

DOCKETED

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CALIFORNIA ENERGY COMMISSION

STAFF WORKSHOP

In the Matter of:)	Docket No. 17-AAER-01
)	Docket No. 15-AAER-02
)	
)	
)	Staff Workshop RE:
)	Regulations for Pool
Appliance Efficiency Pre-Rulemaking)	Pumps and Motors,
For Pool Pumps and Motors, Portable)	Portable Electric
Electric Spas, Commercial Clothes)	Spas, Commercial
Dryers, and Air Filter Labeling)	Clothes Dryers, and
_____)	Air Filter Labeling

CALIFORNIA ENERGY COMMISSION

THE WARREN-ALQUIST STATE ENERGY BUILDING

IMBRECHT HEARING ROOM

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

THURSDAY, AUGUST 3, 2017

9:00 A.M.

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Peter Petty

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

2 AUGUST 3, 2017

9:03 a.m.

3 MS. DRISKELL: I'm Kristen Driskell.
4 I'm the Manager of the Appliances Outreach and
5 Education Office. I'll cover a few housekeeping
6 items before we begin.

7 For those of you who are not familiar
8 with this building, the closest restrooms are
9 located outside the door to the right. There's a
10 snack bar on the second floor if you are hungry.
11 It's under the white awning.

12 And in the event of an emergency and
13 the building is evacuated, please follow
14 employees to the appropriate exists, probably
15 this one. We'll convene at Roosevelt Park, which
16 is the park across the street. If you're not in
17 an emergency, please use the main exit that you
18 came in through. These ones will have an alarm
19 on them and they will go off.

20 Here's our agenda for today. We'll
21 start with Staff's Replacement Pool Pump Motor
22 proposal. Then we'll have a set of stakeholder
23 presentations, about ten minutes for the people
24 here. And we'll open it up for discussion and
25 public comments.

1 After a short break, we'll turn to portable
2 electric spas, stakeholder presentations and another public
3 comment period.

4 We'll cover some next steps before we move on to
5 the lunch break and then we'll have our lunch break.

6 For the afternoon session, we will have a
7 commercial clothes dryers. Have a presentation from the
8 IOUs on the proposed test procedure and then open it up for
9 comments. And then we'll turn to air filters.

10 If you'd like to make a comment or ask a question
11 during one of the public comment periods, I actually invite
12 you to sit at the table now. That will facilitate making
13 that comment and you can just push the button on your
14 microphone to turn it on if like the (indiscernible) is on.
15 Please state your name and your organization before making
16 the comment. And if you can, please provide your business
17 card to our court reporter who's walking around raising his
18 hand, so that we can get your name correctly in the record.

19 If you're rejoining us by WebEx, please use the
20 raised hand feature and we will call on you after taking
21 comments in the room. You may also type your comment or
22 question into the chat box and we'll read it out loud to
23 the room. If you're not seeing an audio device next to
24 your name on WebEx, that means we don't who you are. You
25 need to ping us and call back in using your audio pin, so

1 that we can call on you.

2 We'll go over a brief history of our pre-
3 rulemaking proceeding for all of the topics today. They
4 all start off the same. They started with an order
5 instituting rulemaking in 2012. In 2013, they released an
6 invitation to participate at workshops. In June, we had an
7 invitation to make proposals. And then in May 2014, we
8 requested additional information on small network
9 equipment, commercial clothes dryers, portable electric
10 spas and pool pump motors.

11 At this point the schedule is diverse for each of
12 the appliances. For pool pump motors and portable
13 electric spas, we published our first draft staff report
14 in January of 2016 and held a workshop the next month. We
15 published our second draft staff report in June 2016 and
16 held a workshop after that in July. At that point, the
17 U.S. Department of Energy took over dedicated purpose pool
18 pumps and published a final rule in January 2017, and that
19 rule is now final.

20 So now we are at a point in July where we
21 published our second revised staff analysis, our third
22 report, on replacement pool pump motors and portable
23 electric spas.

24 A shorter history for commercial clothes dryers,
25 we had a -- the California IOUs docketed their case report,

1 proposing a test procedure for commercial clothes dryers in
2 February of this year. And then in July, we published our
3 draft staff analysis for commercial clothes dryers. So
4 this is the first workshop on those topics.

5 Finally, air filters. We actually adopted
6 testing, rate reporting and labeling requirements for air
7 filters in May of 2015. Due to some comments from
8 stakeholders about difficulty complying, we adopted
9 emergency regulations to delay the compliance date to April
10 1, 2019, and are currently wrapping up what we call a
11 certification rulemaking to make that delay permanent.
12 That will be adopted at the August 9th business meeting.

13 In order to correct the errors, we published a
14 staff report on July 18th proposing different ways to
15 correct those testing procedures for air filters.

16 This is an overview of the entire rulemaking
17 process at the Energy Commission. We are, where that
18 circle just showed up, discussing the draft staff analysis
19 in a public workshop. After this point, we will move to a
20 standardized regulatory impact assessment for those
21 regulations that have an economic impact of \$50 million or
22 more. Then move into the formal rulemaking period,
23 beginning with publication of a Notice of Proposed Action.
24 The green bubbles on this show all the opportunities for
25 public participation. There are probably even more

1 opportunities than we can show here since you can always
2 call us or contact us with questions. And we also take
3 written comments on all the draft staff reports.

4 Speaking of written comments, so we are accepting
5 oral comments at today's workshop. We also encourage
6 written comments to our docket. Comments are due by 5:00
7 o'clock p.m. on September 1st. You can submit
8 electronically by going to the links here. Please make
9 sure you go to the right docket.

10 For portable electric spas and pool pump motors,
11 the docket's 15-AAER-02. For commercial clothes dryers and
12 air filters, it's 17-AAER-01. And we'll present this
13 information again, so you don't have to write it down.

14 If you're interested in submitting confidential
15 information, please contact staff first and we'll put you
16 in contact with our Chief Counsel's Office. There's a
17 confidentiality process you have to go through to submit
18 confidential information. And you need to make sure that
19 you contact us before you submit it. Otherwise, all
20 comments will become part of the viewable public record.

21 I will now turn this over to Sean Steffensen to
22 present our Replacement Pool Pump Motor Staff Report.

23 MR. STEFFENSEN: Good morning. My name is Sean
24 Steffensen. I'm a Mechanical Engineer at the Efficiency,
25 Education and Outreach Office. I would like to welcome

1 everybody today both in the room and online. Thank you for
2 your participation. Here is the agenda for my
3 presentation.

4 I will summarize the updates to the draft staff
5 report and then my suggested topics for discussion. Pool
6 pump motors, including motors sold with a pool pump and
7 replacement motors use a significant amount of energy. As
8 much as 2,500 kilowatt hours per year per pool, according
9 to the Residential Appliance Saturation Survey. The
10 California Energy Commission first regulated pool pumps and
11 motors, starting in 2004. Before that time, most pool pump
12 motors were single speed. Some pools utilized fairly
13 inefficient motor types.

14 There are current standards for residential pool
15 pump and motor combinations and replacement residential
16 pool pump motors. The standards prohibit inefficient split
17 phase, or capacitor start induction run electric motors.
18 They require all pumps and motors of 1 horsepower or
19 greater total capacity to be capable of two-speed
20 operation.

21 Today, we will discuss staff's proposal to update
22 the standards, with a focus on what has changed since we
23 last met. As I present today, I will attempt to say
24 replacement pool pump motors or replacement dedicated
25 purpose pool pump motors. From time to time I may say

1 "replacement motors" to briefly mean replacement pool pump
2 motors.

3 This shows the rulemaking process. I will note
4 our process differs from the U.S. DOE. Each green bubble
5 indicates an opportunity for the public participation. We
6 are currently in the stage indicated by the blue arrow with
7 a 45-day comment period that started when staff published
8 its draft staff report on July 12th, 2017.

9 Today, we will discuss the staff proposal. We
10 seek your comments to determine if the staff proposal is
11 ready to enter the formal rulemaking process. If not, the
12 staff will revise the proposal and repeat today's workshop.

13 Next, we will perform a standardized regulatory
14 impact analysis, or a SRIA. The SRIA will study the impact
15 of staff's proposed regulatory change. The full rulemaking
16 stage will begin with a 45-day comment period and an
17 issuing of a Notice or Proposed Action.

18 At the conclusion of the comment period and after
19 we've had one more workshop, the Commission will hold a
20 public hearing. The Chair and Commissioners will consider
21 public comments and they will vote as to whether to adopt
22 the proposed regulation. Some of this is somewhat
23 different than DOE and I know some of you in the room are
24 more familiar with DOE, so I'm taking a couple of moments
25 to discuss what our requirements here are in California.

1 The Office of Administrative Law will review the
2 adopted regulations to ensure they meet the requirements of
3 the Administrative Procedure Act. The regulations will
4 then be filed with the Secretary of State and at that point
5 become effective on the effective date. I've noted various
6 durations on this slide to show a typical durations. Those
7 durations that are not required by law and may vary based
8 on business needs.

9 Staff reviewed comments from the July 2016, staff
10 workshop and the comments to the docket. Staff also
11 reviewed information for the dedicated purpose pool pump
12 effort at the U.S. Department of Energy. I appreciate the
13 comments received as well as the spirit of collaboration
14 during the U.S. DOE process.

15 The proposal has shifted, our staff proposal has
16 shifted to focus on replacement motors as the U.S. DOE has
17 issued a direct final rule for a dedicated purpose pool
18 pump standards.

19 Staff proposed to align replacement motor testing
20 in standards with the DOE pool pump testing and standards.
21 Staff added freeze protection setting requirements
22 consistent with those adapted to the dedicated purpose pool
23 pump direct final rule.

24 Our goal is to continue to be to modernize the
25 standards, take notes of current market trends and

1 technology advances and to extend state-wide energy
2 savings.

3 I post a link here to the staff proposal and all
4 its details. I invite you to take a look at it and to
5 comment on it in detail. We hope to receive public
6 comments today in this discussion and also in the upcoming
7 weeks as part of our process.

8 So now I'll address certain aspects of the
9 proposal to highlight changes and what has stayed the same.
10 The proposed scope includes replacement pool pump motors
11 that are 5 horsepower or less. Residential pool pump motor
12 applications, commercial pool pump motor applications,
13 staff also intends to cover the various pool pumps found
14 around pools including filter pumps, pressure cleaner
15 booster pumps and waterfall pumps. The scope will include
16 replacement pool pump motors for in-ground, above-ground
17 and storable pools.

18 Staff proposes replacement motor equipment
19 classes to align with the U.S. DOE dedicated purpose pool
20 pump equipment classes. The definition for each equipment
21 class rely upon the designed and marketed definition as
22 found in the pre-published DOE dedicated purpose pool pump
23 test procedure direct final rule.

24 Staff seeks comment upon this approach to define
25 replacement motor equipment classes in this manner. Study

1 of separate equipment classes allows consideration on
2 separate test conditions and separate efficiency standards
3 to collect differences in use and utility of these devices.

4 Staff proposes a motor weighted energy factor to
5 align to the U.S. DOE pump weighted energy factor. The
6 performance metric compares the output power to the input
7 power as a measure of efficiency. The two figures shown on
8 this slide shows some similarities on the metrics. In each
9 figure, a motor must apply a torque to overcome the load.
10 On the left, the load comes from the pump impeller as it
11 pushes the water through the plumbing system. On the
12 right, a dynamometer, or device used to test the motor
13 simulates the impeller. The dynamometer imparts the load
14 on the motor shaft in the test procedure and what we're
15 discussing today will set what that load should be.

16 What torque or motor load would simulate the load
17 from the impeller? The U.S. DOE chose System Curve C to
18 set the test conditions for pool pumps. Curve C flows
19 result in high flow. High flow would lead to a high motor
20 load. And that's where I would suggest starting the
21 discussion. I seek comments as to what the motor load
22 would best be to replicate the load from the pump.

23 Staff assumes 55 percent per pump efficiency,
24 based upon the U.S. DOE dedicated purpose pool pump
25 technical support document, Table 3.6.2. Staff chose 55

1 percent as a middle value as shown in that chart. Staff
2 seeks comments as to this assumption.

3 The test points are modeled after the test point
4 from the U.S. DOE dedicated purpose pool pump test
5 procedure. There's high-speed testing and low-speed
6 testing, where available, with the motor capability and the
7 test points are intended to align with the U.S. DOE test
8 points. High-speed turndown is allowed for variable speed
9 motors to align with the U.S. DOE.

10 This chart shows the replacement pool pump motor
11 minimum motor weighted factors. The minimum performance is
12 aligned with DOE WEF standard. Staff used a conversion of
13 1.4 to convert hydraulic horse power, which the U.S. DOE
14 uses to define their pump WEF to then convert in this
15 equation to motor WEF. Otherwise there are no other
16 changes to the DOE equation. So that's how I'm proposing
17 to go from, as we discussed at DOE the hydraulic horse
18 power to the total motor horse power, just what I hope to
19 get is an equivalent standard.

20 Further, staff chose 1.4, to maintain
21 California's requirement for two or more speeds for motors
22 1 horsepower or more. That's the reason behind the 1.4, in
23 addition to aligning with the DOE. Staff seeks comment
24 upon this approach. The next slide will show the effect of
25 this choice on where the small versus self-priming

1 filtering pump standards occur.

2 Staff performed a survey of pool pump and motor
3 combinations in replacement pool pump motors certified to
4 the Commission. This chart focuses on the replacement pool
5 pump motors, certified to the Commission as of April 2017.
6 This chart shows that there are available models that will
7 meet the proposed standard specifically for large -- and it
8 just shows self-priming or I'm stumbling over the words
9 here, the self-priming large filtering pumps are shown on
10 the right, with the first sloping curve. Then we see the
11 line that drops vertically. And then we show what the
12 conditions are for the small self-priming filtering pumps.

13 Again, I believe this shows a consistent
14 breakdown of -- and I've also shown various motor
15 construction, dual speed as red, single speed as blue and
16 variable speed as green. And this approach draws the line
17 consistent with where I believe DOE. I also seek comment
18 upon this proposal.

19 Staff applied the standards, saving methodology
20 used on previous rulemaking efforts to calculate the
21 savings on consumer and state-wide models. Efficiency of
22 current compliant products were held at the same level,
23 while non-compliant products are moved to exactly meet the
24 standard, the minimum standard, the minimum standard.
25 Staff assumed product stock and duty cycles, operational

1 speed and product life times as documented by the U.S.
2 DOE's dedicated purpose standard technical support
3 document.

4 In other words, I went and looked to the most
5 recent information in the U.S. DOE docket and updated my
6 analysis to reflect those numbers that are the participants
7 that the DOE agreed to. Calculation details are shown in
8 Appendix A of the draft staff report.

