

DOCKETED

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BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the matter of,)
) Docket No. 18-AAER-08
Phase 2 Appliance Efficiency)
Regulations)

STAFF WORKSHOP RE:
APPLIANCE EFFICIENCY REGULATIONS FOR
LINEAR FLUORESCENT LAMPS EXEMPT
FROM FEDERAL REGULATION

WARREN-ALQUIST STATE ENERGY BUILDING
1516 NINTH STREET
1ST FLOOR, ARTHUR ROSENFELD HEARING ROOM
SACRAMENTO, CALIFORNIA 95814

WEDNESDAY, JULY 10, 2019

10:00 A.M.

Reported By:
Peter Petty

APPEARANCES

Staff Present

David Nichols, Supervisor, Appliances Office, Energy Division

Soheila Pasha, Appliances Office, Energy Division

Other Presenters

Jasmine Shepard, Energy Solutions

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

2 JULY 10, 2019 10:00 A.M.

3 MR. NICHOLS: Good morning, everyone. Welcome.

4 For those of you in the room and those of you that are
5 online, and listening, this is the staff workshop for
6 Proposed Energy Efficiency Standards for Federally
7 Excluded and Exempted Linear Fluorescent Lamps

8 (Whereupon, the WebEx system automated recorded
9 voice interrupts proceeding)

10 MR. NICHOLS: Today's workshop agenda, we're
11 going to open with some housekeeping and introduction
12 information. There will be staff presentation by
13 Soheila Pasha. There will be a short break. Then,
14 there will be stakeholder presentations limited to ten
15 minutes each. Then, there will be an open discussion
16 and public comment, and then we will adjourn.

17 While this meeting is scheduled to go until
18 noon, once all comments are received and stated, the
19 workshop will be completed.

20 Please note this workshop is being recorded with
21 a court reporter and on WebEx. All comments today will
22 be added to the public record. No Commissioners will be
23 present today and no decisions will be made at this
24 workshop.

25 For those of you that are here in the building,

1 restrooms are located outside of the Rosenfeld Room to
2 the left, by the exit signs, and on the right beyond the
3 stairs and in back of the elevators.

4 If you have need of refreshments, there are
5 water fountains by the restrooms. Also, there's a
6 lounge on the second floor, with vending machines.

7 While we never anticipate an emergency
8 happening, if it does, we ask that you please follow
9 staff and evacuate calmly and follow the staff to the
10 appropriate exits. We will convene at Roosevelt Park,
11 located diagonally across from this building.

12 For those of you that are participating online,
13 please mute your phone. Please use the raise hand
14 feature to make comments. We will unmute you so you can
15 make comment. You may also use the chat feature to make
16 comments. We will read those comments into the record
17 and respond accordingly.

18 Please remember to state your name and the
19 organization that you represent. We recommend that you
20 log in to the WebEx event, and use the audio PIN or have
21 WebEx call you.

22 For those of you that are participating in the
23 room and wish to make comments, please go to the
24 microphone provided at the podium. If needed, we can
25 bring a microphone to you. When you see a green light,

1 the microphone is on. A red light indicates the
2 microphone is off.

3 I'm sorry, I've lost screen here. Just a
4 second.

5 Please speak directly into the microphone.
6 Please state your name and the organization you
7 represent. When done, please turn off the microphone so
8 that it changes the light back to red. And we ask that
9 you please provide the court reporter with a business
10 card.

11 Documents for this are going to be available
12 today. They will be posted on the Energy Commission's
13 website, as will this presentation, and all related
14 documents that you will need.

15 There will be a discussion in a few moments
16 about the timeline on this prerulemaking.

17 All comments related to the Proposed Energy
18 Efficiency Standards for Federally Excluded and Exempted
19 Linear Fluorescent Lamps are due by 5:00 p.m. on Monday,
20 August the 26th, 2019. You may submit your comments
21 electronically. Please make sure that when you submit,
22 you can follow the directions, again, in this
23 presentation, but also make sure you always include the
24 Docket No. 18-AAER-08.

25 You may also mail in your docketed information.

1 Please send it to the Energy Commission Address. Again,
2 please include the docket number. You may also do it
3 digitally in email, by docket@energy.ca.gov and include
4 the docket number, again that's 18-AAER-08, and indicate
5 Federally Exempted Linear Fluorescent Lamps in the
6 subject line.

7 Before I introduce Soheila Pasha today, the
8 Energy Commission and the Efficiency Division is happy
9 to announce that we have a new Office Manager. His name
10 is Pierre DuVair. Pierre has worked with the Energy
11 Commission in the past, recently at the Department of
12 Finance, and now back with us.

13 He is a specialist in climate change, including
14 economics, policy, alternative transportation fuels and
15 technologies, and greenhouse gas accounting. And for
16 over 16 years was here at the Commission. And we're
17 very happy to have him back and with us today.

