13 computer.

14   The combined net direct savings to individuals

15 and businesses in the state are expected to be

16 approximately $3.5 billion from 2018 to 2030, or about $350

17 million per year, once the product stock has fully turned

18 over.

19   As a result of lower energy demand, the proposed

20 standards are expected to reduce the greenhouse gas by more

21 than half a million metric tons annually.

22   I'm going to go over some parts of the

23 regulations in this presentation. For the full complete

24 computer regulations please refer to the published Express

25 Terms that are posted to the Commission's website.

1   Section 1601 of the regulations is about the

2   scope of the products and explains which ones are, and

3   which ones are not, subject to the proposed regulations.

4   In the scope are desktops, including high expandability

5   computers, portable all-in-ones and integrated desktop

6   computers, notebooks including two-in-ones, mobile thin-

7   client and mobile gaming computers, small scale servers,

8   workstations including mobile workstations and thin-client

9   computers.

10   Other scopes are tablets, game consoles, large

11   scale servers, servers, industrial computers, small

12   computer devices, which are defined as computer devices

13   with a screen area of 20 square inches or less.

14   Section 1602 is the definitions. The initial set

15   of definitions were taken from the ENERGY STAR Version 6.1.

16   New definitions are added or slight modifications were made

17   in order to simplify regulatory language, clarify products

18   that are in or out of the scope, or to make a distinction

19   between similar devices that were subject to different

20   standards.

21   For example, primary storage means the largest

22   capacity nonvolatile storage device present in the system.

23   This definition distinguishes the primary storage from the

24   other storages in the system since they are subject to

25   different adders. I will explain the adders in the

1 upcoming slides.

2   The definitions used in the standards describe

3 product types such as tablets, mode of operation such as

4 short idle mode, design capabilities such as integrated

5 graphics, and small volume manufacturers.

6   Here are examples of a few of the definitions

7 that are new or modified and of more importance. The

8 complete list is in the Express Terms again that are posted

9 to the Commission's website. I will not go over the whole

10 definitions, but rather describe each of these terms

11 briefly.

12   Let's start with expandability, high

13 expandability computers, I'm sorry, the first one,

14 expandability score.

15   Expandability score only applies to desktop

16 computers. It is a score that increases by the number of

17 ports in some of the system's features. It creates a

18 boundary for computer categories that are subjected to

19 different total energy consumption limits. High

20 expandability computers are high-end desktops that are

21 subject to workstation standards, rather than the

22 established standards.

23   In order for a desktop to be considered as a

24 high-expandability computer it needs to meet one of the

25 criteria that are specified in this definition. It needs

to either have an expandability score of 690 or more, or
have a powerful graphics card as stated here along with a
600 watt or greater power supply.

Small computer devices as defined here are meant
to include devices such as handheld scanners or graphing
calculators. As mentioned earlier they are out of the
scope of the proposed regulations.

One of the requirements of the regulation is that
computers be shipped with certain power management
settings. However, some computers are shipped with
operating systems such as free DOS that cannot support
power management. Limited capability operating systems are
intended to include these types of operating system for the
purpose of exempting them from the power management
requirements in the regulations.

We modified the definition of sleep mode from the
ENERGY STAR definition in order to be inclusive of
operating systems that don't have a traditional sleep mode.
It will be discussed a bit more in the next section, which
is the test procedure.

Test procedure was based on ENERGY STAR's March
2016 test method with the modifications that hard-disk
spinning is not altered from the default as a shipped
setting. For annual energy use calculations, it uses the
ENERGY STAR Specification Version 6.1.

1   For computers manufactured prior to July 1st,

2   2021 depending on the criteria that they meet, they can

3   either use conventional or full capability mode weighting.

4   For computers manufactured on or after July 1st, 2021 only

5   conventional mode weighting is used to calculate the total

6   energy consumption.

7   Test procedure also describes how to calculate

8   the expandability score. The expandability score is based

9   on interfaces and features that are included in a computer

10   model, and their actual energy consumption. This metric is

11   used to categorize desktop, mobile gaming and thin-client

12   computers into four groups called categories.

13   Each of these categories has a maximum total

14   energy consumption limit that is directly related to its

15   expandability score, which is calculated as 100 plus the

16   sum of each port's score multiplied by the number of each

17   port.

18   The monitor that is used for the computer testing

19   should have a resolution of 1920 x 1080 and use progressive

20   scanning. And the operating system is set to the same

21   resolution and scanning. The displays' native resolution

22   is used for the computers with the integrated display.

23   Display connection also should be based on the order that

24   is specified here.

25   Test procedures also explain how to measure the

sleep mode power. The sleep mode power measurement is

performed in a modified manner compared to ENERGY STAR, in

order to be inclusive of operating system with an

alternative sleep mode. Instead of measuring the power

after manually entering the sleep mode, the sleep power is

measured after 30 minutes and before 31 minutes of user

inactivity following the long idle.

Power factor is measured based on the specified

test procedure at the 50 percent load for regulation

purposes, and during the long idle for data collection

purposes. And it is recorded in the test report to provide

the data, the configurations with the most energy used is

selected.

All computers, with the exception of small-scale

servers, rack-mounted workstations, and computers with a

limited capability operating system or without an operating

system, are required to have power management in a way that

they transition display into a sleep mode after 15 minutes

of user inactivity. And transition the system into sleep

mode after 30 minutes of user inactivity.

A sleep mode is either ACPI's S3 state or an

alternative sleep mode as described in the previous section

with the maximum power limits.

For systems with alternative sleep mode there is

a limit on their sleep mode power. The sleep mode power

1   limits are included in Table V6 of the Express Terms.

2   There is a baseline limit for each computer type plus an

3   additional allowance for computers with high capacity of

4   system memory, beyond a certain amount as indicated in this

5   table. Notebooks and all-in-one computers have an

6   additional 2 watt allowance for discrete graphic GPU.

7   Smaller-scale servers, high-expandability

8   computers, mobile workstations and workstations are not

9   required to meet total energy consumption limits. They

10 rather are required to have two hardware requirements: 80+

11 Gold level power supply and energy efficient Ethernet. All

12 other computers in the scope of the regulations must meet

13 the specified limits for the TEC, or Total Energy

14 Consumption.

15   The standards for desktop mobile gaming systems

16 and thin-clients are implemented in two tiers in order to

17 maximize energy savings and provide a smoother supply chain

18 transition.

19   Table V7 of the Express Terms shows the energy

20 consumption standards for computers. To set the TEC level

21 for each computer type, a combination of the baseline

22 energy limit and additional energy adders is proposed.

23   Desktops, mobile gaming systems, and thin-clients

24 are divided into four categories based on their expandable

25 test score. The first three categories have a baseline

1 energy consumption allowance that is different for each

2 category. The fourth category, which contains computers

3 with an expandability score or more than 690 or high-

4 expandability computers are subject to the workstation

5 standards as it was explained in the previous slides.