9 The proposal is cost effective with payback
10 periods well within the product lifetimes where standards
11 are proposed. This shows the residential case. On the
12 next slide I show the commercial case, since the scope is
13 intended to encompass both motors that are intended for
14 residential applications and commercial applications.

15 Staff found substantial statewide energy savings
16 for the proposed standard. When fully implemented, the
17 standard will save 657 gigawatt hours per year. Staff
18 received comments that differed on how much or how often
19 consumers would choose to replace just the motor, rather
20 than the pump and motor combination when the motor fails.
21 The estimates, as shown in the docket, differed between 25
22 percent to 60 percent of the time that a consumer would
23 choose to replace just the motor.

24 The estimate here assumes 25 percent of consumers
25 choose to replace the motor while 75 percent of consumers

1 choose to replace the pump and motor at the end of motor
2 life. A higher percentage of consumers choosing to replace
3 the motor would leave to greater savings under this
4 proposal.

5 The proposed standards provide millions of
6 dollars of savings for California businesses and consumers.
7 At full stock turn over there will be \$121 million of
8 electrical cost savings.

9 I have listed some items to facilitate discussion
10 at this workshop. Staff seeks input on a proposed
11 replacement motor test procedure. How could the proposed
12 test procedure be improved? Do the test conditions reflect
13 the loads a motor would see if coupled to the pool pump
14 moving water on the pool pump system? Does the proposed
15 replacement motor standard provide that replacement motors
16 are at least as good as the original motors in the pumps
17 compliant with the U.S. DOE standard? If not, how could
18 the standard be modified to achieve the same?

19 Staff is aware that many motor type are used to
20 drive dedicated purpose pool pumps. Some replacement
21 motors may be covered products under the existing DOE
22 electric motor rule or the DOE small electric motor rule.

23 Staff seeks your comments to identify overlap
24 between the staff proposal and the existing DOE rules.
25 Staff notes the recent DOE test procedure for small

1 electric motors and electric motors request for
2 information. And also the public meeting on dedicated pool
3 pump motors. And we plan to participate in these
4 activities.

5 Staff has released a draft staff report. We are
6 in a comment period right now. Comments may be submitted
7 electronically at the link above or emailed to the docket.
8 Hard copies may also be sent to the Energy Commission at
9 the address shown on the slide.

10 For those of you on the phone, this entire
11 package has been docketed and is available in docket 15-
12 AAER-02. Comments are due by 5:00 p.m. September 1st.
13 Once we receive comments we will analyze the issues,
14 compare the comment to the proposed standard, and figure
15 out the best path forward. We look forward to your
16 feedback and will work hard to incorporate it into our next
17 draft of the standards.

18 Thank you for your participation today. My
19 contact information is shown here.

20 We will next proceed into the formal
21 presentations followed by an opportunity to receive
22 comments from the public. I can take clarifying questions
23 on this presentation, but substantial comments and
24 statements should be saved for the public comments
25 following the remaining formal presentations. Thank you.

1 Please state your name and organization.

2 MR. OSBORNE: Ken Osborne, with Regal Beloit.
3 Just to clarify, this is targeted at replacement motors
4 only. And we have the dedicated purpose pool pump rule
5 coming from the Department of Energy. So I'm surmising
6 that you're going to wait for that to impact the pool
7 pumps. Your effort is to close all the loopholes under the
8 replacement motor market. But are you concerned about a
9 period from 2019 to 2021, two-and-a-half years, where the
10 loopholes are closed for the replacement motors, yet
11 loopholes still exist for complete pumps?

12 MR. STEFFENSEN: I think that's a great topic for
13 today to discuss. And we would want to understand what you
14 feel and the others in the audience feel would be in that
15 case as you described it, to further discuss and describe
16 that situation.

17 MR. OSBORNE: Okay. Thank you, Sean.

18 MR. STEFFENSEN: Any other questions? Thank you.

19 Next up will be Charles Kim from the California
20 Investor Owned Utilities and just hold on just a moment
21 while I switch the presentation over.

22 MR. STEUBEN: Good morning. My name is Jeff
23 Steuben. I'm here to help facilitate the process of the
24 comments from the investor owned utilities, so while Sean
25 is changing the presentation I just wanted to introduce

1 myself.

2 MR. STEFFENSEN: I believe I have Chad's
3 presentation.

4 MR. STEUBEN: Great. Thank you.

5 So Charles, are you on the line to provide
6 comment?

7 MR. KIM: Can you hear me?

8 MR. STEUBEN: Yes, we can.

9 MR. STEFFENSEN: Yes, we can. Thank you.

10 MR. KIM: Can you hear me?

11 MR. STEFFENSEN: Hi. This is Sean Steffensen.

12 We can hear you, (indiscernible) now.

13 MR. KIM: All right, thank you.

14 I'm Charles Kim of the Southern California Edison
15 Company. I'm speaking on behalf of California's small
16 utilities (indiscernible)

17 (Audio cuts in and out during speech.)

18 California ISOs have (indecipherable) pool motors
19 and pool pumps for many years, recognizing (indiscernible)
20 for the market. And (indecipherable) --

21 UNIDENTIFIED SPEAKER: I'm not getting it.

22 MR. KIM: (Indiscernible) California IOUs support
23 this effort at (indiscernible) --

24 (Off mic discussion of audio issues.)

25 MS. DRISKELL: Charles?

1 MR. KIM: Yes?

2 MS. DRISKELL: I'm going to pause you. We're
3 having a hard time hearing you in the room. Is it possible
4 for you to get a line?

5 MR. KIM: Okay. Can Jeff then read my statement?

6 MR. STEUBEN: Yes I can, Charles. I can go
7 ahead.

8 MS. DRISKELL: Sorry about the difficulties now.

9 MR. KIM: All right, thank you.

10 MR. STEUBEN: All right. I will start from the
11 top on behalf of Charles here. So this is from Charles Kim
12 on behalf of Southern California Edison, speaking on behalf
13 of the California Investor Owned Utilities.

14 "The California Investor Owned Utilities have
15 been involved with pool pumps for many years, recognizing
16 and identifying the energy saving functionalities,
17 incentivizing pool pumps to transform the market. And
18 today we are focusing on variable speed pool pump and motor
19 by rebating \$200 per qualifying products.

20 "I'd like to take a moment to thank the pool pump
21 industries for partnering with the California Investor
22 Owned Utilities, for benefitting Californians over the
23 years.

24 The California Energy Commission is taking a
25 leadership role, once again, for an update. And the

1 California Investor Owned Utilities are supporting the
2 CEC's efforts. I am especially thankful for adding clarity
3 and definition on coverage of all pool pumps for 5 total
4 horsepower."

5 So that is the comment here from Charles. And
6 we'd like to pass it over to Chad to give a presentation.
7 So we have that up on the screen. So Chad, are you
8 available?

9 MR. WORTH: Yeah, can you hear me?

10 MR. STEUBEN: Yes we can. Go ahead.

11 MR. WORTH: Okay. (Indiscernible)

12 (Audio cuts in and out, unintelligible.)

13 MR. STEUBEN: Hey, Chad? Can I pause you really
14 quick here? So the connection is a little garbled to
15 understand you. Do we have a --

16 MR. WORTH: Yeah. I've tried my (indiscernible)
17 but it's very scratchy on my end as well. I don't know how
18 to make it better.

19 MR. OSBORNE: Could they try hanging up and
20 calling in again and see if it clears up?

21 MS. DRISKELL: It sounds like he did.

22 Chad, we'll try to have you proceed. We might
23 not be able to get it down on the transcript. So we'll
24 probably want you to submit your comments also in writing.

25 MR. WORTH: I'm just calling in. It sounds like

1 people are having similar problems as well. Okay. I'll
2 try to do this quickly and speak as little as possible,
3 next slide.

4 The IOUs have a fairly long history of engagement
5 and involvement with pool pump energy efficiency starting
6 in 2001. We were very involved in the last Title 20
7 rulemaking. This rulemaking began in 2012. We
8 participated here, also essentially in the DOE working
9 group, which was just finalized in 2017. Next slide.

10 The current Title 20 motor standards, as most
11 people here are probably aware, is that there's a motor
12 efficiency standard saying pool pump motors manufactured on
13 or after January 1st, 2006, may not be split phase or
14 capacitor induction run. There's also a two multi or
15 variable speed capacity requirement that applies to
16 residential pool pump motors over 1 horsepower, such and
17 they must have a control to operate as well. Next slide.

18 Real quick, are people able to hear me better?
19 It's gotten a lot quieter on the line.

20 MS. DRISKELL: Yes.

21 MR. WORTH: Okay. Great. Again, with regards to
22 this rulemaking we've been very engaged in this from the
23 start. We originally submitted our case proposal in July
24 of 2013. We participated in a CEC workshop in that
25 following January of 2014. CEC then issued a data request

1 in March of 2014. We responded to that data request.
2 Shortly after, we started engaging with the APSP-15
3 Committee to work on a number of the test procedure issues.
4 And on September 30 of 2014, we documented a revised data
5 request response.

6 On October 9th, the IOUs hosted an industry round
7 table with the Energy Commission at PG&E's office in San
8 Francisco. And then since that there's been a staff
9 workshop in February of 2016 and in July of 2016, in which
10 we participated and responded to both of those. Next
11 slide.

12 Broadly, the IOUs support CEC's staff proposal,
13 which we believe the proposed standards are cost effective
14 and achievable and will lead to a significant amount of
15 savings. We'd also like to commend the CEC on their work
16 on the staff report. It took a lot of work and a lot of
17 good thought and we're very supportive of the staff report
18 generally.

19 But when you kind of boil it down, the main
20 things that the staff report does is it aligns replacement
21 motor standards with a new metric, the motor weighted
22 energy factor, and less aligned of the DOE rule. We think
23 this is very significant and support that. It moves the
24 standards from prescriptive to performance. It helps close
25 loopholes by ensuring that all pool pump motors are

1 covered. And it also provides various clarification and
2 simplification to the test procedure and reporting
3 requirements. Next slide.

4 As pertains to the test procedure, as was
5 mentioned the original test procedure, the IEEE 114, is not
6 ideal for testing motors at multiple speeds. The IOU team
7 worked with the APSP-15 Committee and identified the CSA
8 C747-09 as more appropriate. What the staff report does is
9 aim to simulate the hydraulic characteristics from the DOE
10 pump test procedure to ensure that comparable replacement
11 motors are available and meet similar efficiency
12 requirements. And with the test procedure, we also support
13 the updated reporting requirements for freeze protection,
14 standby power and power factor. We think this will
15 provide useful information to consumers and utilities.

16 Next slide.

17 Again, the big thing that also the staff report
18 does is expand the coverage to all pool pump motors. Right
19 now Title 20 only applies to residential filtration
20 applications. This has created significant challenges as
21 well as confusion in the marketplace. This proposal will
22 extend the motor efficiency standards to align with DOE
23 standards and cover all motors under 5 total horsepower and
24 align with the DOE product classes.

25 We believe this will greatly improve compliance

1 and expand savings in the new applications. Next slide.

2 And as mentioned before, the shift from
3 prescriptive to performance standards will allow all
4 different motor types to compete. And by aligning with the
5 motor weighted energy factor we think this will really
6 encourage efficient motors throughout. Next slide.

7 We support the January 1st, 2019, effective date
8 as noted in the analysis. Each year of delay is costing
9 California pool owners roughly \$16.9 million in electricity
10 costs. We support the alignment of the new pump motor
11 standards to align with the DOE rule when it takes effect
12 in 2021. Next slide.

13 And so some of the suggestions for improvement,
14 the staff report I believe it's the third, has largely
15 improved and there's great progress made on many of these
16 issues. We'll be making a couple of comments in writing in
17 a little more detail with regards to the motor capacity
18 thresholds to align with the hydraulic horsepower values as
19 well as some definition recommendations. And we look
20 forward to submitting these comments in writing. Thank you
21 very much.

22 MR. STEFFENSEN: Thank you, Chad.

23 So next up will be the APSP. I'd like to invite
24 the APSP. If you could, if you're more comfortable there
25 or coming up here.

1 MR. SIDDIQUI: Whichever you prefer.

2 MR. STEFFENSEN: I don't care, but it's like the
3 acoustics are --

4 MS. DRISKELL: No. Just make sure you speak
5 directly into the mic, so that people on the Web can hear
6 you.

7 MR. SIDDIQUI: Sure. My name is Shajee Siddiqui.
8 I'm with Zodiac Pool Systems, but I'm making this
9 presentation on behalf of the Association of Pool and Spa
10 Professionals. Can everyone hear me okay?

11 The Association of Pool and Spa Professionals,
12 also known as the APSP and its pool pump and motor
13 manufacturer members are supportive of the Energy
14 Commission's initiative to further advance the efficiency
15 standards for pool pump motors.

16 For us, this is yet another opportunity to
17 demonstrate our ability to cooperate with the various
18 constituents and most has been most recently demonstrated
19 in our cooperation with the Department of Energy in getting
20 their dedicated full purpose pool pump working group and
21 final rule established. Next slide please.

22 What follows are just come comments we that have
23 with respect to the most recent proposal for the motor
24 rule, put out by the CEC. The next few slides address some
25 of the definitions that have been identified and just

1 questions.

2 The current replacement motor definitions, as
3 proposed by the Energy Commission, rely upon the designated
4 and marketed definition what will identify replacement pool
5 pump motors that can be shown to be intended for use with a
6 pool pump by the markings on the motor packaging or through
7 descriptions in catalogs or other publicly available
8 documents.

9 The APSP manufacturers have a concern that this
10 definition or this regulation could possibly be
11 circumvented by a motor manufacturer designating a
12 replacement as something other than a pool pump motor. So
13 we'd like the Commission to look at that. Next slide
14 please.

15 Thank you. Also, the CEC equation for
16 replacement pool pump motors assumes that the pump is 55
17 percent efficient. And our concern is if a pump is more
18 efficient than the replacement motors required to meet the
19 motor WEF could potentially have to be more efficient than
20 the original motors.

21 So the APSP recommends that this be looked or
22 possibly changed. Otherwise pump manufacturers may not be
23 able to sell replacement motors for the pumps that do
24 comply with the rules. So this is just since we don't have
25 any data we'd like to look at this a little bit more

1 carefully. Next slide please.

2 With respect identical replacements, regarding
3 the replacement motors, the pump manufacturers should be
4 allowed to offer the identical replacement motor for the
5 pump, which complies with the upcoming DPP rule, or DPPP
6 rule, the DOE rule, without additional qualification of the
7 motor regardless of any requirements established as a
8 result of this rulemaking. That's just to make sure that
9 if we've got a pump that complies that when the replacement
10 motor is sold separately, that won't be found as non-
11 compliant by California. Next slide?

12 With respect to freeze protection, regarding the
13 freeze protection, the APSP requests that the CEC adopt and
14 align with the federal DOE guidelines, which include that
15 if the pump is shipped with freeze protection disabled,
16 then the prescriptive requirements should not apply to that
17 pump. Next slide.