18 At this time, I'm going to turn the presentation
19 over to Soheila Pasha, the subject matter expert who
20 will present the workshop today. Thank you, Soheila.

21 We are apparently having a technical difficulty.
22 If you can hold just one moment, we'll be back to you
23 and you'll get a live presentation where you'll be able
24 to see things.

25 (Off the record at 10:06 a.m.)

1 (On the record at 10:15 a.m.)

2 MR. NICHOLS: Okay, our apologies. This the
3 Energy Commission. This is a staff workshop today for
4 Proposed Energy Efficient Standards for Federally
5 Excluded and Exempted Linear Fluorescent Lamps.

6 We apologize for the technical difficulties. We
7 think we're just about wrapped up and ready to go here.

8 My name is David Nichols. I'm going to go over
9 this again for -- for those of you that caught this
10 earlier, this is going to be a rerun performance.

11 I covered some housekeeping items.

12 Introduction, we'll have a staff presentation by Soheila
13 Pasha. There will be a short break. There will be some
14 stakeholder presentations, limited to ten minutes each.

15 There will then be an open discussion and public
16 comment, and then we will adjourn. While this meeting
17 is scheduled to go until noon, if we finish with all
18 comments for the record before then, that will conclude
19 the workshop.

20 (Whereupon, the WebEx system is tested)

21 MR. NICHOLS: Okay, thank you once again for
22 your patience. I apologize.

23 This is the workshop today for Proposed Energy
24 Efficiency Standards for Federally Excluded and Exempted
25 Linear Fluorescent Lamps.

1 My name is David Nichols. I am a Supervisor
2 with the Appliances Office.

3 Today's agenda, I will make some introductions,
4 go over a few housekeeping rules. I apologize for this
5 being a little redundant.

6 Staff presentation will be made by Soheila
7 Pasha. There will be a short break. We will then have
8 stakeholder presentations, which will be limited to ten
9 minutes. Then, there will be an open discussion and
10 public comment.

11 Those of you that are online, we'll discuss how
12 you will be a part of this in commenting, in just a
13 moment.

14 Once all comments are received and all notices
15 to us have been given, we will then adjourn the meeting.
16 Even though this was scheduled from 10 until 12, once
17 all comments are received, we will be done.

18 Please note this workshop is being recorded with
19 a court reporter and on WebEx. All comments today will
20 be added to the public record.

21 No Commissioners will be present today and no
22 decisions will be made at this workshop.

23 For those of you in the building, restrooms are
24 located outside the doors of the Rosenfeld Room to the
25 left, over by the exist signs, and to the right beyond

1 the stairs, and in back of the elevators.

2 If you need water, there are water fountains
3 near those restrooms. You're also welcome to go to the
4 second floor, where there is a small lounge where you
5 have vending machines.

6 While we never anticipate there being an
7 emergency, if there is one, we ask those of you in the
8 building to please follow staff. The building will be
9 evacuated. Follow staff through the exits and please
10 meet diagonally at Roosevelt Park, across from the
11 building.

12 For those of you that are participating online
13 today, we ask that you please mute your phones. Please
14 use the raise hand feature to make comments. We will
15 unmute you. Or, you may use the chat feature to make
16 comments. We will read those comments into the record
17 and respond accordingly. Please remember to state your
18 name and the organization that you represent.

19 We recommend that you log in to the WebEx event
20 and use the audio PIN, or have WebEx call you.

21 For those of you that are with us today, we ask
22 that if you're going to make comments to please go to
23 the microphone provided at the podium. Please remember
24 if there's a green light, your microphone is live. If
25 it is red, it is dead. So, if you want to be heard,

1 please push the button and make sure the green light is
2 on. Please speak directly into the microphone. Make
3 sure you state your name and the organization you
4 represent. When done, please turn off the microphone.
5 And we ask that you please provide, for the court
6 reporter, a business card.

7 All documents related to this workshop and the
8 docket number are noted in this presentation, which will
9 be available to you. This is a prerulemaking workshop.
10 All relative documents are found online and are
11 available.

12 For those of you making comments, they will be
13 due no later than 5:00 p.m. on Monday, August the 26th,
14 2019. You may submit them electronically. There's a
15 link that tells you how to do that. If you need to send
16 a hardcopy, please send it to our physical address.
17 Please note the Docket No. 18-AAER-08. You're also
18 welcome to submit digitally at docket@energy.ca.gov.
19 Please include the docket number, again 18-AAER-08, and
20 indicated Federally Exempted Linear Fluorescent Lamps in
21 the subject line.