6   To reduce the burden on utilities a minimum power

7 factor requirement of .9 measured at full load is required.

8   Table V8 of the Express Terms presents the

9 corresponding energy allowances for each adder shown here

10 for both desktop and notebook-type computers. These adders

11 are intended to approximate the power requirements for the

12 added parts. Part of Table V8 is shown here. Again for

13 the full table please refer to the Express Terms that are

14 posted to the Commission's website.

15   Next, I'll go over some of the adders that are

16 more important. There is an adder for each graphic card,

17 where the first card gets a larger adder as its frame

18 buffer bandwidth increases. The stringency of this adder

19 is implemented in two tiers as is shown in this table.

20 There is also an adder for the second and after graphic

21 cards, the adder is always larger for the first graphic

22 card regardless of its frame buffer bandwidth.

23   There is also an adder for computers with

24 integrated high-resolution displays that have a high

25 bandwidth system memory. It is intended mainly for

1   integrated graphics and serves a similar purpose as the

2   discrete graphics adder. As it can been seen from this

3   formula here in the table the adder for the system memory

4   increases with the memory's bandwidth. This adder does not

5   apply to computers meeting any of the criteria that are

6   listed in this table.

7   Under Section 1606, covered products that are

8   manufactured on or after the effective dates must certify

9   their compliance to the Energy Commission's database.

10 Collected data includes data that is necessary to determine

11 the compliance and identify products as well as the data

12 collected for future rulemaking processes.

13   There is no proposal for any specific labeling or

14 marking requirements other than general labeling

15 requirements. General labeling requirements are that the

16 model number, manufacturer, and the date of manufacture are

17 being permanently and legibly placed on the product.

18   Here is a sample of data collected. Again, the

19 full list is in the Express Terms. This is just to show

20 some of the data that we collect. Again, some of these

21 terms are for the regulation purposes and some of them are

22 just for the data collection purposes.

23   As you see three items here in the blue color,

24 those are the ones that we just collect for the data

25 collection purposes. Other ones in the black color are for

1   the regulatory purposes.

2   Here is a timeline of the various effective

3   dates. On the top above the dates are effective dates for

4   the proposed regulations and the section below the dates

5   are effective dates for graphic requirements for a computer

6   to be qualified as a high-expandability computer and the

7   effective dates for different adders.

8   To find the effective date for a particular

9   system you would start from the top left diamond. For

10 example, to find the effective for thin-clients you start

11 from the first diamond and follow the path. The question

12 is asked, do any of these apply? Since thin-clients are

13 not one of those products you will follow the path through

14 the "no" answer and go in to the second diamond.

15   Again, since thin-client is not one of those

16 cases listed here you follow the "no" path to the third

17 diamond. You find thin-client as the last product listed

18 here. Therefore it is one of these products and you go to

19 the "yes" path and you see the two tier effective dates: as

20 of January 1st, 2019 for Tier 1 and July 1st, 2021 for Tier

21 2.

22   There are limited exemptions to the proposed

23 regulations. The first exemption applies to small volume

24 manufacturers or SVMs. In order to be considered a SVM, a

25 manufacturer's total annual gross revenue must be $2

1   million or less, and they must assemble and sell the

2   computers at the same location. These manufacturers can

3   certify themselves as a small volume manufacturer to the

4   Commissioner's website. However, if they no longer meet

5   any of the requirements they must remove themselves as an

6   SVM within 90 days.

7   If the SVM manufactures 40 units or less of a

8   basic model of computers, these units are exempted from

9   complying with the proposed standards, with the exception

10   of power management. However, if an SVM manufacturers more

11   than 40 units of a basic model, those units must comply

12   fully with the regulations.

13   Basic models are considered computer models that

14   have the same chassis, power supply, motherboard and

15   expandability score.

16   The other limited exemptions apply to the desktop

17   computers and thin-clients that are assembled before July

18   1st, 2021 entirely from parts manufactured before September

19   1st, 2018. These computers are exempted from complying

20   with most of the proposed standards, again with the

21   exception of the power management.

22   Technical feasibility, among all computer types,

23   desktops use the largest amount of energy and present the

24   greatest potential for energy savings. To determine the

25   total energy consumption limit for desktop computers,

1 expandability score, which correlates directly with the

2 power supply side is calculated.

3   As shown here desktops are divided into four

4 categories based on their expandability score. For each

5 category of desktops TEC limits for Tier 1 and Tier 2 are

6 shown here, with red and green lines. Specific energy

7 allowances are added to these levels for adders such as

8 discrete graphic cards.

9   This pullout here shows the measured TEC versus

10 expandability score. Each data point is color coded to

11 indicate which category the system belongs to. It shows a

12 good correlation between measured TEC and expandability

13 score. It also shows a nice crossover for each category.

14   In terms of feasibility, although most desktops

15 consume more power than proposed limits, there are some

16 desktop systems with power consumptions close to the

17 proposed levels, proving that the proposed levels are

18 technically feasible.

19   Expandability score doesn't apply to notebooks,

20 since they are not typically expandable like desktops.

21 However, similar to desktops, the total energy consumption

22 limit consists of a base energy plus additional energy

23 allowances for adders are proposed. Constraints on real

24 estate space, battery life and heat dissipation drives

25 notebook manufacturers to design them far more efficient

than other types of computers. In fact, as of November,

2014, more than 70 percent of notebook computers certified

to the ENERGY STAR 6.0 specifications already meet the

proposed energy limits.

Small-scale servers and workstation standards

apply to mobile workstations and high-expandability

computers. There is no limit required on the total energy

consumption for these computers. However, they are

required to use 80+ Gold power supply and high efficiency

Ethernet. 80+ Gold power supplies have a minimum of 80

percent conversion efficiency and are broadly available in

the market with more than 1,500 models listed across

multiple manufacturers as of November 2015.

Efficiency of the power supply has very little

interaction with the functionality of the computer beyond

providing the necessary power and doesn't affect the

functionality of the systems. If anything, it should

improve the performance since more efficient power supplies

produce less heat. Energy efficient Ethernet is also

widely available and provides enhanced functionality

without a significant negative effect.

The other requirement is power management with an

exception for small-scale servers. A sleep mode power

limit applies to computers with alternative sleep mode.

This limit is similar to ENERGY STAR's limit and includes

1   an adder for systems that have more than 32 gigabytes of

2   memory.

3   Energy savings and costs, here is Tier 1's life

4   cycle energy and cost savings along with incremental costs.