18 With respect to the timing of the rules, the DOE
19 rule versus the CEC, the federally Dedicated Purpose Pool
20 Pump Regulations, DPPP pardon me, go into effect July 2021.
21 APSP recommends that the CEC align the implementation of
22 its revised efficiency standards for pool pump motors with
23 the federal rules, so that the industry can prepare for
24 both concurrently. Next slide, please.

25 APSP also recommends that that the DOE determines

1 to move forward with the federal regulation on pool pump
2 motors, which sounds like it is, we would respectfully ask
3 the CEC to postpone the pump motor regulations altogether
4 for the DOE rule, which we believe would preempt any CEC
5 pool pump motor regulation.

6 So basically, it's the industry's position that
7 any DOE pump motor rule be implemented as close to the DPPP
8 rule, the 2021 date. So just basically repeating what I
9 spoke of in the earlier slide. Next slide, please. Thank
10 you.

11 The pump and motor manufacturers have had a long
12 history of working with the regulators and the energy
13 advocates on higher efficiency standards. Our work with
14 both the CEC and the DOE represents our commitment to
15 continuing to do so. We are pleased to see that the CEC is
16 working to address loopholes that have been created in
17 regards to the pool pump motors when the DOE rule was
18 established. And we hope it will encourage the federal
19 government to follow suit. Next slide.

20 And in closing, we look forward to working with
21 all parties to deliver an effective set of efficiency
22 standards for pool pump motors and align such regulations
23 to ensure consumers realize the maximum benefits. To that
24 end, APSP respectfully requests that the CEC consider out
25 comments as well as those provided by our member companies

1 as it develops its final rulemaking.

2 And with that I thank you on behalf of APSP. And
3 I'll step into my role as a representative of Zodiac Pool
4 Systems and also say that we support everything that I just
5 spoke on behalf of the APSP as well. Thank you.

6 MR. STEFFENSEN: Thank you, Shajee.

7 Next up, Jeff Farlow with Pentair.

8 MR. FARLOW: Good morning. This is Jeff Farlow,
9 with Pentair. And I wanted to give thanks for the
10 opportunity to participate in these hearings. California's
11 Commission has always been very transparent and
12 collaborative. And so we want to thank you for this
13 opportunity, okay? Next slide.

14 This is just to let you know visually that we
15 absolutely support getting rid of pool pump motors and the
16 energy hogs. That many of them still exist in the market,
17 so we do support eliminating these energy hogs from the
18 market. Next slide.

19 So Pentair, we do have a long history of working
20 with the California Energy Commission, the utilities in
21 California, to provide more efficient products that give us
22 an energy efficient option in the market. One of our
23 focuses is to develop energy efficient products for the
24 pool industry.

25 If we look at the 242 pool pumps and motors that

1 are currently listed in the CEC database, 85 of those or
2 about 35 percent are Pentair models, so we absolutely do
3 focus on that. We also have made a significant investment
4 in training in the State of California. And this is to
5 train our industry on the California energy efficiency
6 regulations, on how to comply with them, what they mean,
7 how to interpret them. We've also done a lot of training
8 to the trade on how to properly operate the equipment, so
9 that energy savings are achieved. So we absolutely do
10 support this.

11 Another thing just to demonstrate our focus on
12 energy efficiency, we are an ENERGY STAR Partner of the
13 Year Award recipient for the last four years since ENERGY
14 STAR has had a certification for pool pumps. So again,
15 just to demonstrate our commitment to that. Next slide.

16 So we'll look at some specifics for the proposed
17 standards. We absolutely think it's correct to try to
18 harmonize with the DOE rules. And it seems like on the
19 surface the motor weighted energy factor is a good metric
20 to do that. It seems to be superior to using a typical
21 motor efficiency metric.

22 We think that the motor weighted energy factor
23 helps take into account the savings that are obtained from
24 the pump affinity law. Whereas the motor efficiency metric
25 would not do that as well, from our perspective, so we do

1 support the motor weighted energy factor. At least that at
2 a high level.

3 Before we could really commit a full throated
4 commitment to this, we would like the opportunity to do
5 some actual testing and see more specific data, so that we
6 don't have any unintended consequences from this. So a
7 little bit more time with that would be helpful, you know,
8 we are assuming a 55 percent wet end hydraulic efficiency.
9 We're not sure how that will play out when we put it with
10 the motors, so more time would be needed to evaluate.

11 We do have the same concern that there would be a
12 case where, if we had a pump that was compliant, a finished
13 pump that was compliant for the DOE regulations. And then
14 we wanted to offer that replacement motor for sale that
15 there's a chance that that replacement motor would not be
16 in compliance although when used on a compliant pump, it
17 works fine. So I think that would be an unintended
18 consequence that we should really be aware of. I don't
19 think anybody would really want a valid replacement motor
20 to not be able to be used on its original pump head.

21 So just to make sure that there's provisions that
22 would allow that would be a recommendation. Next slide.

23 So as we went through the Department of Energy
24 Dedicated Purpose Pool Pump Regulations, we were very vocal
25 on the need to close this motor loophole. We just don't

1 think that the savings would be achieved if this loophole
2 exists. DOE responded positively with our request to close
3 this loophole.

4 In fact, we have our initial meeting scheduled
5 actually one week from today in Washington D.C. to address
6 this very issue. Our intent and desire is to have the
7 motor loophole issue resolved by the July 2021
8 implementation date, for the dedicated purpose pool pumps.

9 So it would be our recommendation to try to hold
10 off on the CEC regulation, at least track along with the
11 DOE regulation so that the DOE regulations would be the
12 national standard. And there's also concern about having
13 just a California only regulation. And it has to do with
14 the lack of inspector presence during the retrofit or
15 replacement activity. That's typically not -- a permit is
16 not issued.

17 I think there's good opportunity for a new pool
18 construction where permits are issued and there's plan
19 reviews. But in the replacement market, which is very
20 prevalent in California, there's really no enforcement or
21 regulation on that. And we're concerned that a California
22 only rule would just cause a lot of non-compliant product
23 to be shipped and purchased online, or shipped in across
24 state lines, and circumvent this rule. Whereas if we
25 waited for a national standard that could be avoided. Next

1 slide.

2 There's also an issue that we've identified. And
3 this goes back to the dedicated purpose pool pump
4 regulation with the Department of Energy. And we've made
5 them aware of this and we are going to addressing this, but
6 I'm bringing it up now to try to prevent a flaw or
7 unintended consequence to be perpetuated into a California
8 regulation where then we have to deal with it at this level
9 also.

10 And it has to do with 5 horsepower pumps, which
11 would be regulated under this standard. And the Department
12 of Energy, to give a little background, has chosen Curve C
13 to determine what the maximum horsepower is of a pump. And
14 what I've presented here is a slide to show a 3 horsepower
15 pump applied across Curve C. Curve C would be the yellow
16 system performance line. And then the 3 horsepower pump
17 would be the red line. And then on top of that, I have a 5
18 horsepower pump, which is represented by the blue
19 performance curve, the solid blue line.

20 And we see that both of those pumps cross Curve C
21 at the exact same point. So they would be rated with the
22 exact same horsepower, based on the flows and pressures in
23 that intersection point. But if we look at where the 5
24 horsepower is intended to operate, we see that Curve C is
25 not its optimum point. In the dotted lines you'll see

1 where I've plotted the efficiency for those two pumps.

2 The 3 horsepower pump efficiency peaks around 120
3 gallons per minute where the 5 horsepower pump's efficiency
4 peaks out closer to 180 or 200 gallons a minute. So the 5
5 horsepower is really not intended to operate on the Curve C
6 system.

7 While we have not addressed the solution to this
8 yet, we are working on it. So I wanted to just bring it to
9 your attention. Some thoughts are we need an additional
10 system curve. Right now California only recognizes A, B
11 and C. Curve C was recommended to California. Back in
12 about 2008, the APSP had a subcommittee that helped
13 determine what Curve C was. At the time we actually
14 identified a Curve D, but we chose not to even include that
15 at the time. But I would say that even a Curve E may be
16 better represented by the system that these 5 horsepower
17 pumps are intended to operate on. So something to consider
18 as these standards unfold. Next slide.

19 And so that's it. I once again want to thank on
20 behalf of Pentair the opportunity to participate and the
21 CEC transparency and openness to comments in this process.

22 MR. STEFFENSEN: Thank you, Jeff.

23 So the ASAP, Appliance Standards Awareness
24 Project, will be joining us online.

25 MS. MAUER: Hi, Can you hear me?

1 MR. STEFFENSEN: Yes we can.

2 MS. MAUER: Okay. So (indiscernible) online, I
3 think we're all hearing really well background noise when
4 anyone in the room is speaking. It seems to go away when
5 Chad was speaking and then came back. But hopefully you
6 can hear me okay.

7 So this is Joanna Mauer with the Appliance
8 Standards Awareness Project. ASAP organizes and leads a
9 coalition of efficiency advocates to advance the appliance
10 standards at both the national and state level. We have a
11 steering committee that includes representatives of
12 efficiency and environmental groups, consumer groups,
13 utilities and state government.

14 We appreciate the opportunity to participate in
15 today's meeting. And we're pleased that the Commission is
16 advancing standards for replacement pool pumps motors. And
17 we're a member of the ASRAC working group that negotiated
18 the new national standards for pool pumps that were
19 finalized by DOE earlier this year.

20 However the DOE standards do not address
21 replacement motors. And there's concern that absent
22 standards for replacement motors consumers can chose to buy
23 a replacement single speed motor instead of buying a new
24 variable speed pump, which will impact both pool pump
25 manufacturers and energy savings. And there's therefore a

1 broad support for standards for replacement pool pump
2 motors among the stakeholders involved in the DOE-led
3 negotiations for pool pumps.

4 Standards for replacement pool pump motors offer
5 large potential energy and economic savings. CEC staff
6 estimates that the proposed standards after staff turnover
7 would face 157 gigawatt hours per year, which translates to
8 \$122 million in bill savings for California consumers.

9 These standards would also help protect the very
10 large savings from the DOE standards for pool pumps. DOE
11 estimate that on a national level, the pool pump standards
12 will save 3.8 quads of energy over 30 years of sales.

13 To put this in perspective, these savings are
14 equivalent to about 4 percent of total U.S. annual energy
15 use. Complementary standards for replacement motors will
16 help ensure that these very large savings from the DOE pool
17 pump standards are actually achieved.

18 We believe that aligning California standards for
19 replacement motors with the DOE standards for pool pumps,
20 as extent possible as is proposed in the staff report,
21 makes good sense. In particular, it makes good sense that
22 the energy factor score of replacement motors be roughly
23 equivalent to that of motors in new pool pumps.

24 Finally, new CEC standards for replacement pool
25 pump motors could serve as a model for other states and for

1 potential future national standards, which would increase
2 the impact of the California standards. Thank you.

3 MR. STEFFENSEN: Thank you.

4 Up next, we'll have Scott Petty from Hayward Pool
5 Products.

6 MR. PETTY: Good morning, everyone. My name is
7 Scott Petty from Hayward. I think on the last one,
8 everybody heard a lot of this, so I'll try not to repeat.
9 Next slide, please?

10 Hayward, as well as many of the other
11 representatives here, we do support where the CEC is taking
12 this proposal for replacement motors. And particularly,
13 really involved the different approach, particularly
14 innovative approach of (indecipherable) as Jeff previously
15 mentioned, taking into account the weighted energy and then
16 the benefits of running pumps at different speeds really I
17 think helps align and close the gap versus just looking at
18 motor efficiency as was previously presented.

19 So I think this is a really great opportunity to
20 align that. And so like some of my counterparts, I just
21 have some general comments for areas that we may want to
22 evaluate. But are by no means not something that would be
23 deal breakers by any means. Next slide.

24 Again, as was noted before I think a challenge we
25 could face is that definition, being based off designs and

1 marketed. We recognize that there aren't right now, easily
2 defined visible characteristics that would separate pool
3 pump motors. And so therefore an alternative is designed
4 and marketed. So while I think this could work, it could
5 lead to some unintended consequences as (indiscernible).
6 So I don't know of an alternative solution, but if the
7 industry and with the motor manufacturers -- if there are
8 any opportunities for any physical characteristics or other
9 means of separation I think that would help, because this
10 could lead to unintended consequences by relying on
11 marking. So I would just encourage the group to really
12 brainstorm if there are other options to better define
13 these characteristics. Next slide.

14 Again, the same type thing with that is potential
15 loopholes or unintended consequences. I mean, for
16 instance, we know Hayward uses the same motor on a booster
17 pump as it does on a single speed self-priming pump. And
18 so how does that work when it's a complete system, a pump.
19 There are different characteristics as defined by the DOE,
20 but on the motor only. Could that again lead to unintended
21 consequences and loopholes, so better definitions could
22 help limit that. And so I just again encourage the group
23 to look at those to see if you can better type those up.
24 Next slide.

25 The same thing as was mentioned before by

1 particularly pool pumping manufacturers, to allow from the
2 pump manufacturer to offer the component that's used in a
3 regulated pump to not have to do anything additional for
4 that motor only. Particularly, kind of jumping to the
5 bottom one thing that I don't know was really discussed
6 directly in terms of the DOE or here at the CEC, is there's
7 items that are sold. But then there's also no charge
8 warranty replacements, so if a product fails a motor is
9 often the component of a pump that may need replacement.
10 How is that handled? We wanted pump manufacturers to be
11 able to offer the same component that they had when they
12 bought the complete pump. So a proposal would be could we
13 just exclude no charge warranty replacements to make sure
14 that the consumer doesn't have to purchase, or had to
15 utilize something that's different from what they already
16 had before.

17 So getting us to at the end of the day to the
18 goal, which I think we all have, is that the motor that is
19 the component that is the complete pump should not have any
20 additional requirements beyond that of the pump as a whole.
21 Next slide.

22 Again, this was talked about before, the
23 assumption of 55 percent. Hydraulic efficiencies can vary
24 I'll say significantly, but we've seen numbers higher than
25 55 percent. So we would encourage, perhaps as

1 manufacturers share some data and maybe that number needs
2 to shift. Because if it's too low the consequence could be
3 that the replacement motor has to work harder, has to be
4 more efficient, to compensate for the pumps having in
5 reality a higher efficiency.

6 So the good news is if I rely on our engineers to
7 do the math -- it's been a while since I've had to look at
8 those type of equations, but I think the way the pump
9 efficiency factors in it's not as significant. It doesn't
10 appear that it's going to make as significant a change on
11 the overall motor WEF. And by our math if you change the
12 efficiency by say you go from 55 to something like 70
13 percent. That's a 30, 35 percent improvement. The math, I
14 believe would show that's only about a 10 percent
15 difference in motor WEF. And the separation between motor
16 WEF, between single speed and variable speed should be much
17 larger than that.