22 Soheila Pasha is our subject matter expert. She
23 will be joining us today. But before she does, I would
24 like to introduce the new Office Manager for the
25 Appliances Office. His name is Pierre DuVair. Prior to

1 working with the Finance Department, which he did for
2 the last couple of years, he spent 16 years at the
3 Energy Commission. He is a specialist in topics related
4 to climate change, including economics, policy,
5 alternative transportation fuels and technologies, and
6 greenhouse gases, and accounting. Again, with over 16
7 years of experience. And we are happy to have him back
8 at the Commission.

9 At this time, we're going to turn the workshop
10 over to Soheila Pasha. She is our subject matter
11 expert. She has been working with many of you that are
12 in this room and online, and we welcome her. Thank you,
13 Soheila.

14 MS. PASHA: Thank you, David. Good morning. My
15 name is Soheila Pasha. I'm a Senior Electrical Engineer
16 in the Appliances Office, here at the Energy Commission.

17 The purpose for today's workshop is to present
18 an overview of the proposed regulations for Federally
19 Excluded and Exempted Linear Fluorescent Lamps. And
20 also, to give an opportunity to the public to ask
21 questions or make comments.

22 You will also have an opportunity to provide
23 written comments, as David mentioned, and went over how
24 to submit those comments. I will repeat those
25 instructions at the end of my presentation, also.

1 Let's begin with the agenda for my presentation
2 today. I will begin with some background that includes
3 a timeline of events with the Energy Commission on
4 rulemaking process, and background on linear fluorescent
5 lamps.

6 Next, I will provide an overview of our
7 proposal, including our proposal for the scope,
8 definitions, and efficiency standards, test procedure
9 and product certification.

10 Follow up with our technical feasibility
11 analysis and the results of our savings cost analysis
12 and environmental impacts.

13 Lastly, I will go over the conclusions and next
14 steps.

15 After my presentation, I take any clarifying
16 questions on this presentation.

17 Let's start with some background. Here's the
18 timeline of prerulemaking events so far. On January 19,
19 2018 the Energy Commission started the prerulemaking
20 activities by issuing an Order Instituting Rulemaking,
21 or OIR, to inform stakeholders and public about
22 considering to establish efficiency standards, test
23 procedures, and marking and labeling requirements for
24 linear fluorescent lamps.

25 On April 4th, 2018 the Energy Commission

1 published an invitation to comment notice, asking for
2 proposals from interested parties to establish appliance
3 efficiency standards for linear fluorescent lamps.

4 The comment period for this invitation ended on
5 May 24th, 2018. The staff reviewed all of the proposals
6 and comments received.

7 On June 27 of this year, the Energy Commission
8 published a draft staff report, which started a
9 prerulemaking comment period. It contains the staff
10 proposal and its supporting analysis, which we will be
11 going over in this presentation today.

12 The prerulemaking comment period for this staff
13 report will end on August 26, 2019.

14 This is an illustration of the prerulemaking
15 process. These are just some of the major prerulemaking
16 activities that occur before the formal rulemaking
17 process begins.

18 The prerulemaking process allows the Energy
19 Commission to gather information and it also provides an
20 opportunity for the Energy Commission and stakeholders
21 to discuss and explore recommendations in an open forum,
22 before the formal -- before the official process of
23 adopting regulations.

24 So, again, on June 27 of this year, the Energy
25 Commission published a draft staff report initiating a

1 prerulemaking comment period. Prerulemaking comment
2 periods are typically 45 days, but could be longer. We
3 are providing about 60 days for this prerulemaking
4 comment period.

5 During this comment period, we hold a public
6 workshop to present staff's proposal, which is the
7 workshop we are having today. The prerulemaking comment
8 period, again, will end on August 26 of this year.

9 After which, we will review the comments
10 received and, if needed, revise our staff analysis
11 addressing the comments received.

12 Once complete, we will begin the formal
13 rulemaking process to adopt efficiency regulations for
14 Linear Fluorescent Lamps that are Excluded or Exempted
15 from the Federal Regulations, which is illustrated in
16 the next slide.

17 To complete the rulemaking, this is an
18 illustration of the formal rulemaking process for your
19 reference. These are just some of the major
20 requirements in the California's Administrative
21 Procedure Act, or APA. I will not go over the details
22 of the formal rulemaking process today. We will present
23 this in more details in the future presentations, when
24 the formal rulemaking starts.

25 Now, let's review some background specific to

1 the Linear Fluorescent Lamps. Federal has standards and
2 test procedures for a subset of fluorescent lamps.
3 Those are the lamps listed in the pink box and consist
4 of 4-foot, 8-foot, and 2-foot U-shaped lamps that have
5 more general applications.

6 Lamps that are exempted from the federal
7 regulations are the ones listed in two green boxes. For
8 example, they include lamps with the Color Rendering
9 Index of 87 or more, and impact-resistant linear
10 fluorescent lamps.

11 The yellow box here -- the yellow box here are
12 linear fluorescent lamps that are not in the definition
13 of GSFLs and, therefore, have no Federal standards.