5   Energy savings are calculated using a database prepared by

6   ITI and projected to ENERGY STAR's data sets in order to be

7   consistent with the previous staff reports, which relied on

8   ENERGY STAR's data set for the energy savings calculations.

9   This data set is available for your review in the Energy

10   Commission's docket.

11   Incremental cost has been adjusted proportional

12   to the energy savings for each tier, compared to the

13   original energy savings from the Second Draft Staff Report.

14   The cost is also adjusted to calculate the average cost,

15   considering the fact that some computers are already

16   compliant. This factor was not accounted for in the

17   previous Staff Report.

18   Here are the same calculations for Tier 2, the

19   same methodology for energy and cost savings are applied

20   here too. As is shown, the life cycle cost savings are far

21   more than the incremental cost. Therefore, the proposed

22   standards are cost effective.

23   This is the statewide first year and stock

24   turnover savings. Energy savings are based on Tier 2

25   standards. The total first year energy savings is more

1   than 327 gigawatt hours per year. And the total stock

2   turnover energy savings is more than 1,600 gigawatt hours

3   per year.

4   So this concludes my presentation. As a reminder

5   again, the comments are due on October 24th, at 5:00 p.m.

6   You can electronically upload your comments to the link

7   that's provided here, or you can send a hard copy to the

8   address that's shown here. You can also email your

9   comments and there is an email address supplied here.

10   Please include the docket number 16-AAER-2 in the subject

11   line.

12   So I'm ready for any clarifying questions that

13   you have, if you have any questions.

14   (No audible response.)

15   Okay. If not, let's go to the comments. The

16   first comment is Gregg Hardy.

17   MR. HARDY: Hello. Once again, my name is Gregg

18   Hardy. On behalf of the Northwest Energy Efficiency

19   Alliance, or NEEA, I thank you for the opportunity to speak

20   at this important hearing.

21   NEEA has a history of championing energy

22   efficiency work on computers that dates back to 2004 when

23   NEEA funded the 80+ Utility Incentive Program for efficient

24   internal computer power supplies. The 80+ Program achieved

25   broad industry support and paved the way for the

1   establishment of ENERGY STAR on mode power requirements.

2   NEEA applauds the efforts by the California

3   Energy Commission, the industry and advocacy stake holders

4   and develop a Title 20 proposal for computers and monitors

5   that shows signs of broad stakeholder support. The

6   proposed base allowance levels and several key adders are

7   more stringent than ENERGY STAR levels and the CEC proposal

8   includes important test method improvements.

9   NEEA also appreciates the Natural Resource

10   Defense Council, their efforts to identify and mitigate

11   specific risks associated with the proposal for monitors

12   and computers.

13   Like NRDC, NEEA is concerned that some of the

14   proposed allowance levels and exemptions may be too

15   generous at the time of the 2019 Tier 1 and 2021 Tier 2

16   effective dates, given historical power reduction curves

17   for new computer and monitor technologies. To mitigate

18   this risk, NEEA recommends a) tighter levels, particularly

19   for Tier 2, for the allowances and exemptions identified by

20   NRDC. And b) a proactive mechanism or off-ramp to evaluate

21   and adjust levels if needed as technologies evolves.

22   NRDC's proposed off-ramp would involve sunsetting

23   allowances 12 months after a feature achieves significant,

24   perhaps 10 percent, market share. NEEA also requests

25   additional transparency into data use to develop proposed

1   levels, for example, data behind the proposed adder for

2   OLED displays.

3   Once again, NEEA views this rulemaking as an

4   important step in our collective efforts to mitigate the

5   effects of climate change and encourages the Commission to

6   look more carefully at how we can increase the confidence

7   that needed energy savings will occur in future years.

8   Thank you.

9   MS. PASHA: Thank you. There's a presentation by

10   ITI, please Shahid?

11   MR. SHEIKH: Thank you. This is Shahid Sheikh

12   from Intel representing the industry on computer comments.

13   I just want to make sure the comment the gentleman had

14   earlier -- I think they were pertaining to displays -- is

15   that true?

16   MR. HARDY: On both.

17   MR. SHEIKH: Okay. Because most of the comments

18   we were talking about are OLEDs and others.

19   MR. HARDY: (Indiscernible) intent to apply to

20   both.

21   MR. SHEIKH: Okay. Thank you.

22   All right, so I'm going to talk about computers

23   comments. Again, the idea is not to make everything very

24   exhaustive here. We will have a lot more detailed comments

25   in our written submission in the next couple of weeks or so

1 and some justification as well.

2   So starting with the first slide, on the

3 definitions, again some of these comments we have, we had

4 understanding with CEC except that the way the language

5 came out we have a slightly different way to propose

6 changes here.

7   On high-expandability computers and mobile

8 workstations, there was separation of the system memory

9 bandwidth and the frame buffer bandwidth requirement.

10 They're slightly different definitions. System memory

11 bandwidth has to do with a high-end integrated graphics

12 based system and the frame buffer bandwidth has to do with

13 a system of (indiscernible). And also the numerical

14 numbers were somewhat different, so we would propose to

15 keep those separate in the definitions.

16   On the workstation, industry recommends to

17 correct bandwidth, unit of measure from gigabytes/sec to

18 giga transfers/sec, under the workstation definition.

19 Again, this is part of the understanding we had broadly

20 across the stakeholders, this is just a minor case of an

21 omission here.

22   On the next bullet is a limited capability. And

23 this is a case of a zero or thin-client systems; the 1605.3

24 subsections that does not include thin-clients exemption

25 from 1605.3(B) for systems with limited capability

1 operating systems or internal storage. So the way it reads

2 right now is if the model is shipped with a purchaser

3 request for either a limited capability operator system or

4 without an operating system, the model is not required to

5 comply with the subsection (B).

6   So industry proposes the following addition to

7 this subsection to clarify the total energy consumption

8 procedure and avoid confusion. So we are recommending to

9 add what you see in red is to either a limited capability

10 operating systems or, without an operating system, or

11 without an internal storage to be added. And further, the

12 model may substitute the power in long idle mode with power

13 in sleep mode and typical energy consumption.

14   The whole thinking here is that if you have to

15 calculate your TEC since there is no sleep mode here, for

16 systems manufacturers to actually compute that you're

17 simply replacing your sleep mode waiting with a long idle

18 power. So this is along the lines of what ENERGY STAR has,

19 as well for the systems that do not have a sleep or

20 alternative do ACPI S sleep mode.

21   On the mode weightings, 1604(B) allows for

22 conventional and full capability duty cycles. ITI has

23 confirmed that not all OS and hardware suppliers support

24 the full capability requirements. This is something we had

25 discussed with CEC earlier, but then after we did our

1   survey and figured out who were the OS and hardware

2   suppliers, we figured out that there's not much support for

3   full capability today. There is some, but not much. Three

4   major nonproprietary operating systems manufacturers do not

5   support full capability. And two of the three major

6   network interface chip manufacturers do not support full

7   capability.