18 So it's something we definitely should look at,
19 but hopefully it's not going to make a radical difference
20 in the overall goal of this proposal. Next slide.

21 Again, I think this was mentioned before in the
22 APSP, but with respect to freeze protection we request the
23 CEC align with the DOE, which includes the statement that
24 if the pump is shipped with freeze protection disabled,
25 then those requirements are not applicable. And again,

1 that directly aligns with what is in the DOE regulation.

2 Next slide.

3 So again, we appreciate the opportunity to be
4 here. We're very encouraged to address this issue and
5 close some of the loopholes that have existed for a period
6 of time going to a performance-based standard that aligns
7 with the DOE. We're very encouraged with the direction of
8 this. We have some things that we need to, I'll say button
9 up and address, but overall feel very confident we can get
10 to something that's beneficial to consumers, manufacturers
11 and the entire pool industry. Thank you.

12 MR. STEFFENSEN: Thank you.

13 Next up, I'd like to offer Don Lanser from Nidec
14 Motors the opportunity to speak.

15 Don, are you there? The connection is somewhat
16 unintelligible. Please go ahead if you're there, Don.

17 (Audio issues being addressed.)

18 MR. STEFFENSEN: I guess Don, please hold your
19 comments and we'll come back to you. I'll guess I'll open
20 up to the room for those in the audience for comment and
21 we'll come back to you, Don.

22 Would you please state your name and
23 organization?

24 MR. OSBORNE: Ken Osborne, Regal Beloit. I know
25 I have limited time, so I'd just like to add a couple of

1 comments and two or three questions to be on the record.

2 First, I already asked about the CEC coverage of
3 motors only in the issue of loopholes remaining for full
4 complete pumps. So I wanted to state for the record Regal
5 Beloit and other manufacturers have been supportive of the
6 industry and work of the DOE to create a motor regulation
7 aligned with the DPPP, Dedicated Purpose Pool Pump
8 Regulation. Even though there might be some commercial
9 advantage for selling more motors in the replacement market
10 the motor manufacturers want to do the right thing, not
11 move the industry backwards, but want to advance efficiency
12 for the good of everyone in the channel.

13 In the same light we want you to consider for
14 this loophole, potentially for two-and-a-half years, just a
15 suggestion that the CEC motor standard could apply to all
16 pool pump motors, and not just replacement pool pump
17 motors. And that would enable the industry to then get
18 aligned, hopefully with DOE regulations and close that
19 loophole in 2019 instead of waiting until 2021.

20 Another comment for the record, there's been
21 several comments here about 55 percent assumption on water
22 efficiency. Regal Beloit agrees with that and suggests
23 that the CEC consider a higher water efficiency that would
24 broaden the range of compliant motors, but sill motors that
25 would be well within the EL-6 range, for example, in

1 standard pool pump motors.

2 Then a few questions, Sean, you mentioned in your
3 presentation that the horsepower uses an assumption of 1.4,
4 which would then -- on the horsepower, hydraulic-to-motor
5 horsepower. That ends up to be 0.995 and consistent with
6 the history of Title 20 and 1 total horsepower and greater.
7 But I just want to have the CEC and industry discuss that
8 further, because my understanding is the 0.711 hydraulic
9 could equate to motor horsepower above 1 total horsepower,
10 maybe 1.1 or 1.2. I just want to make sure we have the
11 best alignment with the DOE standards as possible.

12 Another question is we just want clarity from the
13 CEC on how you propose to distinguish between self-priming
14 and non-self-priming motors? There are different standards
15 in your proposal for those two categories.

16 And then lastly, we are looking for comments or
17 direction from the CEC on how you view alignment with the
18 DOE effort. And preemption if the DOE is to be successful
19 and we hope to be successful in creating a federal standard
20 on pool pump motors. Thanks for the time.

21 MR. GOLLAPUDI: Chandra Gollapudi, Regal Beloit
22 Corporation. I just want to add one point to what Ken just
23 said about the definition. I think DOE has a different
24 requirement for definitions and I think we all said that
25 we'd like to see more alignment.

1 One thing to consider is that the most important
2 category of where the savings are, are self-priming, larger
3 standard size self-priming and this potential to look at
4 the physical features such as the flange or the shaft. And
5 also potentially tie it to a standard like the UL-1081 that
6 exists for pool pumps today. If DOE and CEC could request
7 UL to create a standard for the motors, that is an option
8 that you could more well define a pool pump, a dedicated
9 purpose pool pump motor.

10 MR. STEFFENSEN: So let us hear -- thank you for
11 your questions, I will get back to you.

12 MR. GOLLAPUDI: Thank you.

13 MR. STEFFENSEN: I just want to provide Don an
14 opportunity, then we'll come to your feedback.

15 (Audio feedback and issues.)

16 MR. STEFFENSEN: Don, we're trying to -- please
17 speak if you believe we can hear you. Don, we're not
18 hearing anything now. Please, if you're there? Okay.
19 Don, we're not hearing anything. Please use the chat box
20 to provide the questions or comments that I'll address.

21 (No audible response.)

22 So I think at this point I'd like to maybe take a
23 couple minutes myself to provide some comments and some
24 responses to some of the questions out there where really
25 my goal here is to further the conversation. So that way

1 the comments I hope to receive in the future, by September
2 1st, we'll be that much further along in the discussion.

3 That was a good comment regarding the precision
4 of the 1.4 versus what should it be. I think probably
5 looking back to my notes there probably was a rounding for
6 simplicity, but that does seem to put it one way or the
7 other of that very important 1.4 start. So I will go back
8 and review what it would mean to round it perhaps another
9 way. I think perhaps it may need to go to another decimal
10 point too. (indiscernible) with a .995 versus 1 point.

11 UNIDENTIFIED SPEAKER: (Indiscernible)

12 MR. STEFFENSEN: So I would like to comments to
13 reflect what the importance is, how close do we need to be?
14 And division's always very tricky as to determining exactly
15 how you get the numbers to (indiscernible) -- Your
16 questions about the 1.1, 1.2 and also I think the comments
17 I've heard from around the room about the hydraulic
18 efficiency and what that may be in the calculation of the
19 WEF.

20 I had presented a slide earlier that showed what
21 the WEF would be assuming 55 percent. And in the comments
22 that I received from a number of stakeholders, I put
23 together using my calculations in a sense a flip book here
24 that'll show.

25 And this is a what if and just very briefly the

1 calculation of WEF, the way I've formulated it and it's
2 shown in the draft staff report, pump efficiency shows up
3 in the numerator, along with the motor output power.
4 They're multiplied together and they're divided by the
5 input power.

6 And so that number in the numerator is constant
7 and if we assume various pump efficiencies -- I put in all
8 various values we could assume. Zero percent isn't a very
9 good, but just to watch as we flip through how the values
10 change, 10 percent, 20 percent. And we begin to see a
11 separation of the product types, the motor efficiencies.

12 This is built upon the data that's in the
13 database. It shows that at 30 percent, we begin to see
14 more separation. We begin to see the variable speed,
15 because of what I believe is the most influential part of
16 the WEF system that DOE proposed, which I'm trying to
17 mimic, that the turndown begins to really show its full
18 effect. And we begin to see the separation where variable
19 speed is pulled up high. We get to 40 percent, 50 percent.

20 Again now it's not being as extreme, like there's
21 some sort of ratio, but if we continue to go this is what's
22 proposed, 55 percent. We will continue to see a separation
23 of the line that's drawn as to what's compliant, what's not
24 compliant. What's above the black line that's compliant,
25 what's below the black line would not be compliant.

1 We continue on 60 percent, 70 percent. And just
2 to note that the pumps are certified to the database using
3 the motor efficiency data that was provided. That's how
4 I've tried to calculate what would be in a sense the input
5 power and the output power through that. What stays as the
6 motor efficiency and the motor total capacity. That's how
7 I derived the inputs to the WEF calculation.

8 I don't throw in a lot of terms here. I know I
9 will speak to everyone of you in person in more detail so
10 you can understand my thoughts. But as we scroll through
11 it's 70 percent, 80 percent, 90 percent and of course 100
12 percent is the maximum value than we could really accept.
13 You can't get much better than 100 percent.

14 We're still seeing a separation of what's
15 compliant and noncompliant. So I believe what we're seeing
16 -- what I see is that the WEF scoring, the ability of the
17 turndown of the variable speed motors really provides that
18 defining characteristic of what would be compliant or
19 noncompliant for this proposal.

20 I just wanted to share this with you. Again, I'm
21 not saying -- I'd hate to say this doesn't matter. I think
22 it does matter a lot, but the WEF scoring is very
23 influential as far as a turn down goes. I do want to get
24 your comments as to -- I chose the middle value. I try not
25 to be arbitrary. I looked at the table. There's a matrix

1 of six numbers, tried to figure out what would be a high
2 cost. I really tried to keep in simple, if I can. If not,
3 I am open to comments as to how to add an additional value
4 detail to further make that standard much more precise. I
5 mean we really want to include those that are compliant and
6 exclude those that will not be compliant.

7 And just one last comment, while we're here, I
8 mean I am hearing comments as to well what if the motor is
9 compliant with DOE and not compliant under this system?
10 And I would wonder if some of those comments are aimed at
11 this vertical line. And I would look for comments as to
12 where that should be drawn. That's very much a factor of
13 the 1.4 in that denominator of those WEF scores.

14 I'll try to lead you towards where I think
15 adjustments could be made with rationales provided. That's
16 what I'm looking for and I want to speak with you. Anyone
17 who wants to talk with me, please call me up, email me. I
18 want to respond to your concerns.

19 Questions regarding definitions, I've heard
20 comments that the design and marketed perhaps could be
21 improved upon. I have looked for those physical
22 characteristics. I look for comments as to what physical
23 characteristics -- I would prefer physical characteristics.

24 The rationale behind design and marketed though
25 is that consumers, those that I believe would purchase the

1 vast majority of these, are going to go and try to figure
2 out what motor is going to work with what pump. And
3 they're going to want to have that assurance beforehand
4 that this motor that they're buying will work with this
5 given pump. And there'll have to be some sort of
6 communication at some point, public communication that we
7 can all see, of a motor and what pumps that motor would be
8 appropriate for. I would look for comments as to that
9 rationale and what additional information can be provided
10 to further that discussion and how we could improve these
11 definitions.

12 But that was my thought behind it, in order to
13 find the replacement motor there has to be some sort of
14 communication and assurance to the consumer that they're
15 choosing the right motor. Otherwise they wouldn't choose
16 that motor. And I realize that probably some motors could
17 be chosen by a very crafty consumer without regard to some
18 sort of published data. So that's my comment upon that.

19 I do look to how we could improve it, as well as
20 if there are dual use motors, like I've heard that comment,
21 whether they're self-priming, non-self-priming or where
22 maybe perhaps a motor could be used as a booster pump or a
23 self-priming pump. I think we saw that in the DOE
24 proceeding, the CASE team took a motor from a self-priming
25 pump and put it on a pressure booster pump to show a

1 savings (indiscernible) potential.

2 In those instances if a manufacturer says it's
3 good for both, I mean if my interpretation of other
4 regulations we have, the manufacturer should be certifying
5 for both those product categories and meeting both those
6 standards. And I look for comments as to the effect of
7 that.

8 So I've talked for a while. And perhaps I would
9 encourage -- I mean at DOE we had a very much of a back and
10 forth to understand responses. I mean I would open it up
11 to anyone who would want to make further comment, either
12 based upon what I've said or anything else that comes to
13 mind or anyone who hasn't spoken yet.

14 MR. GOLLAPUDI: Sean?

15 MR. STEFFENSEN: Could you state your name.

16 MR. COLLAPUDI: This is Chandra Gollapudi, of the
17 Regal Beloit Corporation. I think you mentioned that you
18 took the mid-value of the efficiency. I think the goal is
19 kind of create the separation between EL-6, variable speed
20 and some kind of variable speed or modulation versus
21 everything else at the same time allowing the OEM's maximum
22 flexibility with the application of motors. So instead of
23 erring on the mid side maybe it's more appropriate to go
24 higher on the higher side, as long as you know there's gap
25 there in the technology. So I would say erring on the

1 higher side, on the pump efficiency, is beneficial for the
2 industry.

3 MR. STEFFENSEN: Great. Thank you for the
4 comment. Those are the type of comments we were looking
5 for. What is --

6 MR. GOLLAPUDI: I have one more comment or
7 clarification question. I think CEC has taken the approach
8 of replacement motors regulation. Whereas we know that DOE
9 is taking the approach potentially -- we'll find out next
10 week -- but it's more than likely that they are taking the
11 approach of pool pump motor approach. In which case, would
12 the CEC will be preempted by a DOE motor rule, if there is
13 one?

14 MR. STEFFENSEN: I would not comment on
15 preemption (indecipherable). That's not my specialty.

16 MS. DRISKELL: I can comment, Sean, if you like
17 although I have a lawyer somewhere in the room who will
18 correct me if I'm wrong. So if DOE does do a rule and
19 that rule takes it back, then we would preempted at that
20 point. So there wouldn't be two rules in effect at the
21 same time. You only get one.

22 MR. GOLLAPUDI: Got it. Thank you.

23 MR. STEFFENSEN: I'm trying to respond, but Ken
24 you asked several questions. It was the last question the
25 issue of when standards would apply where if they were a

1 state standard or a federal standard. Again we would want
2 to understand what you think would happen in your comments,
3 under various scenarios. So that's something that we want
4 to understand. And I think the industry will have an
5 insight into that.

6 MR. OSBORNE: Ken Osborne, Regal Beloit. Yeah, I
7 think in follow up we'll have some comments there. I
8 haven't fully vetted that, but I just noticed that the
9 Title 20 current pump regulations will remain in place.
10 And I think there's potential to remaining in the service
11 market for noncompliant pumps to be installed. And our
12 goal is to eliminate the noncompliance to Title 20. And I
13 think there's a gap there that would need to be addressed.

14 MR. STEFFENSEN: Thank you.

15 I would open it up to anyone in the room that
16 would like to make comments (indiscernible) who've already
17 made comments. Please come up the microphone, introduce
18 yourself, and state your organization.

19 MR. GELHAUS: I'm Phil Gilhaus and I represent
20 the Foundation for Pool and Spa Industry Education in
21 Sacramento. And I see two situations here. The primary
22 filter pump, as it's assembled is one issue. And then
23 you've got the replacement motor issue is what today's
24 agenda is.

25 And I'm kind of wondering about there's a

1 component missing in the replacement motor side is the
2 impeller that carries the load on the motor, correct? That
3 would influence the replacement motor and the total
4 horsepower factor. To me, I think that the motor pump
5 manufacturers could possibly make a subassembly where the
6 motor and impeller were coupled and sold as a unit that
7 would couple up to the volute or wed into the pump.