14 This proposal is targeting the excluded and
15 exempted lamps in the boxes with red line borders.
16 They're high CRI, impact-resistant, and 2-foot and 3-
17 foot linear fluorescent lamps.

18 So, why we propose the standards for linear
19 fluorescent lamps? Again, some fluorescent lamps are
20 federally regulated and several types are exempted from
21 the federal regulations, including lamps with a CRI of
22 87 or more and lamps that are impact resistant.

23 The most common type of linear fluorescent lamps
24 are T12, T8, and T5 lamps. Where T stands for the
25 tubular shape and the subsequent number represents the

1 diameter of the lamp in terms of 1/8th of an inch.

2 Among the most popular linear fluorescent lamps,
3 T12s are the least energy efficient and cannot meet the
4 federal standards. They exist on the market because of
5 the federal exemptions. Some of the T8s are starting to
6 make use of these federal exemptions.

7 From 2015, LMC, or Lighting Market
8 Characterization Report, more than 26 percent of all
9 linear lamps in the U.S. are T12s. That is about 600
10 million T12 lamps in the U.S. Again, these are the
11 lamps that cannot meet the federal standards.

12 This chart here shows NEMA's published lamp
13 indices from Q-4 of 2017. It indicates that towards the
14 end of 2017, 11.4 percent of linear tube lamps that were
15 shipped in the U.S. were T12s.

16 Also, it appears that the shipment of T12 lamps
17 has remained relatively stable after 2015. And TLEDs
18 are primarily displacing T8s. These facts defy the non-
19 general application reason for some of the federal's
20 GSFL exemptions.

21 Less than 4-foot linear lamps include 2-foot and
22 3-foot linear lamps with general applications and
23 currently are out of the scope of federal regulations.
24 On a statewide basis, these lamps require a significant
25 amount of energy. There are more efficient LED

1 replacement lamps available on the market today.
2 Therefore, we are proposing new efficiency standards for
3 2-foot and 3-foot linear lamps with the base types that
4 have general applications.

5 We receive these proposals from the
6 stakeholders. CASE team proposed efficiency levels
7 consistent with the efficiency of an average linear LED
8 lamp for both State regulated GSFLs and less than 4-foot
9 lamps. However, setting LED efficiency levels for State
10 regulated GSFLs will create inconsistency with federal
11 and other state standards. It may not result in
12 significant energy savings because consumers have an
13 option to buy a federally regulated low CRI lamps, or
14 lamps that are not impact resistant. And also, it may
15 encourage some manufacturers to intentionally reduce the
16 lamp's CRI in order to meet lower efficiency standards.

17 NEMA and Philips Lighting proposed not setting
18 any State standards for linear lamps. However, proposed
19 standards are very cost effective and saves a
20 significant amount of energy. Not setting any standards
21 will result in foregoing a significant potential energy
22 savings and money benefits to California consumers.

23 Next we'll go over our staff proposal. We are
24 proposing to cover State-regulated general service
25 lamps, or GFSLs, that consists of lamps with a CRI of 87

1 or more, and impact resistant lamps. And only include
2 the lengths, bases, and output lumens that are covered
3 by the federal standards as they are listed here.

4 We are also proposing to include State-regulated
5 less than 4-foot linear lamps that is consisted of 2-
6 foot and 3-foot linear lamps, and only includes standard
7 output lamps with medium or miniature bipin bases.

8 We are proposing to a definition for State-
9 regulated general service fluorescent lamps, where it
10 means any impact-resistant fluorescent lamp or high-CRI
11 fluorescent lamp that is one of the following types that
12 are listed here, and they are taken directly from the
13 federal definition for fluorescent lamps.

14 I'll give you a moment to look at those types,
15 if you want to read those. But they are exactly from
16 the federal definition.

17 Similar to the federal exclusions, we are
18 proposing to the term State-regulated general service
19 fluorescent lamp does not include any lamp designed and
20 marketed for the following applications: Lamps designed
21 to promote plant growth; lamps specifically designed for
22 cold temperature applications; colored lamps,
23 reflectorized or aperture lamps; lamps designed for use
24 in reprographic equipment; and lamps primarily designed
25 to produce radiation in the ultra-violet region of the

1 spectrum.

2 We are also proposing to define high-CRI
3 fluorescent lamp and impact-resistant fluorescent lamp.
4 The definition of impact-resistant fluorescent lamp is
5 not new. It's taken from the federal definition for
6 such lamps.

7 The high-CRI definition is new and is designed
8 as high-CRI fluorescent lamp means any fluorescent lamp
9 with a CRI of 87 or greater.

10 Another definition we are proposing is State-
11 regulated less than 4-foot linear lamp, which is defined
12 as any straight-shaped linear lamp with nominal length
13 of 2-foot or 3-foot that has either a medium bipin base
14 or a miniature bipin base.