8   And then OS and hardware suppliers do support one

9   of the other capabilities called remote wake capabilities.

10   This is, of the four capabilities that ENERGY STAR has

11   prescribed, remote wake is one of the capabilities. So

12   that would be our proposed changes would ensure all

13   computer manufacturers would have the option of choosing

14   between conventional or remote wake duty cycle weightings.

15   So in terms of the language change we would

16   modify the last sentence. Instead of saying, "...unless

17   they meet the criteria to use full capability," we will

18   change that to read, "remote wake mode weighting." And

19   then in the second paragraph would be in order to use the

20   remote wake mode weightings, "...a computer shall have the

21   following features enabled."

22   So these are some of the same language that

23   ENERGY STAR has with some addition to alternate to ACPI S3

24   sleep mode. So the first one has to do with maintaining

25   Ethernet (IEEE 802.3) or wireless network and then the

1   second bullet has to do with while in ACPI S systems, ACPI

2   System S3 sleep mode or alternative to ACPI S sleep. The

3   system is capable of remotely waking upon request from

4   outside of the local network. So this language, except for

5   the changes on the alternative ACPI S3 mode, the language

6   is pretty much carried over from the ENERGY STAR.

7   The next thing we want to talk about is the

8   schedule. And Soheila had earlier shown a fairly complex

9   flow chart about different schedules. So our proposal

10   would be to streamline some of the scheduling, so that it

11   makes it easier for manufacturers and their suppliers to be

12   able to implement the schedule changes.

13   So for example, enhanced performance Tier 1 and

14   Tier 2 requirements, these are enhanced performance

15   displays, are aligned with the computer monitors effective

16   dates, which is the right approach. But however, the same

17   enhanced performance requirements apply to integrated

18   desktop computers.

19   The way we had it, after talking to CEC and

20   others, is that it makes sense to have the same

21   requirements for the enhanced performance displays that are

22   scattered over from the monitors and no need to come up

23   with a separate requirement. But however the dates don't

24   align. So this date and this alignment is confusing and

25   unworkable for computers.

1   So we would propose to modify Table V8 to align

2   enhanced performance display requirement dates with the

3   computer effective dates respectively, which is the Tier 1,

4   January 1, 2019 and Tier 2, July 1, 2021. So the same

5   requirements, but different dates and the dates to be

6   aligned with computer's dates, rather than display dates,

7   which are on a slightly different cadence here.

8   On the second part of the schedule, on the high

9   expandability computer compliance for computers meeting the

10   high expandability criteria, per definition, starts January

11   1st, 2018. However, the dates for discrete graphics and

12   power supply requirements are on a different timeline and

13   something that Soheila had shown earlier. So it says

14   "before January 1, 2020," and "on or after January 1,

15   2020." It is confusing and unnecessary to track these

16   dates. This could inadvertently lead to potential

17   noncompliance.

18   So the industry proposal is to modify high

19   expandability computer criteria to remove the following

20   language. So if the computer is manufactured before

21   January 1, 2020, that language would be removed and modify

22   three to change from "on or after January 1, 2020," to "on

23   or after July 1, 2021" to align with the computers Tier 2

24   dates.

25   So I know this is a little bit hard to

1 understand, so this is essentially where the current

2 effective dates are and this is a slightly different way of

3 what Soheila showed us. Is focusing on if you have small-

4 scale servers, mobile workstations, workstations and high

5 expandability scores of greater than 690, okay if that is

6 effective January 1, 2018 and if that does not meet that,

7 then it's either January 1, 2019.

8   But then you also have high expandability score,

9 a power supply of 600 watts or greater and discrete

10 graphics with frame buffer bandwidth of 400 gigabytes per

11 second or greater or integrated graphics with a system

12 memory bandwidth of 434. This is something that we are

13 proposing that should be added as well.

14   So and if it's a no than go to -- which means it

15 does not meet any of these requirements -- then it does not

16 apply. Then it's simply you move to 2019.

17   And if it happens to be after January 1, 2020

18 then you have a separate box here at the bottom, that if it

19 meets -- if it's no then you go back to January 2019,

20 otherwise you go to July 1, 2021.

21   So we are trying to streamline this. And this

22 would be our proposal.

23   And that what you see in the left-hand side is

24 small-scale servers, mobile workstations, high

25 expandability score with either of the 690 or power supply

1 or discrete graphics and if it simply a no then you move to

2 January 1, 2019 and then from there move to July 1, 2021.

3   So the enhanced performance and other

4 requirements and all align to pretty much Tier 1 and Tier 2

5 of the computer standards. And in the case of high

6 expandability, the graphics requirements also then align

7 with the computers dates and not on a separate cadence.

8   Other minor comments here and this is again a

9 minor change on the Final Staff Report, Final Analysis page

10 47, the add-in card allowance is incorrectly stated in

11 watts instead of kWh or the separation should also be in

12 kWh. The transmission rate should be in Gb/s second and

13 not GB/s. I know this is minor stuff, but these are

14 necessary for consistency.

15   On the future technologies this topic came up

16 earlier this morning as well. This refers to the Staff

17 Report - Final Analysis page 49. It's the discussion of

18 the future technologies is welcome and consistent with our

19 discussions excepting one important aspect. The reference

20 to the petition process under Section 1221 of Title 20,

21 seems to contemplate business as usual to us, whereas our

22 discussions have emphasized the importance of expeditious

23 considerations for these technologies.

24   So the new technologies coming into market should

25 be not withheld unnecessarily hostage to the prolonged

1   petition process. We request that CEC's Executive Director

2   take steps to ensure expedition, committing to a process of

3   no more than six months.

4   I think this was the spirit that we've had in

5   discussions with CEC, is that this process should not be

6   open-ended and we should put some sort of a timeline to be

7   able to complete these areas in the future.

8   So that's the end of my presentation.

9   MR. RIDER: Are we taking any comments now?

10   COMMISSIONER MCALLISTER: Thanks, very much.

11   (Off mic colloquy to set up comment period.)

12   MR. RIDER: Okay, Mark. You're up and just --

13   MR. COOPER: Okay, thank you. Thank you, can you

14   hear me okay in the room?

15   COMMISSIONER MCALLISTER: Yep, all good.

16   MR. COOPER: Okay. So my name is Mark Cooper.

17   I'm the Director of Research of Consumer Federation of

18   America. And we have participated in this proceeding along

19   with several of our California members for several years

20   now. We view this proceeding as a landmark for consumers

21   in a number of ways. And our involvement in it is

22   particularly gratifying for a number of reasons.

23   Over the course of three years, we have

24   articulated the consumer view of performance standards as

25   we have applied to many, many consumer durables, energy

1   consuming durables, and in this case computers.