8 Conversely, for the motor manufacturer, maybe
9 they want to include an impeller that marries up to the
10 total horsepower rating and the load that that pump is put
11 under. I don't think that any of that's being considered
12 in this current language. And I think it's a very
13 important factor, especially if the motor is just being
14 purchased as a replacement and the impeller isn't being
15 dealt with at the time of the replacement motor being
16 addressed. This is primarily on a single speed pump, being
17 replaced on a primary filter pump situation. I think
18 there's an issue there that should be reviewed by the APSP
19 Committee in dealing with that.

20 The other thing is that I think there's going to
21 be a huge educational situation occurring with the new DOE
22 ruling and how they want to go with the weighted horsepower
23 factor. We've been teaching total horsepower at FPSIE
24 since back in the inception of -- well at least since 2012.
25 And now we're going to ask the industry to start looking at

1 a new DOE standard with a weighted horsepower factor, which
2 is going to totally change the educational requirement and
3 knowledge within the field. And it's going to create
4 confusion on confusion, in my opinion and with our
5 experience.

6 We've trained by way in California, FPSIE, we
7 have certified over 1,900 what we call certified
8 installers, that don't only take the horsepower, but the
9 total system head in dynamic measurements is part of what
10 we train. And we do that in conjunction with Hayward,
11 Pentair, Zodiac, we work directly with those people.

12 And I think those are a couple of concerns coming from
13 an educational point and interacting with the people who
14 are actually doing the work in the field. That there are
15 going to be some potential issues coming up that should be
16 considered and there should be an education component
17 considered somehow, moving forward to 2021 at the latest or
18 2019 depending on where this falls.

19 That's my comments for the record. Thank you.

20 MR. STEFFENSEN: Thank you. Could I just follow
21 up with one question? This is Sean Steffensen of the
22 Energy Commission. Is it a common product where a motor
23 and impeller are sold together as one (indiscernible)
24 model, is that just part --

25 MR. GELHAUS: Typically, I don't know that the

1 installers -- on the back of every impeller is an embossed
2 part number. And that part number corresponds to the old
3 way of determining the vein depth and diameter that creates
4 the volume that creates the load on the motor, there's a
5 designator on there. I don't know if you quizzed the
6 industry -- and by the way I've been doing this since I was
7 seven years old -- so matching up that impeller number to
8 correspond to the GPM flow rate, I don't think if you
9 quizzed the industry that many of the service trade are
10 educated on that factor, which correlates to the
11 replacement motor load.

12 MR. STEFFENSEN: Great. Thank you.

13 MR. GELHAUS: Does that answer your question, I
14 hope, somewhat?

15 MR. STEFFENSEN: Yeah, I guess what I was fishing
16 for is this another equipment class or do we --

17 MR. GELHAUS: Well, moving forward, I think that
18 the --

19 MR. STEFFENSEN: -- (indiscernible) something
20 that I would go to a pool supply store and see a motor and
21 impeller together in a box?

22 MR. GELHAUS: Yes. And, or there's another way
23 to do it. The OEM manufacturers could make a subassembly
24 where the bracket, the seal, and the impeller are coupled
25 to the motor. And then the service guy doesn't have to

1 know any of these components and it could be coupled up to
2 the volute side of the pump. And no plumbing has to be
3 changed or anything under that kind of a situation.

4 On a variable speed situation, that's a total
5 different motor impeller altogether that I'll let Mr.
6 Farlow have his moment, but that would be a coupled
7 impeller with the variable speed would couple up into that
8 volute of that originally installed pump. The volute has
9 to match up right, though. There is a few little things
10 there.

11 But anyway, I don't want to get too technical. I
12 just think that the impeller and the motor and load is an
13 important factor that needs to be considered, is the bottom
14 line what I'm trying to say. Okay?

15 MR. STEFFENSEN: All right. Thank you.

16 Jeff?

17 MR. FARLOW: This is Jeff Farlow from Pentair.
18 To Phil's comment, I want to point out that we do offer a
19 pool pump motor with seal plate and impeller already
20 installed. The term that we use is power end.
21 So those are currently offered. I don't have data on sell
22 volumes, relative to the pump sales, or just motor sales.
23 We can get that for you. But that configuration is readily
24 available to order.

25 But just to clarify, it would not be totally

1 interchangeably. Somebody could not buy a Pentair power
2 end and put in on a STA-RITE pump, for example. It is
3 specific to a hydraulic package.

4 MR. STEFFENSEN: Okay. Great. Thank you.
5 Scott?

6 MR. PETTY: This is Scott from Hayward. I think
7 just to build on what Jeff said, the energy term power end,
8 those are offered. And so I think Phil raised a good
9 point, that could be another loophole depending on the
10 definition. DOE has defined a pool pump, based off of the
11 strainer basket, so that is a complete pump.

12 Depending how we define motor is maybe literally
13 just the motor itself. And if it is, then power end could
14 potentially fall outside of either one of those and be
15 excluded and be another way to work around. So I think
16 it's a good point he brings up that we may want to either
17 include it in the definition or somehow take it into
18 account.

19 MR. STEFFENSEN: Yeah, thank you. This is Sean
20 Steffensen. And I would like to take a look at some of
21 those and get comments that would identify as what those
22 items are and their characteristics, would be helpful I
23 think.

24 So I'd like to again invite anyone in the room
25 that would like to make a comment. We can go on to the

1 phone lines.

2 MR. NESBITT: Yes. This is George Nesbitt. Can
3 you hear me?

4 MR. STEFFENSEN: Yes, we can. Please go ahead.

5 MR. NESBITT: I'm a HERS Rater for those of you
6 that don't live in the building world with home energy
7 labor. So a couple of things --

8 (Audio difficulties.)

9 MR. STEFFENSEN: Sorry for the technical
10 difficulties. Please go ahead.

11 MR. NESBITT: I --

12 MR. STEFFENSEN: We can hear you.

13 MR. NESBITT: (Indiscernible)

14 MR. STEFFENSEN: Sorry, George. We're having
15 technical -- George, I think we'll come back to you. Is
16 there someone else online? Did Don Lanser want to make a
17 comment? We had trouble earlier.

18 (No audible response.)

19 MR. STEFFENSEN: Okay. Please try indicate your
20 request to make any comments by raising your hand online.
21 Otherwise, use the chat box and we'll go through those.

22 Okay. I think at this point we don't see any
23 comments online. With all the technical difficulties at
24 this point seeing no more comments in the room, we will
25 take a ten-minute break. We will be back at 10:50 to begin

1 the Staff's Portable Electric Spa Presentation. Thank you.

2 (Off the record at 10:37 a.m.)

3 (On the record at 10:52 a.m.)

4 MS. LOPEZ: Good morning everyone. My name is
5 Jessica Lopez. I'm an Energy Analyst here in the
6 Appliances and Outreach Education Office at the Energy
7 Commission. I want to welcome everybody here and those who
8 have tuned in to our third staff report workshop on
9 portable electric spas. Today's workshop will cover recent
10 updates to our proposal that were detailed in the second
11 revised staff that was published on July 12th.

12 Here is today's agenda. First, I will discuss
13 the purpose of this workshop, our updates since the last
14 staff proposal, our proposal in which I'll touch on the
15 scope, the definitions, the test method, the standard and
16 the label requirement; our analysis, which includes
17 technical feasibility, cost effectiveness and statewide
18 energy savings, and then a brief discussion on inflatable
19 spas.

20 After my presentation, I'll discuss what the next
21 steps are following this workshop, mention a few discussion
22 topics to facilitate the comment period. And then a few
23 other speakers will make their formal presentations and
24 finally we'll open it up for comments.

25 The purpose of this workshop is to discuss the

1 changes since the last staff report and to get feedback
2 from the public and stakeholders. The second revised staff
3 report is available online at the link we've provided on
4 this slide. The report contains details of the proposal
5 that will be presented today.

6 Within Title 20 of the California Code of
7 Regulations, there is a test method and a maximum standby
8 power standard for spas. Our proposal is to update the
9 test procedure to an industry accepted test method, update
10 the standby power standard, and add a label requirement.
11 The proposed items that have not changed from the previous
12 staff proposal are the definition for portable electric
13 spas, the addition of the terms exercise spas, combination
14 spas, and standby mode. And the proposed standby power
15 standard will also remain the same and apply to all
16 portable electric spas.

17 New changes since the previous staff proposal are
18 clarifying the test method for combination spas, the
19 addition of the terms rated capacity, rated volume and fill
20 volume, new data submittal requirements, updating the value
21 limits on the performance bar and some of the wording on
22 the label. And we've also updated the label requirement
23 for combination spas. And I'll go through each of these in
24 more detail in this presentation.

25 So the scope, since the last proposal remains

1 unchanged. The definition would maintain the existing
2 broad definition. That includes storable or inflatable
3 spas, flexible or soft spas, traditional spas, exercise or
4 swim spas, and combination spas as illustrated on this
5 slide.

6 A portable electric spa as currently defined,
7 means a factory built electric spa or hot tub supplied with
8 equipment for heating and circulating water. Staff has
9 previously proposed to expand on this definition, but we
10 believe the definition as it exists is clear and suitable
11 and will remain unchanged. Thus all portable electric spas
12 are still regulated.

13 The proposed definitions for exercise spa,
14 combination spa, and standby mode are as follows:

15 For exercise spa, also known as a swim spa, the
16 definition will be a portable electric spa designed to
17 produce a water flow intended for water therapy or
18 recreational physical activity including, but not limited
19 to, swimming in place.

20 For combination spa, or combo spa, the definition
21 will be an exercise spa with multiple reservoirs capable of
22 heating each body of water.

23 And for standby mode, the definition will state
24 that only default settings, as shipped by the manufacturer,
25 are enabled except water temperature, which may be adjusted

1 to meet the test conditions. No manual operations are
2 enabled as defined in ANSI APSC-ICC-14-2014. These
3 additions provide clarification and elaborate the scope.

4 The proposed additional definitions include rated
5 capacity, rated volume, and fill volume.

6 For rated capacity the definition will be the
7 number of people capable of fitting in a portable electric
8 spa as specified by the manufacturer.

9 For rated volume the definition will be the rated
10 capacity of the portable electric spa, in gallons as
11 specified by the manufacturer on the spa, on the spa
12 packaging, or the spa marketing materials.

13 And for fill volume, the definition will be the
14 water capacity of the portable electric spa in gallons, at
15 the halfway point between the bottom of the skimmer opening
16 and the top of the spa. In the absence of the skimmer, the
17 water capacity is six inches below the top of the spa.

18 These terms are meant to support the items that are
19 represented on the label and the data being requested
20 during certification.

21 The proposed test method will continue to be
22 ANSI/APSP ICC-14 Version 2014, but with a clarification for
23 combination spas. Which will state, for combination spas
24 each reservoir will be powered on simultaneously and heated
25 to the appropriate temperature, according to the test

1 procedure for the entire duration of the tests.

2 Our proposal to update the standby power standard
3 has also remained the same for spas manufactured on or
4 after January 1st, 2006. And before January 1st, 2019 the
5 standby standard is five times the volume to the two
6 thirds. For spas manufactured on and after January 1st,
7 2019, the standby power standard is 3.75 times the volume
8 to the two-thirds, plus 40.

9 For combination spas, each reservoir must meet
10 the proposed standard in order for the entire unit to be
11 compliant. The proposed standard tightens power
12 consumption on larger spas and provides a modest relief for
13 smaller spas.

14 The proposed label requirement will inform the
15 consumer at the point of sale that the unit meets
16 California's appliance efficiency standard and is certified
17 to be sold in California. Informed consumers will lead to
18 energy savings by allowing consumers to choose a more
19 efficient unit.

20 The label closely resembles the original label in
21 the proposed test method. The label includes a few
22 modifications since the previous staff report, which are
23 highlighted on this example. We've clarified the label
24 will show the rated volume and not the fill volume. And in
25 response to comments we've received from the previous staff

1 report, staff changed the boundary limits on the
2 performance bar illustrated on the label to remain fixed as
3 opposed to a function of volume. Because a performance bar
4 based on the function of volume will skew the measured
5 standby power to the right, reducing the effectiveness of
6 the label to visually illustrate the range of energy
7 efficiency.

8 Next, we provided a formula for how the total
9 annual power consumption is calculated. We've also
10 included a citation California Code of Regulations Title 20
11 Section 1608(a), to inform consumers that this unit and spa
12 cover combination is compliant with the regulation.

13 In our previous staff report, we proposed a
14 separate label for portable electric spas, exercise spas
15 and combination spas. In response to the comments we
16 received from the previous staff report, staff has reverted
17 to using two labels, one for portable electric spas and one
18 for exercise spas.

19 Combination spas will be labeled both with --
20 we'll be using both labels, one for the spa portion and one
21 for the swim portion. The labels shall display the
22 manufacturer and model number of the spa cover used during
23 testing and indicate the spa cover is allowed for sale with
24 the unit, in accordance with California Code of Regulations
25 Title 20 Section 1608(a). And finally, the label must be

1 removed by the consumer only.

2 Here's an example of the proposed labels, one for
3 a portable electric spa and then one for the exercise spa,
4 and then one -- so the portable electric spa label will be
5 used for the combo spa portion. And then the exercise spa
6 label will be used for the swim portion of the spa.

7 The label includes the rated volume, the standby
8 power resulting from the test procedure, the maximum
9 allowable standby power, an estimate of the annual power
10 consumption, the spa cover manufacturer and the spa cover
11 model.

12 Data submittal requirements, the table shown in
13 this slide is Table X, which shows the data submittal
14 requirements when certifying to the appliance efficiency
15 database or MAEDBS. The additions and alterations are the
16 ones highlighted in yellow. Manufacturers shall identify
17 the spa type, the test and spa cover model number, the test
18 and spa cover manufacturer, state weather if the spa cover
19 is insulated, the voltage, the rating capacity, state
20 whether the spa enclosure is fully insulated, the rated
21 volume, the fill volume and then the normalized standby
22 power.

23 For models tested with more than one cover, only
24 the covers that result in compliance may be sold with the
25 unit at the point of sale to the consumer, which is

1 congruent with the language that exists in Section 1608 of
2 the California Code of Regulations Title 20. Which
3 requires that the unit is sold with only and all
4 components, design characteristics and other features that
5 effect energy or water consumption as the units are tested
6 under the specified test procedure, and for which
7 information was submitted to the database.

8 For the sake of the label, only the cover that
9 yields the maximum standby test result shall represent the
10 model on the label. And all unit and spa cover
11 combinations that pass the standby power standard shall be
12 certified to the appliance efficiency database.

13 The feasibility of our revised proposal relies on
14 the data we've received in our appliance efficiency
15 database. The data represents entries certified through
16 the Energy Commission as of March 2017. During this time,
17 more than 1,300 entries were in the database however only
18 approximately 960 entries are used for this analysis due to
19 anomalies in the data set.

20 More than 94 percent were traditional spas, 5
21 percent were exercise spas and less than 1 percent were
22 combo spas.