15 Similar to the definition of the State-regulated
16 GFSL, the term State-regulated less than 4-foot linear
17 lamp does not include any lamp designed and marketed for
18 the applications that are listed here.

19 We are defining designed and marketed and cold
20 temperature fluorescent lamp to clarify them because
21 these terms are used in the definition of State-
22 regulated GFSLs and the State-regulated less than 4-foot
23 linear lamps.

24 The definition of cold temperature fluorescent
25 lamp is not new. It's directly taken from the federal

1 definition for such lamps.

2 The designed and marketed is slightly revised
3 from the federal modified definition to apply for State-
4 regulated lamps, and is defined as: Designed and
5 marketed for State-regulated lamps means exclusively
6 designed to fulfill the indicated application and, when
7 distributed in commerce, designated and marketed solely
8 for that application, with the designation prominently
9 displayed on the packaging and all publicly-available
10 documents such as product literature, catalogues, and
11 packaging labels.

12 Proposed efficiency standards. For State-
13 regulated GSFOs, we are proposing to align with the
14 federal standards for GSFOs. This will create
15 consistency with other states and federal efficiency
16 standards, and also maintains consistency of standards
17 for the maps that have various CRI values or various
18 enclosure materials where they're otherwise identical.

19 For State-regulated less than 4-foot lamps, we
20 are proposing minimum energy efficiency standards of 115
21 lumen per watt, which is consistent with average TLEDs.

22 We are also proposing that the effective date of
23 the proposed standards to start one year after the
24 adoption of the standards or January 1, 2021, whichever
25 comes last.

1 Proposed test procedures. We are proposing to
2 use federal test procedure for federally-regulated
3 general service fluorescent lamps for State-regulated
4 general service fluorescent lamps.

5 For State-regulated less than 4-foot lamps, we
6 propose to use federal test procedure for integrated LED
7 Lamps, for TLEDs with integrated drivers, commonly
8 referred to as a ULs Type C. And federal test procedure
9 for nonintegrated LED lamps for TLEDs with nonintegrated
10 drivers, also commonly referred to as ULs Type A or Type
11 B.

12 Although kinds of fluorescent lamps on the
13 market don't meet the federal standards, we are
14 proposing to use the federal test procedure for
15 federally-regulated fluorescent lamps in case
16 fluorescent type lamps that comply with the proposed
17 standards are developed in the future.

18 For State-regulated general service fluorescent
19 lamps we are proposing to certify linear fluorescent
20 lamps within the scope. Linear LED lamps that meet the
21 proposed standards are not required to be certified to
22 the Energy Commission's database because they would not
23 be regulated by the proposed standards.

24 For State-regulated less than 4-foot lamps, we
25 are proposing to certify linear LED and fluorescent

1 lamps within the scope. Although, currently only linear
2 LED lamps on the market can meet the proposed standards.

3 We are not proposing any product-specific
4 marking for either State-regulated GSFLs or less than 4-
5 foot lamps.

6 Let's review technical feasibility of our
7 proposal, now. The feasibility of our proposal relies
8 on the available LED or fluorescent linear and u-shaped
9 lamps on the market that could replace the inefficient
10 and noncompliant lamps. There are T8 fluorescent and
11 LED type of replacement lamps available for all State-
12 regulated GSFLs, except for 8-foot, high output where
13 there are only fluorescent type of lamps that are
14 available to replace them. Because TLEDs' output lumen
15 does not reach to the same level.

16 The CRI of available fluorescent type
17 replacement lamps for noncompliant high CRI lamps are 85
18 or higher. Although CRI is slightly lower than 87, the
19 difference is not likely to be noticeable for most
20 consumers. Also, the energy efficiency of most of these
21 lamps exceeds the proposed levels and potentially
22 improving their CRI by a few points would not
23 drastically reduce their efficiency, and should still
24 meet the proposed efficiency standards.

25 We concluded that there are compliant

1 replacement lamps available and therefore standards are
2 technically feasible for State-regulated GSFLs.

3 To ensure the feasibility of our proposed
4 standards for State-regulated less than 4-foot lamps,
5 staff analyzed available 2-foot and 3-foot lamps on the
6 market. This graph here shows the energy efficiency
7 versus the output lumen of the available 2-foot linear
8 fluorescent and LED lamps. Orange color dots are
9 indicating 2-foot LEDs and blue color dots are
10 indicating 2-foot fluorescent lamps.

11 The vertical line indicates our proposed
12 efficiency standards. Any lamp above this line meets
13 the proposed standards. As it shows, a large number of
14 TLEDs on the market can replace the noncompliant 2-foot
15 fluorescent lamps.

16 This is a similar graph for 3-foot linear lamps.
17 Again, the vertical line indicates our proposed minimum
18 efficiency standards and any lamp above this line meets
19 the proposed standards.