2   And the process we go through is we start from a

3   simple question. Are there potential consumer savings? In

4   this case, we definitely think there are. And I will

5   return to the magnitude of those savings at the end of my

6   remarks. Having convinced ourselves that there are

7   savings, we begin a more detailed analysis. Can you put up

8   the first slide, I think?

9   Once we conclude that there are potential savings

10 in the marketplace we then ask a question, why isn't the

11 marketplace delivering those benefits to consumers? That's

12 what we would normally think would happen in the market.

13 And we are firm believers in the marketplace as a

14 consumer's best friend. But when there are clearly

15 identifiable consumer savings that are not being delivered,

16 then we ask what are the market failures? What are the

17 obstacles in the market that are preventing those benefits

18 from being delivered to consumers?

19   As we have testified in this proceeding and many

20 others, there are numerous ones in the digital marketplace.

21 And one of the reasons we think this is such an important

22 proceeding is precisely because digital products are

23 becoming more and more important in consumer's lives. And

24 having an energy efficiency of those devices is

25 increasingly important.

1   In our next slide we then ask the question, given

2   that we've identified some market imperfections or sources

3   of market failure, we ask whether the appliance performance

4   standards can be an effective tool for dealing with those

5   problems, for solving those problems. We generally think

6   that performance standards actually can work particularly

7   well, because they address many market imperfections. And

8   we have obviously testified to that in this proceeding.

9   Can we go to the next slide?

10   One of the questions we ask ourselves in many of

11   these proceedings is California a good place to start? In

12   fact in a number of areas, appliances, automobiles,

13   California has been a leader in setting efficiency

14   standards pointing the way towards efficiency, pulling the

15   rest of the country -- and in some respects the world -- to

16   a more efficient level of operation. So we think that

17   California is in fact a good place to start.

18   The next slide, the key question then becomes is

19   the proposed standards well designed? Does it have key

20   attributes that suggest it will be effective? And needless

21   to say, we think that these standards are. The key here is

22   to be product neutral, technology neutral, still

23   competitive, set a standard, but let the marketplace work

24   to achieve that standard. Let the companies and the

25   capitalists and the entrepreneurs do their thing, which

1   they do very well. That is to deliver the most efficiency

2   at the lowest cost. So we think this standard is

3   particularly well designed. Next slide, please.

4   We are particularly gratified by the continued

5   development of the process in this proceeding and the small

6   part we have played in preventing some misguided efforts to

7   undermine the Commission's ability to drive the process

8   forward. We believe we have been making progress here.

9   And we hear some recommendations from both sides, from the

10   industry side, from the environmentalist side, and soon

11   you'll hear from the consumer side, that the process should

12   continue. But let us understand the benefits that have

13   occurred through allowing the process and the dialogue to

14   continue.

15   In fact, we believe the standard is stronger

16   today than it was in the recent past, because it now

17   recognizes the design cyle with the TTO (phonetic) process

18   and the length of the design cycle in the industry, which

19   we always consider, the needs of small businesses, and the

20   demands of consumers for niche products. So we think that

21   the process has in fact improved the standards to the

22   benefit of both consumers and the industry.

23   Now, let me go back to the beginning and say why

24   we look at the consumer benefits. As pointed out in the

25   materials developed by the Commission the consumption of

1 these consumer durables is a significant part of the

2 consumer bill, someplace in the neighborhood of 2.5 to 4.4

3 percent. Of course, there's an economic waste in there,

4 but that's an important number. But let me underscore

5 this. You've heard that in the commercial sector, it's 7

6 percent of electricity. And let me be clear, consumers pay

7 every penny of the cost of energy consumption in the

8 commercial sector, because that is recovered from consumers

9 in the price of the goods and services they buy. The tooth

10 fairy doesn't pay for electricity when a local supermarket

11 or a local business consumes energy. The consumer pays for

12 that, so the potential savings here are very large.

13   And we think the standards do a good job. And we

14 have provided, we apply a specific set of criterion. The

15 benefit cost ratio across the major energy consuming

16 durables at issue here: desktops, monitors and notebooks,

17 which are what residential households buy a lot of, the

18 benefit cost ratios are between 2.5, 2.3 to 6.1. It's a

19 various large positive benefit cost ratio.

20   And those are pocketbook costs. Those are not

21 the environmental costs. That's the consumer pocketbook

22 savings, compared to consumer pocketbook costs. Obviously

23 you could add in environmental and public health savings by

24 reducing consumption of electricity. But we as consumer

25 advocates focus on that consumer pocket.

1   The payback savings are less than two years,

2   which is a pretty rapid period for consumers. Many things

3   they buy these days, they don't get that kind of payback

4   period. And the break even period is less than half the

5   life of the asset of the consumer durable.

6   And this is just a rule of thumb, but when we

7   look at our members in the eyes we think it's good to be

8   able to say to them, "Look, for more than half the life of

9   that product you're going to be enjoying energy savings."

10   And so we believe that this process has gotten us

11   to a place that's good for consumers, it's good for the

12   industry. And let me emphasize that the bottom of the last

13   point on the last slide -- I hope I said to turn to the

14   last slide -- we want everyone to be vigilant in this

15   process. We certainly will be. We assume that the

16   industry, which generally supports the standards that you

17   heard will act in good faith and not abuse the

18   accessibility as it has been granted.

19   Even so we believe the CEC should adopt an

20   aggressive market monitoring program that estimates the

21   normal rate of increase in the (indiscernible) product, so

22   which would then afford flexibility. That monitoring

23   should trigger an immediate proceeding should there be an

24   observed shift break in the trend of market shares. We are

25   not suggesting bad actions or intensions on the part of the

1 industry here. That's not the point.

2   Even if it's such a break, and particularly it's

3 such a break in terms, it's simply a market process. As

4 the market process develops, certain types of products

5 become much more popular. They see it's a niche, they

6 become (indiscernible). Even if it's just a market process

7 the CEC should react swiftly to it, because the underlying

8 marketing imperfections persist. The problems that I

9 mention at the beginning haven't gone away. They are still

10 there.

11   As these products become more widespread the

12 magnitude of potential to consumer savings grows. And we

13 also believe in fact that the cost of greater efficiency

14 can be expected to decline as economies of scale are

15 achieved, as they become more mass market, as innovation

16 and efficiency grows for the products that are already

17 covered.

18   So we think it's really important for the mission

19 (phonetic) without suggesting anyone's going to bust the

20 process, but it's part of the normal process to look very

21 hard at the way the market is developing.

22   So in summary, we believe we have arrived at a

23 good rule. It has been achieved through a good

24 collaborative process and we believe all of us should work

25 together to bring it to the best outcome for consumers and

1   the industry. Thank you.