23 The chart displayed on this slide shows the
24 feasibility of these models against the proposed standard.
25 The blue curve is the current standard. The red curve is

1 the proposed standard. And the green dots symbolize the
2 models certified in our database. Noncompliant models are
3 those above the red curve and compliant models are those
4 below the red curve.

5 So the compliance for traditional spas is about
6 79 percent, 58 percent for exercise spas, and 43 percent
7 for combo spas.

8 I want to make a note that the percentages for
9 exercise spas and combo spas do not account for the change
10 in testing temperature, but the new test procedure proposes
11 for exercise spas and the swimming portion of combination
12 spas, which reduces the testing water temperature by 15
13 degrees. So the compliance rates could be higher for both
14 exercise spas and combo spas.

15 Also taking a closer look at the chart, you can
16 see that the proposed standard provides some relief for
17 smaller spas with a volume capacity less than 180 gallons.

18 Staff still believes, based on the data sets that
19 we have in our database that improvements can be made in
20 the market. Products may increase their efficiency by
21 using better insulating practices or insulation materials,
22 improving spa cover designs or insulation materials within
23 the spa cover, incorporating radiant barriers and improving
24 the controls.

25 In addition, the proposed standard test method,

1 the proposed standard and test method are performance based
2 and technology neutral and are accepted by the industry.

3 Cost effectiveness. Our methodology for cost
4 effectiveness is still based on the reports and studies of
5 the differences between a noncompliant spa and a compliant
6 spa. The life cycles include incremental costs that can
7 make it more efficient and the label costs. The cost for
8 traditional portable electric spas of \$100.38 per unit.
9 For exercise spas, the costs are \$200.38 per unit. And the
10 cost for combo spas is \$232.50 per unit.

11 Since the study we reference for incremental
12 costs did not distinguish between traditional and exercise
13 spas, we looked at the price difference of the units in the
14 market and we scaled the incremental costs to that. Based
15 on a ten-year design life, we see that energy savings
16 exceeds the life cycle cost.

17 The estimated total savings is 12 gigawatts after
18 the first year and approximately 145 gigawatts per year
19 after full stock turnover, which is equivalent to almost
20 \$27 million. The energy savings is based on two factors:
21 the savings between noncompliant spas and compliant spas
22 and the savings from requiring a label.

23 So I want to address inflatable spas. Since our
24 previous staff report, we did receive some comments that
25 provided new information, so I do want to address those

1 today. Respondents indicated inflatable spas are intended
2 for seasonal use. That is six to seven of the warmest
3 months of the year, due to possible damage to the
4 inflatable spa material and the pump, when outdoor
5 temperatures are below 40 degrees Fahrenheit.

6 However the California minimum average
7 temperature is above 40 degrees Fahrenheit allowing these
8 units to operate beyond the seasonal use in some regions.
9 We also received the docketed test lab report showing a
10 model with a capacity of 210 gallons resulted in a
11 normalized standby power of 469 watts when the maximum
12 allowable standby power is 176 watts for a spa of this
13 capacity. That's roughly three times more than a
14 traditional spa.

15 Staff believes the intended use and operational
16 use are similar to regular spas. For example the water
17 temperature in an inflatable spa is capable of reaching the
18 same temperatures as a ridged spa, so from 60 degrees
19 Fahrenheit to 104 degrees Fahrenheit.

20 Also, the proposed standard again provides relief
21 for smaller spas below 180 gallons. And inflatable spas in
22 the market have a volume capacity that ranges from 130
23 gallons to more than 260 gallons.

24 The proposed standard and test procedure are
25 technology neutral and performance based. That is the

1 regulations do not restrict manufactures to design their
2 spas to specific physical parameters or components.

3 That concludes my presentation for what was in
4 the staff report. I briefly want to go over what the next
5 steps are following this workshop, through the diagram of
6 the rulemaking process.

7 The green call-out symbol indicates that there is
8 an opportunity for public participation. We are currently
9 in the stage indicated by the blue box. We are within the
10 45-day comment period that started when the second revised
11 staff report was published on July 12th of this year.

12 And during this workshop we are seeking comments
13 from the public and stakeholders. The next step is to
14 analyze and address the comments received. And if there
15 are no major changes, we will prepare a standardized
16 regulatory impact assessment indicated by the yellow box.

17 So here are a couple of discussion items that we
18 thought of. Do manufacturers see any recent improvement
19 trends in the spa market? How are small spa businesses
20 affected by the staff proposal? And these are just some
21 questions to help facilitate the discussion during the
22 comment period.

23 And then just as a reminder, comments are due by
24 5:00 p.m. on September 1st. The docket number for this
25 appliance type is 15-AAER-02. Comments can be sent

1 electronically to the link shown on this slide or you can
2 send hard copies to the Dockets Office. Or you can send
3 digital copies to the docket email address.

4 This concludes my presentation and my contact
5 information is on this slide. Please feel free to contact
6 me with any questions or concerns. We will proceed to
7 formal presentations, followed by a comment period. But I
8 will allow some time for clarifying questions. Any general
9 statements or comments should be held for the comment
10 period.

11 And I'll take questions now in the room first.
12 Do we have anyone online?

13 (No audible response.)

14 All right. So our next presenter is Chad and
15 Charles Kim.

16 MR. KIM: Can you hear me?

17 MS. LOPEZ: Yes. We can hear you.

18 MR. KIM: Hello. Okay. Thank you. I'm Charles
19 Kim of Southern California Edison Company. I'm speaking on
20 behalf of the California Investor Owned Utilities.

21 Spas have been regulated since January 1st, the
22 year 2006. Almost 12 years have passed since then. And we
23 together have another milestone about (indiscernible), but
24 it should be energy efficiency standards for spas.

25 California IOUs thoroughly reviewed the latest

1 staff report. And I must say it is well written and
2 clearly demonstrated the cost effectiveness of a proposed
3 energy efficiency updates. And certainly, technically
4 feasible as demonstrated by the CEC staff.

5 I would like to point out three major goals that
6 CEC has been trying to achieve here. First, clarification
7 of definition. Second, updates on the energy efficiency
8 standard with (indiscernible) for small spas. And third,
9 label requirements, so that everyone can see, which is a
10 qualifying product and which is not. And that so people
11 have choices. Our customers have choices of buying more
12 energy efficient spas. And label requirements, so they can
13 achieve that.

14 Therefore California IOUs support all three major
15 goals of this proceeding and look forward for a formal
16 rulemaking. This proceeding will certainly benefit all
17 Californians.

18 I'm here with the Chair today. And he will go
19 over very specific items. Thank you CEC for leading this
20 effort and once again thank you very much for a well
21 written, well thought staff report. I greatly appreciate
22 all of you. Thank you so much.

23 MS. LOPEZ: Thank you Charles. Next, we have
24 Chad.

25 MR. WORTH: Can you hear me?

1 MS. LOPEZ: Yes. We can hear you.

2 MR. WORTH: Great. Audio is a much better
3 response, so good afternoon. Again, my name is Chad Worth
4 as Charles mentioned, with Energy Solutions on behalf of
5 the California Investor Owned Utilities. Next slide.

6 As Charles mentioned, the IOUs have been involved
7 in spa energy efficiency for a number of years. We were he
8 first to propose a case study for portable electric spas
9 back in 2004. These standards then first took effect in
10 2006. There were some questions about how spas were
11 performing in the market and the IOUs worked to commission
12 a study at Cal Poly in 2008, to verify the test procedure
13 and savings. And then in 2012, this rulemaking began with
14 CEC asking for a labeling proposal. Next slide.

15 As most of you know, the current standard is the
16 normalized standby power shall not be greater than the five
17 time volume to two-thirds and we'll get to the proposed
18 standard in a minute. Next slide.

19 With regards to this current rulemaking on July
20 2013, IOUs submitted a labeling proposal to the CEC. About
21 a year-and-a-half later, the CEC asked -- or sorry, not a
22 year-and-a-half, that should be January 2014, CEC held a
23 public meeting asking for a standards proposal in addition
24 to a label.

25 At that point, we engaged with the APSP 14

1 Committee to negotiate what a label might look like as well
2 as an updated standard level. And on May 15th, we got
3 docketed the CASE report reflecting this consensus. The
4 APSP Group took the lead and went ahead and published a new
5 updated APSP ANSI standard in 2014 that reflected this new
6 level and the label. And we've continued to participate in
7 the last two staff workshops and provide comments in
8 February 2016 and July 2016. Next slide.

9 Through these various staff reports and iterative
10 process, we believe the proposal has improved
11 significantly. A number of the issues have been resolved
12 and with that we support the staff proposal alternative 3
13 and believe that the standards are cost effective and
14 achievable. And will lead to significant savings as is
15 pretty much been highlighted.

16 Three important changes that this staff report
17 makes is the clarification of the definition, the updated
18 standby standard, and then the label. Next slide.

19 Again, the current definition of portable
20 electric spa, means the factory built electric spa or hot
21 tub supplied with equipment for heating and circulating
22 water, CEC staff has clarified this definition covers
23 traditional, storable exercise and combination spas. Next
24 slide.

25 Strengthening the standby standards, again we

1 worked with the APSP 14 Committee and went through a
2 variety of numbers to come up with the new standard , based
3 on the staff report I believe, more than 75 percent of
4 models in the database will meet the proposed standard.

5 Next slide.

6 When we first got started with the labeling
7 design, the IOUs proposed two different label types just to
8 get the conversation started. Though after working with
9 the APSP Group, it evolved into the current design. Next
10 slide please, which you see here and saw in the previous
11 presentation there've been a number of minor tweaks to this
12 label, of which I don't need to go into in depth. But in
13 terms of how the ranges are set, how it applies to
14 combination and exercise spas versus portable electric
15 spas, how we referenced the cover and whatnot. A lot of
16 these little things have been fixed over the last couple of
17 staff reports. And we think it's in a very good place at
18 this point. Next slide.

19 So with that, we'll continue to participate in
20 the conversation here and if there are other issues we'll
21 be certainly willing to bring those to the CEC's attention
22 in our written comments. But at the time we just thank the
23 staff for the staff report and look forward to the formal
24 rulemaking process getting started. Thank you.

25 MS. LOPEZ: Thank you, Chad.

1 Then next we have Mathew Vartola from Bestway.

2 MR. VARTOLA: All right. Good morning everyone.
3 Before I get started with today's presentation, I'd just
4 like to take this opportunity to thank Ms. Lopez and her
5 team number one, for their attentiveness to our questions
6 and concerns during this process and also their attention
7 to detail in understanding our product and our concerns as
8 an industry.

9 There's no doubt that the proposed regulation
10 that the CEC has brought forward does incur very good
11 energy savings when it comes to the portable spa category.
12 However, we have found ourselves once again locked out of
13 the California market with our inflatable spa product. And
14 we would like to bring forth a proposal to try to meet in
15 the middle.

16 So for those of you who are not familiar, the
17 product that I am talking about now is an inflatable spa.
18 Basically an inflatable spa is a spa that is sold in retail
19 in very compact retail packaging that consumers can easily
20 load into their shopping carts and take home with them. It
21 comes with basically two parts, which is an inflatable spa
22 tub and a integrated filtration system, which includes
23 filtration, heating and air jet capabilities.

24 Most spas that you find in the market are between
25 135 to 250 gallons of water capacity and reach a max

1 temperature of 104 degrees.

2 So with the inflatable spa industry, who really
3 benefits from this type of product? First and foremost is
4 the low-income consumer. These products usually range
5 anywhere between \$300 and \$600, compared to the thousands
6 of dollars that one might pay for a hard-sided portable
7 spa. So obviously the investment on the consumer side
8 initially is a lot less and a lot more manageable for those
9 who do not have the ability to afford a hard-sided spa.

10 People in the renters markets, so if you are not
11 a homeowner, you are maybe staying in a place temporarily,
12 an inflatable spa is a perfect solution. You do not need
13 to hard wire the spa to any type of electrical system in
14 your home. It is just a 110 volt plug and play system that
15 allows you to easily set up and easily take down when
16 needed.

17 Retailers, so when you look at your standard big
18 box regional retailers, a spa product is something that
19 they usually don't sell. However, the inflatable spa
20 offers them a perfect opportunity to reach that market and
21 to benefit from this type of product, going out to
22 consumers.

23 And last, but not least, the spa industry. So a
24 product like this we see as a stepping stone product.
25 Those people or families who are interested in possibly

1 investing in a spa, but don't know if they're going to be
2 using it often enough or not sure if the kids are going to
3 like it, this presents a perfect opportunity for them to
4 make a low-cost investment to test out, to see if a spa is
5 really something that their family would like. And then
6 therefore can make the decision with more confidence about
7 investing up to a more permanent hard sided solution.

8 So just some additional product information for
9 you, I know Ms. Lopez covered some of this, but usually the
10 lifespan on this spa is around three years. We do not see
11 very many cases in which a consumer will be able to use
12 this product more than three years due to really the
13 inflatable nature of the spa liner itself. Taking it up
14 and bringing it down does have some wear and tear and three
15 years is really what we see as the average of life span.

16 Seasonal use, what we see is more or less six to
17 seven months. Because of the limitation on temperature any
18 time you reach a situation where the temperature drops
19 below 40 degrees, it doesn't matter if it's an average
20 temperature or just a couple of days that this happens, the
21 PVC liner of the spa is jeopardized. It will become
22 cracked if temperatures get low enough and therefore
23 rendering the spa useless.

24 And then just the California market size, so what
25 we estimate back in 2015 the last time these spas were

1 legally allowed to be sold in California, the rough market
2 size was about 15,000 units amongst consumers. So to the
3 right here I just have a basic chart here, just letting you
4 know kind of comparatively what an inflatable spa looks
5 like compared to a hard side portable spa. So you can see
6 it's a lot less of a product, a much more simplified
7 product, and a lot lower of a price point.

8 So you know I think one thing that we often times
9 overlook when we get into these discussions. We're talking
10 a lot of data points. We're getting into a lot of
11 industry specific information, but we lose sight of the
12 consumer satisfaction.

13 Now, what we've done, we've run kind of a small
14 cross section of consumer reviews as an industry on
15 Amazon.com and WalMart.com. And when you just run a very
16 basic search, searching for the word "affordability", you
17 find quite a lot of satisfied customers calling out the
18 fact that they are very happy with their purchase just
19 based upon the fact that it was a low price point. They
20 wanted a spa, however they didn't want to pay thousands of
21 dollars for it. So therefore, they bought an inflatable
22 spa.

23 I'm not sure if any of you sell products on
24 Amazon or any other online retailer, but getting the five
25 star review in general is not a very easy thing to do.

1 People will tell you millions of reasons why they don't
2 like your product and not tell you why they like it.
3 However, we found that the affordability aspect is
4 something that people are very more than willing to go out
5 and let us know about. So rather than go through all
6 these, I would just like to leave these in the presentation
7 for the Commission's consideration. So you can see five,
8 four star reviews, going down the board here.