20 Similar to the previous graph, this indicates
21 that a large number of TLEDs on the market can replace
22 the noncompliant 3-foot fluorescent lamps.

23 We conclude that the proposed energy efficiency
24 standards for State-regulated less than 4-foot lamps is
25 technically feasible.

1 Let's look at the cost and benefits of our
2 proposal. This table shows the per-unit baseline and
3 compliant energy consumptions, as well as the per-unit
4 energy savings in terms of kilowatt hour per year for
5 various lamps in the scope of our proposal.

6 The average energy consumptions shown here are
7 calculated based on the lamp's average power in watts,
8 and weighted average annual hours of operations. The
9 per-unit average energy consumption of compliant lamps,
10 and therefore the per-unit energy savings are different
11 for fluorescent and LED lamps. And as indicated here,
12 LED lamps are far more energy efficient than fluorescent
13 lamps.

14 This table shows the projected annual sales for
15 different types of lamps in the scope of our proposal.
16 It also shows projected shares between fluorescent and
17 LED lamp types during the first year for replacements.
18 This project is extrapolated from the trend of lamp
19 shipments data.

20 For example, for 4-foot and 8-foot standard
21 output lamps, 62 percent of replacement lamps are LED
22 and 38 percent are fluorescent.

23 For 8-foot high output lamps, there are only
24 fluorescent replacements available. And for less than
25 4-foot lamps, replacements are currently only LEDs.

1 These percentages are used for calculating the overall
2 energy savings.

3 The last column shows the overall annual energy
4 savings for the first year after the standards goes into
5 effect. The total energy savings for the first year
6 after the effective date is 341.4 gigawatt hour.

7 This table shows the projected stock for the
8 covered lamps in the first year, the weighted average
9 electricity rates and the annual energy savings after
10 the stock is fully turned over.

11 The weighted average electricity rates are
12 calculated based on shares of electricity consumed by
13 the residential, commercial and industrial sectors for
14 their lightings, and their electricity rates.

15 This table also shows when the stock turnover
16 happens for each type of lamps, because the stock
17 turnover cycle depends on the lamp's design life and,
18 therefore, is different for each type. As this table
19 indicates, the majority of the energy savings are from
20 the 4-foot T12s. The total energy savings are up to
21 2,895 gigawatt hour per year. However, the stock
22 turnover savings happen at different years for each type
23 of lamps.

24 The coinciding maximum stock turnover energy
25 savings happens in 2028 and is 2,583.8 gigawatt hour per

1 year.

2 Here are the assumptions we made for the cost
3 analysis of our proposal. Lifecycle energy and cost
4 savings are savings throughout the life of the
5 replacement products. And in addition to the energy
6 cost savings, it includes the weighted cost of
7 noncompliant lamp replacements because compliant lamps
8 last longer.

9 Also, for the cases where the replacement lamps
10 are LED type, they're assumed to be UL type-B, which are
11 integrated LED lamps that bypass the fluorescent
12 ballast.

13 We also assumed that the incremental cost
14 includes the costs for the new parts, which include the
15 lamp and the ballast, if needed, the labor for
16 installation, which includes changing the ballast for
17 fluorescent, or bypassing the ballast for LEDs. The
18 labor cost is calculated based on RS Means published
19 rates for California that are \$60.30 to \$70.76 for a 2-
20 lamp light fixture. That brings the labor cost per each
21 lamp to \$30.15 to \$30.38.

22 For reference, GE has published a labor cost of
23 \$31.30 for a lamp fixture that includes four lamps.
24 Assuming that it will be about the same cost for a 2-
25 lamp fixture, it will be about \$15.65 per lamp. We used

1 the higher rates based on RS Means.

2 The incremental cost also includes the sales
3 tax. We assumed that to be 7.25 percent. We also
4 included the cost of disposing the removed ballasts. We
5 assumed that all removed ballasts are magnetic,
6 containing toxic PCB, which has specific requirements
7 for disposal and, therefore, has higher cost of
8 disposal.

9 I should note that this is a conservative
10 assumption because not all ballasts contain PCB.

11 This table shows the design life of the baseline
12 on compliant lamps, and per unit lifecycle savings, as
13 well as the initial incremental cost per unit for
14 various types of covered lamps.

15 Net benefit ratio is the ratio of the lifecycle
16 cost savings to the incremental cost and is an indicator
17 of how cost effective the proposed standards are. As it
18 shows, net benefit ratios are ranging from 1.5 to 8.4
19 and, therefore, the proposed standards are very cost
20 efficient for all types of lamps in the scope.

21 This table also shows the first year reduced
22 electricity cost and the annual reduced electricity cost
23 after the stock turnover.

24 In the first year after the effective date,
25 California consumers receive more than \$50 million in

1 energy saving costs. And after the stock turnover, they
2 save more than \$428 million dollars per year.