2   COMMISSIONER MCALLISTER: Thanks, Mark. I really

3   appreciate your making the time to be with us.

4   MR. RIDER: Pierre, if you're ready?

5   MR. DELFORGE: Pierre Delforge, NRDC. I'm going

6   to continue where I left off on the monitor comments and

7   talk about some of the similar concerns that we have with

8   computers in terms of potential loopholes that might reduce

9   savings, projected savings, when the standards go into

10   effect.

11   And I'm going to start by highlighting that there

12   is another risk of loophole or type of loophole that we

13   didn't have on monitors, and that's around categorization.

14   With computers the categories, there's four depths of

15   category as Soheila showed early on, based on how

16   expandable the computer is. If you have a highly

17   expandable computer you can add cards and also the

18   peripherals. You have to provide for that power, so you

19   have to oversize the power supply to be able to provide for

20   that power even if the computer is not sold with this add-

21   in equipment. And that results in having a power supply,

22   which is less efficient.

23   And to recognize that and to recognize the power

24   used by the additional interfaces on the motherboard,

25   though CEC provided additional allowances in Categories 2

1   and 3 and even an exemption in Category 4, but the problem

2   -- and we support that. We think it's actually a good way

3   to handle categorization and a good progress from where we

4   were in previous specifications and regulations like ENERGY

5   STAR in the EU.

6   However, this can also be a risk of potentially

7   losing savings if computers can go from one category where

8   they should really be to another one just because there is

9   an unwarranted expandability score, which is what drives

10   this category. So let me give you an example of that and

11   I'm going to dive into about two examples of that,

12   actually.

13   Similar (indiscernible) with the monitors, but

14   we're here focused on seven issues, seven potential

15   loopholes that we identified on computers. And I'm going

16   to dive into three of those, but want to mention them very

17   briefly, so USB ports 2.0/3.x and I'm going to talk about

18   this in a minute.

19   High expandability exemption, and Praheed

20   (phonetic) added a proposal on that for integrated graphics

21   that we weren't aware of, which I think makes that even a

22   bigger concern from our side.

23   A 256-bit memory interface, and I'm sorry for

24   being in the weeds here, but unfortunately this is a

25   technical topic. So we have to if you want to -- you know,

1 details matter in this case -- so we have to go to that

2 level.

3   4-channel memory, HBM adder, enhanced-performance

4 displays for all-in-ones is another issue, which now we

5 have the same concerns as we have with monitors and then a

6 secondary storage adder for "other" undefined. And that's

7 an open door for having potentially new types of storage,

8 which are not exactly as the ones which have been defined

9 in the regulation, which will get 26 kWh/h, which is

10 potentially far too high compared to where they might only

11 need 1 or 2 or, you know, just a much lower adder.

12   And contrary to the monitors, these are additive.

13 And I think we appreciated the fact that there weren't

14 additives in the monitor proposal and I still want to

15 propose, on the computer side, that they follow the same

16 principle. And if you get one of these adders, you know,

17 you don't actually need more than that. I mean, they're

18 substantial enough there shouldn't be more than one adder

19 to be able to meet the standards.

20   Risk compounding is the same issue. You know, if

21 you have the chance of any one of these seven issues takes

22 place, individually for each loophole it isn't that high.

23 Or may or may not be that high, but the risk that any one

24 of those or several of those happen is really high. I

25 mean, I'm talking about 75 or 80 percent for monitors and

1 here we have one more, so it's probably more than that,

2 about 80 to 90 percent probability that at least one of

3 those loopholes may occur.

4   So let's start with USB 2.0/3.x port, so we're

5 talking about the little outlets where you can plug in your

6 USB mouse or phone or whatever you need in the computer.

7 And the CEC proposes to give 5 and 10 watts, the 5 watts to

8 USB 2.0 and 10 watts to 3.x. And that doesn't seem like

9 very much, it's only 5 or 10, but you have to realize that

10 you can have 10 or 15 or more of those on a computer, so

11 they really add up.

12   And it's actually inconsistent with the

13 definition of USB. If you look at the technical USB

14 standard they say 2.50 watts for 2.0 and 4.50 watts for

15 3.x. So that's really is more than half of those were

16 actually in the standard.

17   And actually looking back to ITI's comments from

18 July 2015, we actually agree on what these should be. So

19 unless ITI has changed position since then at least we'd

20 like to understand why. And we don't see a reason for it.

21   In terms of impact, so having this unwarranted

22 expandability allowance for USBs can boost the

23 expandability score by 10 to 15 percent. And if you take

24 some examples, we have three computers we had examined as

25 part of the analysis I know the IOUs had examined. And if

1 you apply the expandability, the overhead or the additional

2 allowance is not warranted here. Two of these three would

3 jump category and would therefore get a 20 to 30 kWhs

4 additional allowance in Tier 1 and 10 to 15 in Tier 2.

5   So and this is significant enough that 20 to 30

6 kWhs is the majority of the savings that we're hoping to

7 get from these computers. So if you give them an

8 unwarranted allowance of that much, basically you're saying

9 I'm not going to get any savings from this particular

10 computer. And then the question is how many of those are

11 going to be in that situation? And it's a little bit hard

12 to estimate, because it depends whether they are close to a

13 category boundary and whether they're going to go to the

14 next category or not. But let's just say about 30 percent

15 of those are in that situation, you know, we're talking a

16 very substantial savings for the standard.

17   So we'll make more detailed recommendations in

18 our written comments, but basically all we're asking for is

19 to align with the technical USB standards, so that should

20 be something that we should be able to agree on. We're not

21 asking for something that's more stringent than that.

22   Let's move to the second issue, which is the

23 high-expandability exemption. And here when you have a

24 compute that is considered high expandability you can have

25 it in several ways. One is to have an expandability score

1   of more than 690, but also by having a graphics card of

2   more than 400 GB/s in January 2019 or 600 GB/s in January

3   2020.

4   The problem is these thresholds -- and actually

5   now to be honest we had talked about this with our industry

6   colleagues. And at the time when we talked about it that

7   seemed reasonable, but we did a little more digging based

8   on the latest proposal. And we now see on the market we

9   have AMD in particular, and I don't know -- I actually

10   didn't do the same investigation on the video side -- but

11   AMD has a card, which is already over the first threshold

12   three years before Tier 1. And we'll see in a minute that

13   this card actually doesn't even need the exemption. It's

14   actually lower, so that the card has the lowest power in

15   idle than many of these cards on the market.

16   Let me actually go through that point right now.

17   So here on the right, you can't read it, but it's basically

18   a list of about 30 different graphics cards that were

19   tested by Tom's Hardware. The one at the very top is that

20   particular card with that HBM memory that I was talking

21   about. It exceeds these thresholds and only uses 5 watts

22   in idle. So you wonder why do we need an exemption when it

23   can meet it and hands down beat the levels with just the

24   normal adder.