9 So this brings us to where we currently stand
10 with inflatable spas based upon Title 20 regulations.
11 Based upon the revised report that was recently published,
12 inflatable spas are categorized amongst the greater
13 category of portable spas. What does that do? It brings
14 inflatable spas to a test standard that is impossible to
15 meet based on the characteristics of an inflatable spa.
16 You have a product that is inflatable PVC, so naturally
17 there's going to be a higher rate of convection when the
18 heat during the standby power testing just goes out the
19 side walls. So as an industry, as the product currently
20 stands, it is unable to come even close to those standards.
21 And we recognize that.

22 So what we're looking to do and what we hope can
23 be the result of these meetings and conversations is to
24 meet the CEC in the middle. Now, if you look to the chart
25 on the right side here, inflatable spas as they currently

1 stand, you're going to see around 500 watts in normalized
2 standby power when it comes to the test method that the CEC
3 runs. We completely understand that it's something that is
4 not aligned with the goals of the CEC. However, what we
5 are willing to do and through the past years of research
6 and development amongst the industry, we feel comfortable
7 with proposing a normalized standby power rate of 250. The
8 176 or 168 as I highlight here, that is the current maximum
9 that the CEC allows, is just impossible to meet. It
10 changes the whole nature of the inflatable spa and all the
11 benefits that go along with it.

12 Now one aspect that the CEC is concerned about is
13 the definition and possible loopholes that could be
14 discovered in breaking out definitions between a storable
15 spa, let's call them, and portable spa. So in
16 collaboration with APSP 15, we developed a definition that
17 we feel comfortable proposing in offering a separate
18 category for these types of products. I'll go ahead and
19 read it verbatim here.

20 "A free standing storable product, utilizing a
21 collapsible main structure to form a vessel." This
22 structure is capable of being disassembled, folded and
23 stored during extended periods of non-use. Storable
24 electric spas are supplied with a cord connected equipment
25 package that integrates the pump, heater, blower and/or air

1 jet pump for water circulation, heating and sanitization.
2 Storable electric spas are not designed or intended for
3 long term use.

4 So what do we see as the advantage of this
5 proposal? So where it currently stands, the annual energy
6 consumption is reduced from the CEC calculated \$59 per
7 month, which annualized comes out to \$34.41 by using the
8 seven-month period to a \$29 per month or \$17 per month
9 annualized energy cost.

10 When looking at the total energy consumed from
11 the estimated 15,000 units that we previously had seen in
12 the market, it would be a reduction of what we currently
13 have as 39.6 gigawatts of power per year to 19.8. So this
14 19.8 number would represent roughly 1.42 percent of the
15 total projected 2019 energy use of portable spas. And when
16 you look at the actual volume of inflatable spas versus the
17 greater category of portable spas, our product represents
18 about 2 1/2 percent of the product in commerce, where our
19 energy usage would only represent around 1 1/2 percent. So
20 in general over the product lifespan the consumer would
21 expect to pay around \$612 of electricity over the product
22 life cycle.

23 So, in conclusion, what we hope that the
24 Commission can consider is that the proposed definitions
25 and grouping of inflatable storable spas will allow number

1 one, the product to be offered to that low-income renter
2 consumer that just doesn't want to make that investment
3 into a hard sided thousand plus dollar spa. You know,
4 there's no reason why we think that a spa should be a
5 luxury item that is only available to be purchased by the
6 economically privileged.

7 A spa should be a product that is widely
8 available to the general population. So we humbly ask for
9 the Commission's consideration in our proposal and our
10 willingness to meet you guys in the middle, to be able to
11 allow these inflatable spas to be sold in the market.
12 Thank you.

13 MS. LOPEZ: Thank you, Matthew.

14 Next, we'll open it up for general comments or
15 statements. I'll first begin with those in the room.

16 MR. COELHO: Am I on?

17 MS. LOPEZ: Go ahead and speak a little bit
18 louder.

19 MR. COELHO: Is that better?

20 MS. LOPEZ: Yeah.

21 MR. COELHO: My name is Nathan Coelho from Master
22 Spas. Not much to say, I just wanted to thank the CEC for
23 all the efforts they've put into this so far. And I very
24 particularly want to commend the CEC for deciding to define
25 swim spas so that there is clarity on the market for

1 whether or not that product is required to be compliant.

2 So that's all I've got.

3 MS. LOPEZ: Thank you.

4 Anyone else in the room? If not, is there anyone
5 online?

6 (No audible response.)

7 All right, since there's no more comments we're
8 going to head out for a lunch break. And we'll return --
9 hold on.

10 MS. DRISKELL: We'll very briefly cover next
11 steps in case anyone is planning on leaving after this
12 session.

13 MR. STEUBEN: Kristin, before you move on, Chad
14 did have question and was trying to connect through the
15 line.

16 MR. WORTH: Hello?

17 MR. STEUBEN: Yeah. Go ahead, Chad.

18 MR. WORTH: Okay. Matthew, thank you for your
19 presentation and crunching some of the numbers there.
20 Perhaps I missed it or you went over it quickly, what are
21 the technology improvements you see inflatable spas
22 adopting to meet the level of energy reduction you're
23 proposing?

24 MR. VARTOLA: Yes. This is Matt with Bestway.
25 We have advancements in the way that we construct the

1 covers. There is a level of insulation that can be placed
2 within the spa walls that still keeps it inflatable and
3 storable and that basically covers it, so with the covers
4 and the walls themselves.

5 MR. WORTH: Okay. Thank you.

6 MS. DRISKELL: Thanks, Chad.

7 So for anybody who's done with us for today, the
8 next step in this process is to receive comments on the
9 staff report, comments are due at 5:00 o'clock p.m. on
10 September 1st. I will pull up that slide again before we
11 leave.

12 After we receive your comments we will take a
13 look and decide if we need to revise the staff analysis and
14 hold another workshop or move forward with the revised
15 staff analysis into the standardized regulatory impact
16 assessment stage of this rulemaking shown on the bottom
17 left-hand side of the screen.

18 If you'd like to submit comments, comments again
19 are due 5:00 o'clock p.m. September 1st. You can submit
20 them electronically on our website, through our e-
21 commenting feature. Or you can send a hard copy to our
22 Dockets Office to docket number 15-AAER-02. Or you can
23 send a digital copy to docket@energy.ca.gov.

24 We'll now break for lunch. We'll start our next
25 session with commercial clothes dryers at 1:00 o'clock p.m.

1 Thank you everyone.

2 (Off the record at 11:32 a.m.)

3 (On the record at 1:02 p.m.)

4 MR. ELLIOT: My name is Ed Elliot. I'm a Senior
5 Engineer with the Codes and Standards Group for PG&E and
6 today we're representing the California IOUs. I'd like to
7 thank Shawn, Ryan and Jessica and Kristen for inviting us
8 here today.

9 And what we need to do at this time is present an
10 hour presentation for the California IOU Commercial Clothes
11 Dryer Test Procedure. So at this time I'd like to
12 introduce our Consultant, Suzanne Foster Porter of Kannah
13 Consulting. Suzanne?

14 MR. NELSON: Thank you, Ed.

15 I'm going to give a short presentation and then
16 I'll hand it back over to the California IOUs and the
17 testing.

18 MR. ELLIOT: That's right,

19 MR. NELSON: Great.

20 Thank you everyone for joining us this afternoon.
21 My name is Ryan Nelson. I'm a Senior Mechanical Engineer
22 with the Appliance Outreach and Education Office. Today
23 we'll be discussing the Draft Commercial Clothes Dryers
24 Testing Certification and Marking Requirements.

25 Can everybody hear me online?

1 (Off mic colloquy to set up audio.)

2 MR. NELSON: Let me start over. Welcome
3 everyone. My name is Ryan Nelson. I'm a Mechanical
4 Engineer with the Appliances Outreach and Education Office.
5 In this afternoon's session we'll be discussing the Draft
6 Commercial Clothes Dryer's Testing Certification and
7 Marking Requirements.

8 Today's agenda for this topic will cover the
9 purpose of this workshop, the staff proposal will highlight
10 some discussion topics to generate discussion, and then
11 next steps. And then we'll hand it over to stakeholder
12 presentations.

13 The purpose of today's workshop is to review the
14 staff proposal for commercial tumble clothes dryers.
15 Hopefully all stakeholders and everybody in the room has
16 had a chance to review the report. The Commission, the
17 Energy Commission is seeking comments regarding the
18 proposed testing, certification and marking requirements.
19 The draft staff report can be located at the following link
20 in the presentation.

21 A little history, commercial clothes dryers have
22 been an interest for several years now dating back to March
23 14th, 2012 when the Order Instituting Rulemaking was
24 released. This OIR included among other appliances
25 commercial clothes dryers. In March 2013 the Phase 1

1 invitation to participate was released, which also included
2 the commercial clothes dryers.

3 Following the invitation to participate proposals
4 were submitted by stakeholders for consideration. After
5 further evaluation the Energy Commission determined that
6 additional information would better support this
7 rulemaking. And on May 28th, 2014 the Energy Commission
8 requested additional information. In January of 2015, the
9 California Investor Owned Utilities case team submitted a
10 revised draft proposal. This proposal had recommended at
11 the time the use of U.S. DOE, the U.S. Department of Energy
12 test procedure with modifications. It was later suggested
13 that a test procedure specifically for commercial tumble
14 clothes dryers would be appropriate.

15 And that leads us to this year, 2017. On
16 February 7th, 2017 the California IOU CASE team submitted a
17 test procedure and proposal. On June 30th a revised
18 version was posted to the docket and it's Version 2.6.
19 This version included updated energy calculations and made
20 a few other refinements.

21 And that brings us to the staff proposal. So why
22 are we here today? Why are we recommending a test, a
23 certification, a marking requirement for commercial tumble
24 clothes dryers? It is estimated that over 500,000
25 commercial dryers operate in laundromats, hotels, motels,

1 multi-family complexes and other commercial industrial
2 applications throughout California.

3 It's estimated these dryers consume 900 GWh of
4 electricity and 260 million therms of natural gas per year.
5 That's costing an estimated \$440 million to operate.

6 Testing certification and marking will help
7 provide consumers with valuable information to aid in
8 decisions in purchasing new and replacement equipment. And
9 provide data for use in a future rulemaking for a possible
10 energy standard.

11 This figure provided from the CASE team, which
12 they'll cover further in their presentation this afternoon.
13 Just as a quick illustration of current models that have
14 been tested, it illustrates ten models grouped by a
15 capacity range indicated by the gray bars. You have 30
16 pound, 55 pound, 75 pound and 120 pound capacity ranges
17 have currently been tested.

18 And just to highlight the difference in
19 efficiencies of dryers within a certain capacity range, if
20 you look at the 30 pound gray bar the dots, the solid dots
21 indicate one run of -- there are six runs that have been
22 tested in the proposed test procedures. That solid dot
23 indicates one run each and then the (indiscernible)
24 indicates an average of all runs. The bar connecting just
25 the -- connects the extremes for that one dryer. So you'll

1 see the two different dryers there in the 30-pound range.
2 That's approximately a 50 percent difference in energy, a
3 combined energy factor for those two dryers tested within
4 that capacity range.

5 The results show there could be substantial
6 efficiency improvements made for commercial clothes dryers
7 in the market of California.

8 Staff proposal scope, currently the scope is
9 stated in the draft report, draft staff report. Our
10 commercial dryers included within the scope will be a
11 commercial tumble clothes dryer with a capacity greater
12 than six cubic feet drum volume and less than or equal to
13 65 cubic feet.

14 These pictures indicate a wide range of types of
15 dryers included within the scope. All the way on the left
16 of the screen, looking like a residential-type dryer, the
17 coin-operated for a laundromat and multifamily, and
18 increasing in size as we go across to the right to your
19 larger on-premises laundry commercial tumble clothes
20 dryers.

21 Definitions, clothes dryer means a cabinet-like
22 appliance that is designed to dry fabrics in a tumble-type
23 drum with forced air circulation and that has a drum and
24 blower driven by an electric motor.

25 Definition of a commercial tumble clothes dryer,

1 means a tumble clothes dryer not covered by 10 C.F.R. part
2 430.32(h) and that has a capacity larger than 6.0 cubic
3 feet drum volume and less than or equal to 65 cubic feet
4 drum volume.

5 Test method, so existing test methods and I may
6 have a correction on this slide of a conversation earlier
7 this afternoon at lunch. However, these all apply to
8 residential clothes dryers, the U.S. Department of Energy
9 has a standard test procedure referred to as DOE 2015; the
10 Australian/New Zealand standards AS/NZS 2442.1; the
11 American National Standard Institute and Association of
12 Home Appliance Manufacturers or ANSI/AHAM HLD-1: 1992. And
13 the International Electrotechnical Commission or IEC
14 121:1991.

15 After review of these test procedures, and
16 previous rulemaking efforts it was determined that a new
17 commercial clothes dryer test procedure would be
18 appropriate. That leads us to the staff proposal to adopt
19 the California Investor Owned Utilities Codes and Standards
20 Enhancement or CASE, "Energy Efficiency Test Procedure for
21 Commercial Clothes Dryers" Version 2.6, docketed June 30,
22 2017.

23 The California investor owned utilities and their
24 representatives will make a more detailed presentation
25 regarding the test procedure following this presentation.

1 Reporting requirements, the proposed reporting
2 requirements in the draft staff report include the
3 following listed in the table and I'll go down the list.
4 Energy source, measured drum capacity, load size drum
5 capacity, load weight capacity in pounds, gas heat input,
6 electric heat input, voltage, combination washer/dryer,
7 automatic termination control, combined energy factor or
8 CEF. Elow; and PS, which would be power standby; PN, which
9 would be power network mode, PW would wrinkle mode, and
10 Poff would be power in off mode. And then power factor
11 which would be an average power factor.

12 The last four listed here would be reported as
13 indicated by the asterisk for the runs completed as
14 prescribed under the test procedure. So the weight of the
15 run for runs AB, C, D, E and F. So I've abbreviated the
16 table that will be a reporting of these four items for each
17 run as shown below the table.

18 MR. MESSNER: Hey, Ryan? Is it okay if I just
19 ask a quick question on that or no?

20 MR. NELSON: Can we hold it until -- just I'm
21 almost done (indiscernible) --

22 MR. MESSNER: Okay. It was just a clarify
23 something, but okay. No problem.

24 MR. NELSON: You'll also notice along with energy
25 and weight we are requesting the reporting of the time to

1 run each cycle during the test procedure. This is to allow
2 a comparison of efficiency versus time to complete the test
3 run, so we're not just looking at efficiency values. We're
4 also evaluating how long it takes to complete the task.