3 In terms of environmental impacts, proposed
4 standards do not increase disposal of additional toxic
5 materials because they apply to the lamps manufactured
6 on and after the effective date. Therefore, they don't
7 impose an early replacement of inefficient lamps.

8 Overall, toxic waste is reduced because
9 replacement lamps are more durable and, in the case of
10 LED replacement lamps are nontoxic.

11 Proposed standards will also save substantial
12 energy, which means fewer power plants are built and GHG
13 and criteria pollutant emissions are reduced.

14 Because ballasts usually have longer life than
15 fluorescent lamps, the proposed standards may accelerate
16 of ballasts containing PCB. However, they don't
17 increase the overall toxic waste.

18 In conclusion, proposed standard achieve energy
19 efficiency savings not provided by the federal
20 regulations for the GSFL. Proposed standards also are
21 cost effective, technically feasible, and save
22 significant energy. These standards don't have an
23 adverse environmental impact and will reduce the overall
24 toxic waste, GHG and criteria pollutant emissions.

25 Our next step is to receive your comments.

1 Here's how you can comment for this staff report.
2 Comments are due by 5:00 p.m. on August 26, 2019. To
3 submit your comments electronically, you can click on
4 the link provided here. Or, you can send a hardcopy to
5 the address provided here. Just make sure to include
6 the docket number 18-AAER-08.

7 You can also send a digital copy through email.
8 The email address is docket@energy.ca.gov. Please
9 include the docket number 18-AAER-08 and indicate
10 "Federally Exempted Linear Fluorescent Lamps" in the
11 subject line.

12 With this, I have concluded my presentation and
13 I can take any questions that you may have.

14 Please use the raise hand feature in your WebEx,
15 if you have a question online.

16 So, in the room, is there any questions in the
17 room? Okay.

18 So, we're answering any clarifying questions
19 that you have about the staff's proposal and also the
20 staff report. Other questions, we will take them as
21 comments.

22 So, we received a question online. Can you
23 please discuss why cold-rated lamps were not included?

24 So, I'm going to discuss about what is proposed,
25 what the reasons. Most of the reasons are of

1 consistency, but we can take these comments and answer
2 them later. Take your comments.

3 So, if there is no other questions, we can take
4 a ten-minute break. Right now, it is 11:02, so we get
5 back at 11:12 to continue with presentations from the
6 IOUs.

7 (Off the record at 11:02 a.m.)

8 (On the record at 11:11 a.m.)

9 MR. NICHOLS: We're going to continue with the
10 workshop. From Energy Solutions, today Jasmine Shepard
11 is here and they have comment, and you will see the work
12 from the PowerPoint, on this screen.

13 Jasmine, thank you for being with us today.

14 MS. SHEPARD: Thank you. Thanks. Good morning,
15 I'm Jasmine from Energy Solutions, on behalf of the
16 California IOUs' Statewide Codes and Standards Team.
17 And we appreciate this opportunity to express our
18 support for the proposal for Federally Exempt Linear
19 Lamps.

20 The IOU involvement began when we submitted a
21 case report, in May of 2018, in response to the Energy
22 Commission's April 2018 invitation. We had some minor
23 adjustments, nothing change in our methodology, and we
24 submitted a revised CASE report in June of 2018. And
25 since then, we've been doing further research and data

1 collection on these exempt linear lamps.

2 Both the CASE report and the staff report mirror
3 each other in scopes. They propose minimum efficacy
4 standards for the same types of linear fluorescent lamps
5 that are not currently federally covered, high CRI
6 lamps, impact-resistant lamps, 2-foot linear lamps, 3-
7 foot linear lamps.

8 The minor difference is that the CASE report
9 proposes standards likely based on LED-level proposal
10 for most lamp types. Whereas, the staff report proposed
11 aligning with the federal standards for covered linear
12 fluorescent lamps, as in the case of the less than 4-
13 foot lamps.

14 We also used a different set of data, but
15 they're both from the DOE, and they pointed to the same
16 conclusion.

17 This table just shows that the staff report is
18 aligning with the federal standards in the case of less
19 than 4-foot. And the CASE report proposed LED lumen
20 efficacy, except for in the case of 8-foot high output,
21 and 2-foot u-shaped for similar reasons that the Energy
22 Commission stated in their staff report.

23 We overwhelmingly support the Energy
24 Commission's proposal for these efficacy standards. We
25 do note that, and understand that the Energy Commission

1 proposed to align for the federal standards, and we
2 encourage them to consider aligning with LED-level
3 standards because these have been proven feasible and
4 cost effective, as well. And in fact, the Energy
5 Commission proposed an efficacy level that is more
6 stringent than we did in our CASE report, and the IET
7 supports this opportunity for increased savings.

8 Because not only is it -- we've also been able
9 to show that in our online data collection and research
10 that we've done to support this proposal.