25   So going back to the previous slide on this, and

1   sorry I think I went to too far here, so going back to the

2   previous on high expandability. The thresholds are 400 and

3   600 when you compare it with the road maps that we looked

4   at. There again on the AMD side we're seeing a vaguer

5   architecture with 1,000 GB/s next year, 2017. Two years

6   before the standard goes into effect. And Samsung is

7   already producing HBM2 memory at 2,000 GB/s again three

8   years before the standard goes into effect.

9   So 400 is very likely to be mainstream by Tier 1

10 and 600 by Tier 2 and so we really don't see a need for it.

11   The impact would be that -- I mean, this is not

12 the only criterion. Again, we have to have in addition to

13 this, there needs to be a 600 watt power supply, which is a

14 pretty high power supply. So only those computers with

15 those power supplies with those power supplies would be

16 exempted, but with a memory bandwidth or sorry, this

17 framework bandwidth adder is not meaningful as it is

18 proposed today.

19   And it could also have a perverse incentive to

20 encourage to encourage power supply upsizing. If that's

21 the only criterion to be able to get at that exemption then

22 a manufacturer could go from the 500 to a 600 power supply

23 just to be able to get at the exemption. And that would

24 result in a 600 power supply would be less efficient, so it

25 actually would result in an increased energy use in these

1   computers.

2   So for Tier 2 we don't see the need for any

3   exemption. For Tier 1 we're open to looking at how do we

4   make sure, given the shorter time, how do we provide some

5   language, which truly meets the needs of niche products and

6   which are already in the pipeline. But we want to make

7   sure that these don't become an open-ended loophole for

8   many products to go through by Tier 1.

9   Okay. And the last point I wanted to mention is

10   that 256-bit memory, so that feature, that's pretty high

11   right? I mean, it's today 128 is already high, so 256

12   seems really high. But and for that they would get 100

13   expandability points, which is really high and would very

14   much help with jumping to the next category and getting

15   this extra allowance.

16   But with HBM, and HBM means High-Bandwidth

17   Memory, which is a step change in memory bandwidth. You

18   know this not the curve in memory increase that we've seen

19   in the last few years, this is a step change and we're

20   seeing a huge increase in memory bandwidth. You know,

21   high-bandwidth memory is when you stack different layers of

22   memory into a single package. And with those, as I said on

23   the previous slide, we're seeing bandwidth up to 2,000 GB/s

24   already coming on to the market today.

25   And those will achieve this criterion of 256 by

default, so it means that this criterion is going to result

in giving all HBM platforms an extra 100 points of

expandability score. And we don't see the reason for it,

because there's no correlation that we can see between that

HBM memory and high expandability. So we think that this

is not warranted.

This is, again another significant risk of

loophole. I think it would be already more limited and

controlled if it were given only to system memory and not

to chip-integrated memory, because a lot of graphics cards

for example are going to having on die HBM. And that would

be the biggest loophole. And the system memory, we don't

think it's necessary, but that would be a narrower one.

So with this I only just want to finish with the

last two slides I already mentioned. But the one point I

want to emphasize is we need to have the CEC tighten or

close these loopholes as we suggested. And I would very

much encourage the CEC -- and one point I actually agree

with you, Shahid, when you asked for a expeditious petition

process to be able to address the standards.

You know, I encourage CEC to set clear

expectations in terms of any of these potential loopholes

growing beyond what is expected. To have the CEC intervene

or first monitor the market very closely as Mark mentioned,

but also intervene and through a very rapid rulemaking be

1 able to close the loopholes before they wipe out most of

2 the savings that are being expected from these standards.

3 And that the California consumers and businesses are

4 expecting.

5   With this, thank you for your attention.

6   MS. PASHA: Thank you.

7   So next is Vojin from AGGIOS.

8   MR. ZIVOJNOVIC: My name is Vojin Zivojnovic from

9 AGGIOS. And Commissioner, thank you very much for the

10 opportunity to address this forum.

11   These four years of investment are not in vain.

12 If you look at the concepts of the expandability adders, if

13 you look at the prototypes which have been developed as

14 part of these proceedings, if you look at the total big

15 picture of this regulation, it definitely leads in the test

16 and measurement procedures worldwide compared to existing

17 standards, compared to standards which are in preparation

18 that we hear about.

19   And it once again puts California ahead of other

20 technologies in that sector in state-of-the-art. And we

21 already hear from people following these proceedings that

22 definitely these concepts, which have been introduced now

23 in this regulation or about to be made part of regulation,

24 will have a lasting effect not only on our state and

25 country, but I believe also worldwide.

How could that happen? I think there was a very good match between the activities of the staff, the activities of industry, companies like mine who have been supported by the IOUs and NRDC in their endeavors. And I think all the long -- especially the staff always look both at the trees and at the forest, so really going after every detail in understanding the technology in its very high complexity that it is.

What speaks for the standards also is the fact that we are living in a mobile efficiency era. And in that era we will just see more and more of a proliferation of great solutions and power conversion and highly efficient CPUs and highly efficient memory devices, hard disk drives or solid state drives and so on.

So altogether I would say it is a great achievement already at this step. Hopefully, these minor differences will be crossed over very soon whether it's a bite or a bit. I mean, that's easily calculated, you start multiplying by it. And I'd like to use the opportunity to point out that with this work, I think if California in these efficiencies need to stay ahead there are a couple of issues, which we are facing very soon.

One is the active mode, because we start living with devices 24/7 there will be less sleep modes and similar things. And then we will face a massive

1   proliferation of similar devices, which we don't know how

2   to categorize. Is that a TV or computer, is it a mobile

3   phone or a tablet? So there will be the need for these

4   horizontal standards.

5   In that sense I'd like to invite the participants

6   here to take part at the CalPlug UCI Workshop November 9th,

7   which will summarize the newest research results from the

8   EPIC grants in plug loads, which is 15-310. And I think

9   you will be able to hear a lot of very good ideas and

10   contributions, which will help then for the next steps,

11   because obviously, we will not get rid of our devices any

12   time soon. And they will consumer power.

13   Thank you very much.

14   MR. SINGH: Any other comments from the audience?

15   Okay, Kim?

16   MR. KIM: Thank you.   I'm Charles Kim, Southern

17   California Edison Company.

18   The comment that I made early this morning

19   stands, but I just want to add a couple of more things.

20   That first of all, as a Program Manager of an advocacy

21   program I feel like if I can push this one through I can do

22   anything. The reason being that the complexity that we

23   have to do with, the technology that is evolving every

24   minute, new software is coming out and also the new buyers

25   as well, regulating this type of thing is not that easy.