11 These high CRI, low efficacy T12s are very
12 prevalent in online retailers. We, in our research,
13 found at least 11 manufacturers from five of the online
14 retailers that we looked at. Some of these online
15 retailers also have brick and mortar locations in the
16 State. And again, that efficacy we found, looking over
17 hundreds of products used was 59 lumens per watt for
18 T12s, whereas the medium efficacy for a T8 was 83 lumens
19 per watt.

20 And then, in addition to this proliferation of
21 low efficiency, these lamps are often incredibly low
22 priced at \$2, as low as \$2 if you're buying it in a 30-
23 lamp case. And we believe that this may have a scenario
24 where people are buying T12s, not because they need high
25 CRI lamps, or they need impact-resistant lamps, but

1 simply because they're cheap, and available, and losing
2 the opportunity for energy savings.

3 One of the stakeholder concerns is ballast
4 compatibility and replacement costs. Both our reports
5 point to the cost effectiveness of such. And I can
6 state that in our online research, the Type A LEDs,
7 which is what we used in our CASE report, are starting
8 from \$4.74 per lamp, in a 12-lamp case. Very common to
9 be able to find tubular LEDs at below \$7.00. And 8-foot
10 linear LEDs are becoming increasingly available. Some
11 of those have plastic enclosures, which make them impact
12 resistant.

13 I can say from my personal experience that five
14 or six years ago, in the commercial and multi-family
15 space ballast compatibility was smaller than it is now.
16 And every year, it's getting larger. And in the case of
17 8-foot linear LEDs, every time I go to a light fair, I
18 see more product availability. So, that's a really
19 great sign pointing to that.

20 In the case of the less than 4-foot lamps, came
21 to the same conclusion. There is a very large
22 prevalence of these lower efficacy lamps available,
23 including T12 and T8, and as well as the T12 U-bend
24 lamps. Again, we're having that same situation where
25 the cost is very low and, so, people are buying more so

1 for the cost and not thinking, maybe considering the
2 possible energy savings from having a more efficient
3 lamp.

4 And, also, we found that the average efficacy
5 for the LED equivalent for the 2-foot lamps was 121
6 lumens per watt, which goes right in line with what the
7 Energy Commission is proposing. 115 lumens per watt
8 should be fairly attainable for tubular LEDs.

9 So, in conclusion, the Utility Team broadly
10 supports the minimum efficiency standards for these
11 lamp types. And we have seen that since there have
12 been federal standards in linear fluorescents, these
13 exempted products are becoming more -- proliferating.
14 And because of their low cost, but low efficacy, it's
15 causing a loophole, as I've mentioned.

16 And the proposed efficiency standards that the
17 staff report stated will prevent the shipment of more
18 than 7.8 annual inefficient lamps to our State. Even
19 more so if the Energy Commission considers getting
20 closer to an LED performance level for the standard.

21 And we're very encouraged by the opportunity of
22 the first year savings that are 340 gigawatt hours a
23 year, which is a significant energy savings.

24 And that's our presentation, short and sweet.
25 Again, my name is Jasmine Shepard. My contact

1 information is on the slide, as well as Mike McGaraghan.

2 And thank you so much for your time.

3 MR. NICHOLS: Thank you, Jasmine.

4 At this time, we have no additional formal
5 presentations. We are welcoming comments. We're going
6 to start with those of you that are in the room. If you
7 have comments you would like to make, you may proceed to
8 a microphone and you may make comment. Thank you.

9 For those of you that are online, you are
10 welcome to use the raise hand feature. We will unmute
11 your phone if you wish to make comments. For those of
12 that wish to make comments put in the chat box, we will
13 respond accordingly. Thank you.

14 Is there anyone online that would like to make
15 comment?

16 So, this meeting will just be a few minutes
17 longer. If you do have comments, please raise your
18 hand.

19 We're going to unmute all of the lines at this
20 time. If there's anyone who has comment or would like
21 to make comment, you are welcome to do so.

22 Okay, we thank you and appreciate your
23 participation in the workshop today.

24 I'm going to turn this back over to Soheila,
25 with some closing remarks. Thank you.

1 MS. PASHA: Thank you, David. So, thank you
2 very much, everyone, for participating here in person or
3 online. This concludes our presentations and our
4 workshop today.

5 You have all the presentations and also the
6 notice online you can access from our docket. And you
7 have until August 26th, 5:00 p.m. to submit your written
8 comments. Thank you very much. Have a good day.

9 (Thereupon, the Workshop was adjourned at
10 11:23 a.m.)

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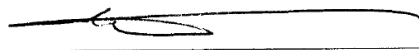
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I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 7th day of August, 2019.



PETER PETTY
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IN WITNESS WHEREOF, I have hereunto set my hand this 7th day of November, 2019.



Barbara Little
Certified Transcriber
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