1 But we are here.

2   I think we are seeing the finishing line and if

3 someone asked me on this step before, do I see the

4 loopholes? I do. But beyond that I see the great work

5 that has been done by the CEC, so I want to commend the

6 author, Ken Rider, and then Soheila for doing great work.

7 It's extraordinary work. The loophole that I see, because

8 I'm speculating is really, really tiny. I see that. And

9 we can lose potentially great savings if someone wants to

10 take advantage of that.

11   But beyond that I see once again, great work done

12 by the CEC and I'm very, very thankful for that. But I

13 also stand behind the incredible industry. What I'm

14 expecting is 100 percent compliance, not 70, not 80, not

15 even 90, but 100 percent compliance, because of the

16 credibility that these companies are bringing.

17   So Chris, can I ask you this question? Maybe

18 it's not even a question, but members of your company, can

19 you comply with the regulation 100 percent? Let's say

20 99.999 percent, can you do that?

21   MR. HANKIN: Good faith negotiation and good

22 faith implementation.

23   MR. KIM: He used the term "good faith

24 negotiation" and "good faith" terms, right?

25   MR. HANKIN: Implementation.

         1   MR. KIM: Implementations, we're there. We are

         2   very close to it, so my one wish here is that let's finish

         3   this.

         4   Some of the savings today we can lose, because

         5   some of the companies may not know these rulemakings, but

         6   the incredible companies who participate in this. When we

         7   have 100 percent, close to 100 percent compliance, we can

         8   recoup some of those savings that we lost, because I'm

         9   expecting very, very, very high compliance in this

        10   rulemaking.

        11   So once again industries, thank you, thank you

        12   very much for showing up. Not just tearing us down, but

        13   trying to pull everything together and make it workable.

        14   So I greatly appreciate that.

        15   And once again, Commissioner, thank you so much.

        16   Making, in my opinion, the impossible possible. Thank you

        17   so much.

        18   MR. SINGH: Any more comments from the audience?

        19   If not, then Ken can you please open the phone lines?

        20   Okay. The phone lines are open, if you have any

        21   comments please raise your hand or make the comments?

        22   (No audible response.)

        23   Okay. The phone lines are open.

        24   COMMISSIONER MCALLISTER: It sounds like that's a

        25   no.

1   MR. SINGH: Okay. Commissioner, we've received

2   no comments on the phone line.

3   COMMISSIONER MCALLISTER: Okay. Well, let's see.

4   I think we talked a little bit about -- oh, somebody else?

5   (Colloquy off mic.)

6   Do we have public comments at all or?

7   MR. SINGH: Okay. Yeah, we can --

8   COMMISSIONER MCALLISTER: Yeah, we're sort of

9   moving on, moving towards wrapping up I think. But by all

10   means, anybody who wants to make a comment, now is the

11   time.

12   MR. SHEIK: So, this is Shahid from Intel, just a

13   few comments on Pierre's presentation.

14   I think Pierre's outlook seems to be a, what

15   could go wrong potentially, and looking at potential

16   loopholes and all those things. But I think part of it is

17   that all these loopholes cost the industry, I don't think

18   the industry would just try to put additional ports just to

19   get a higher expandability score and get to the next

20   category.

21   But the whole premise behind the expandability

22   score was that with the higher expandability you're going

23   to have higher energy. And that was I think, the best

24   compromise we had reached with CEC on the desktops, which

25   is essentially that was never done before is moving away

1 from a performance score, a number of cores and frequency

2 to expandability-based proposition that is aligned with the

3 category approach.

4   And this is going to be based on data, so I think

5 there is -- I sense there's some level of pessimism and

6 potential risk. But I think you have to give industry a

7 chance to make sure that we can make it happen. And we

8 expect compliance standards to be meeting the CEC's

9 requirements and in some cases exceeding.

10   Or as we have probably mentioned before, that we

11 are going to see 50 percent plus idle power reductions on

12 desktops over the next five years. So that's a huge

13 improvement that we have not seen before, so I think we

14 probably have to look on the positive achievements that

15 will come out of this.

16   And we are focusing here more on some of the

17 minor language and other tweaks, but not on the overall

18 framework and the limits at this point, because that has

19 been an effort that we all have put into place for the last

20 year plus, into this. Thank you.

21   MR. SINGH: Thank you. Any more comments, Chris?

22   Okay. Thank you.

23   You know, I just want to mention one more thing

24 as the Commissioner mentioned, that the last due date for

25 the comments is October 24th. But as the Commissioner

mentioned if you could submit comments earlier it's better

for us to look at it and it gives us a little bit more time

to review them. So if you could submit those comments

earlier, you know, that would be nice.

Other than that I think we are done here on the

comments here. Thank you.

COMMISSIONER MCALLISTER: Well, great. I'll just

wrap things up.

You know, this is one moment in time here, I

think the substance will come largely in written comments

and further conversations with staff and advocates in the

industry and really trying to sort of make sure that we're

talking the same language and not past each other. And

just really focus on the few remaining issues.

And I'm going to be paying attention to this. I

think we all understand the important of what we're doing

here, so do want to get it to the finish line. I also want

to make sure that it's something that is going to have

staying power. So there's really no way to do that other

than have the conversations and work through the issues

directly.

So again, the 24th certainly sooner is better,

but really make sure that whenever it comes in it's saying

what you want to say. And it's as much sort of background

context, as much market information, as much sort of

1   context as you can provide. It is going to help us

2   tremendously. It's going to help staff sort through the

3   issues. It's going to provide a foundation for any further

4   conversations that happen as we sort of hash this out going

5   forward in getting toward the end of 45-day language and

6   into the potential 15-day language.

7   So anyways, thank you very, very much everyone

8   for coming. And I want to thank staff, really Leah and

9   Soheila and Harinder and Ken. And just the really great

10   work that's going on here or like Chris Hankin, who's just

11   done a tremendous job herding not exactly cats, but

12   whatever the -- I'll let you determine the appropriate

13   metaphor.

14   But certainly a lot of interested parties, you

15   know, this is California. We're talking about technology,

16   which is what we do here in this state.

17   MR. HANKIN: Herding the leading companies of the

18   world, yeah.

19   COMMISSIONER MCALLISTER: There you go, there you

20   go yeah. Lions, let's say, how about that?
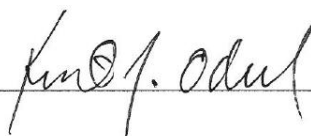
21   But I think this is another example of California

22   leading and everyone operating in good faith. And it gives

23   me a lot of encouragement for the future and for really

24   making this work and being something robust that's going to

25   have a lot of staying. It's going to save a lot of energy

1   and help the state reach all of our various goals.

2   So thanks again everybody and I look forward to

3   the ongoing conversation. So we are adjourned.

4   (Whereupon, at 2:17 p.m., the workshop

5   was adjourned)

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