5 So here's some discussion topics. Are the
6 capacities proposed as in scope reasonable; as in 6 cubic
7 feet to less than or equal to 65 cubic feet? Is
8 application of the test procedure clear? Are the number of
9 runs per test enough to capture the energy consumption of
10 the appliance?

11 I would appreciate for all comments made today to
12 please support your comment and that concludes my
13 presentation for dryers. Our next steps in the rulemaking
14 process, as mentioned earlier this morning we're here to
15 discuss the draft analysis. And the next step for if there
16 are revisions we revise the draft staff analysis with
17 feedback and move on through the public participation
18 process.

19 Comments can be sent and docketed until September
20 1st at 5:00 p.m. The docket for commercial clothes dryers
21 is 17-AAER-01. You can eFile at the link shown on the
22 screen or email them directly to docket@energy.ca.gov. Or
23 if you prefer to send a paper copy send it to the address
24 shown below.

25 To reiterate comments made this morning on

1 confidential information, if you wish to submit
2 confidential information please contact us prior to
3 submitting any data or information. Anything submitted
4 prior to determination of confidential status would be
5 public record.

6 Okay. Yeah, I'll take one question.

7 MR. MESSNER: Thanks, just on the reporting
8 requirements two questions actually. The energy source, is
9 that electric versus gas there but it says kilowatt hours.
10 I was just confused by the energy. Is that the energy use
11 or energy source, because a lot of times you have the
12 energy which is gas or electric.

13 MR. NELSON: No, I'm sorry, gas or electric. It
14 looks like I clipped it off when I shortened the table, so
15 it would be the source gas or electric.

16 MR. MESSNER: Okay. And then so then the
17 kilowatt hour per year on the right is not the --

18 MR. NELSON: No, that is Elow kWh, so the energy
19 and low. Sorry, the two tables, to clarify it let me bring
20 it back up on the screen.

21 MR. MESSNER: Okay.

22 MR. NELSON: So these are not the same tables. I
23 mean, the same columns. Each one of those is a separate
24 reporting, so energy sources is not carrying over.

25 MR. MESSNER: Oh, okay.

1 MR. NELSON: I should have clarified that a
2 little bit in the table, so maybe that helps. So we're
3 going down from energy source all the way down and then
4 jumping over to the next right column starting Elow.

5 MR. MESSNER: Okay. Yeah, I see what you're
6 saying. So then the other question I had then were the
7 capacities. There's three reporting for capacities, is
8 there a -- I mean that's fairly redundant. Is there a
9 reason why you'd need capacity reported in three different
10 ways?

11 MR. NELSON: Well, for measuring the CASE team
12 will go into this in a little more detail. My
13 understanding from the test procedure is that they're going
14 to measure the drum capacity. There's a certain load
15 capacity that is used for each run through the test
16 procedure. So reporting those two and then there's the
17 load weight capacity also associated with a commercial
18 dryer.

19 So sometimes they're advertised as cubic foot or
20 pounds, so we're just trying to collect that data to be
21 clear on what is required in the test procedure and what is
22 listed with the equipment from the manufacturer.

23 MR. MESSNER: All right. Okay. Thank you.

24 MR. NELSON: Okay. Great.

25 If there are no other comments or quick

1 questions, clarifying questions from the room I'm going to
2 hand it over to the California investor owned utilities for
3 their presentation.

4 Ed Elliot, do you want to make your introduction?

5 MR. ELLIOT: Okay. Sorry, Ryan (indiscernible)
6 but I'm Ed Elliott with PG&E's Codes and Standards team,
7 Senior Engineer, and we're representing the California IOUs
8 today. And we want to thank Sean, Ryan, Jessica and
9 Kristen for inviting us.

10 And without further comment we want to start
11 presenting the California IOU Commercial Clothes Dryer Test
12 Procedure. And here is our consultant, Suzanne Foster
13 Porter from Kannah Consulting.

14 MS. FOSTER PORTER: Thanks, Ed. Welcome everyone
15 online and in the room. I will do my best to keep this
16 lively as I realize at least in the Pacific time zone we've
17 just had lunch, so I'll try to keep you awake.

18 I'll ask you to hold your clarifying questions
19 and comments until the end of the presentation. I'll take
20 those all at the end. Please note that I have included
21 slide numbers for your convenience, so if you have a
22 question on a particular slide please feel free to notate
23 that and we can come back to it at the end.

24 So thanks to the California Energy Commission for
25 giving the Investor Owned Utility Case Team an opportunity

1 to present. Yes, Kevin?

2 MR. MESSNER: Sorry, I just -- one idea is it'd
3 be helpful if possible, sometimes when you go through the
4 slides there'll be questions that come up, which then the
5 questions start building. And so then as you get to the
6 end, so it can be helpful if it's possible to ask some
7 clarifying questions along the way to help reduce a build-
8 up of questions that compound as the slides go forward. Do
9 you understand what I'm saying?

10 MS. FOSTER PORTER: Yeah, I understand. I think
11 given the format we've got with folks online and folks in
12 the room, it would be better if we wait until the end. So
13 Kevin, if you get to a point where you don't understand the
14 slides given the additional verbal attention I'll give to
15 them, then do let me know. But I think we'll be all right,
16 we'll take questions at the end. Thank you.

17 MR. MESSNER: Okay.

18 MS. FOSTER PORTER: So, as I was saying I wanted
19 to thank the California Energy Commission again for giving
20 us an opportunity to present the task procedure here today.
21 This was developed by the CASE team, which is more than
22 just myself. We have -- I'd like to thank Daniela Garcia,
23 Ed Jerome, Dave Denkenberger and some of the other folks at
24 the PG&E ATS facility who helped make this test procedure
25 and worked hard to create it. I'm just here representing

1 the team, so wanted to mention them as well.

2 For those of you that are less familiar with
3 commercial tumble dryers, basically the test procedure
4 covers all dryers that are not covered by the current
5 residential DOE test procedure up to 65 cubic feet of drum
6 capacity.

7 Generally speaking, cool air comes in the intake
8 of the dryer. This can be at the top or the back of the
9 dryer. Then it's heated in the burner box, passes through
10 the drum and then passes through a lint screen before it
11 exists the dryer. This photo of a lint screen there in one
12 particular dryer, you can see the exit point on the back
13 here. It's the small round circular in the bottom right
14 corner of the picture of the back of the dryer.

15 Ryan, it looks like we're getting some notes
16 popping up. I don't know if there's any way to get rid of
17 that, but we don't need those. Thanks. If not, it's okay.
18 Thanks, Ryan.

19 Here's the measurements of one of the dryers that
20 we measured in our lab as part of developing this test
21 procedure. This is a relatively typical signature that we
22 see with dryers. What you're looking at here is time in
23 minutes along the bottom. This is for one dryer run. This
24 happens to be a run where the textiles have been over-dried
25 and for the various parameters here, each of these lines

1 represents a different measurement that we take in the
2 course of the test.

3 The blue line is the total gas and electric power
4 in kilowatts. The green line is the relative humidity of
5 the exhaust. I'll note that for this measurement, what's
6 important is this signature and not the absolute value,
7 because there is some mixing with the room air when we take
8 this measurement. The purple line is the weight of the
9 load and there's some noise in this thing though because of
10 the tumbling. We actually take this in real time with a
11 scale that the dryer sits on. And finally, the red line is
12 the temperature in Fahrenheit of the exhaust. There's also
13 mixing of the room air with the exhaust.

14 I'd just like to point out that this is a typical
15 signature that we would see. Basically the dryer, we load
16 the load into the tumbler. The fan and the tumbler turn
17 on. That's this little bump in the blue line you see at
18 the beginning. Then there's a relatively steady gas flow.
19 Once you reach a temperature of the exhaust that is high
20 enough that the dryer signals that the burner should turn
21 off, the burner turns off. And then cycles on and off
22 until it reaches the end of the test. The temperature of
23 the exhaust is cycling with that in that kind of sawed
24 tooth pattern. Similarly, the relative humidity decreases
25 when the burner comes on.

1 So this is a typical type test that we do. This
2 is sort of what you do when you run a dryer, a test
3 procedure run. This happens to be an overdrive test, so
4 this gray line represents the point where the textiles are
5 approximately dry.

6 As we discussed in the CASE report published in
7 the docket, commercial dryers are in three kinds of
8 facilities: multi-family, vented laundry and also in on-
9 premises laundry or what's called in the industry, OPL.

10 The relative number in energy use varies with the
11 different sizes of dryers. The largest number of dryers
12 installed in the stock are represented by the multi-family
13 category and the smallest number by the largest dryers.
14 Similarly, the carbon emissions for the largest dryers are
15 the biggest share of the three, because there is a lot of
16 textiles being dried on the highter duty cycle than you
17 find with the smaller multi-family machines.

18 There are a number of parameters that impact the
19 energy use of dryers. I've shown five of these here. So
20 if you look at this graphic along the bottom is drum volume
21 in cubic feet. And to just give you an idea of
22 approximately where multi-family, laundry mat and on-
23 premises overlap with that, I have the bar shown at the
24 bottom.

25 The five parameters that really do impact the

1 energy use in dryers do vary across the marketplace. One
2 of those is IMC, or initial moisture contents of the load.
3 That can vary depending on what washer you spin the
4 textiles in.

5 Settings impact the energy use, intake air, load
6 size and load type. All of these have an impact on energy
7 use. There's not any specifically significant data about
8 the average use of dryers that we could find. So because
9 of that, we considered the range that these parameters
10 might take in regular use, as we started to develop the
11 test procedure.

12 There are a few trends that I'll point out here.
13 One is intake air. So the intake air is basically the air
14 that's going into the dryer. And in smaller dryers that
15 tends to be conditioned air, like in an apartment building.
16 But for the larger dryers usually these are pulling intake
17 air, basically outdoor air, because they're vented to the
18 outside. Otherwise, the volume of air of these large
19 dryers that's going -- of the air that goes through these
20 large dryers is significant. And so it would be a
21 significant burden on the HVAC systems to try to do that
22 makeup. So they use outdoor air.

23 Ryan already mentioned that commercial tumble
24 dryers use a significant amount of energy in California.
25 I'll just mention that it's almost half a billion dollars

1 in utility bills that businesses and apartment buildings
2 pay every year to operate the dryers. And it's about the
3 greenhouse gas emission equivalent is about two-thirds of a
4 500 megawatt coal fired power plant.

5 As Ryan pointed out, dryers in the marketplace
6 have significant differences in efficiency. The same unit
7 that Ryan mentioned, I'll have some more details on it on
8 screen here. We measured two dryers of approximately 30
9 pounds capacity. One was 60 percent more efficient than
10 the other. Their prices were very similar for when we
11 purchased these dryers for testing.

12 The other thing I'll point out is that the
13 standby power for the more efficient dryer was also
14 approximately a quarter of the standby power for the less
15 efficient dryer.

16 There are also a number of technologies. So we
17 see evidence with our empirical measurements, that there's
18 difference in the marketplace. But we also know from our
19 technical research that there are different technologies
20 that can improve dryers. One of those is heat exchangers.
21 These are used in industrial applications and commonly used
22 in buildings -- I should say industrial applications of
23 dryers. And they're also used in buildings to recover heat
24 from an exhaust stream and transfer it to the intake
25 stream. There have been studies done on using heat

1 exchangers in dryers. The savings are between 8 and 40
2 percent.

3 Burner and fan modulation is another opportunity
4 that can be employed to improve the efficiency of dryers.
5 There are dryers in the marketplace today that use burner
6 modulation, available for manufacturers. We're looking at
7 somewhere between you know, a very small amount of savings.
8 If you're just doing burner modulation with fan and burner
9 modulation it can be up to 25 percent savings. That's from
10 a DOE study. These citations are in the CASE report, if
11 you'd like to see those.

12 Both of the two technologies are applicable to
13 both gas and electric. There's a heat pump, which is an
14 opportunity for electric only dryers. Savings are bigger
15 here, between 13 and 60 percent. And then there are a
16 variety of other technologies including controls, air
17 recirculation, air sealing, improved motors and these in
18 total could improve it approximately 15 to 20 percent.

19 So we know that there are differences in the
20 marketplace today. There are technologies that can improve
21 dryers. One of the concerns or questions we had was well
22 is there room in the installation to include some of these
23 technologies? Because sometimes it takes a little bit more
24 room than what we'd use, a standard cabinet. What we see
25 is that there's typically installations with dryers, even

1 with dryers that are dual pocket or what you might think of
2 it as stacked dryers, there's room above those dryers for
3 additional equipment that can improve the efficiency such
4 as a heat exchanger or a compressor for a heat pump.

5 The other thing that we learned in our research
6 is that owners of laundromats and other businesses do care
7 about efficiency. The Coin Laundry Association is an
8 association of laundromat owners nationwide. They are
9 typically mom and pop-type small businesses in California
10 and elsewhere that operate laundromats. Every year they
11 have an industry association that many of them belong to,
12 and every year they do a survey to understand what are the
13 trends in their industry. They ask their members the
14 question, "What do you feel are the biggest problems you
15 face in the laundry business?" And high cost of utilities
16 was one of the biggest problems for 65 percent of the
17 respondents.

18 Also, in this survey it indicated that utilities
19 are on average between 25 and 35 of gross revenue for many
20 of these businesses. And so they're looking for ways to
21 reduce their utility costs.

22 Furthermore, for national chains like or in large
23 hotel chains like Marriott and Hilton, many of these large
24 companies have a sustainability plans and GHG targets of
25 their own that their shareholders have asked them to meet.

1 And many of them are having problems meeting it. They've
2 installed more efficient lighting. They've done what they
3 can with HVAC. And they've done what they can, especially
4 in the hotel industry they're not able to control how
5 things are used especially in the rooms. So they're
6 looking for opportunities to further reduce their energy
7 use. And so dryers could be one of those things.

8 Finally, utility costs of shared spaces in
9 apartment buildings are passed on to apartment holders in
10 some way or another either by increased rents or by
11 increased subsidies. And so reducing utility costs of
12 those shared laundry rooms can benefit some of the most
13 economically disadvantaged Californians, who live in
14 apartment buildings.

15 Unfortunately, even though there's a lot of
16 interest, or I should say a lot of focus on reducing energy
17 use by these businesses, there's not a lot of information
18 about the differences among the dryers, how efficient they
19 are, but also how they perform. So these are a few
20 examples of quotes pulled from individual specification
21 sheets from dryers that we reviewed as part of our
22 research. And most of these -- it's difficult to -- if
23 you're making a decision about which dryer to buy, it's
24 difficult to compare these statements and make a decision
25 about what is the most efficient dryer.

1 The test procedures that are available today for
2 efficiency are targeted to the residential market. There
3 are also safety test procedures that are not shown here in
4 this list for natural gas and electricity that are covered
5 by the CSA organization. So they're not included here
6 because they don't address energy.

7 But just to give you a summary, I think -- Ryan,
8 you covered these first three, showing the table left to
9 right. The utility test protocol, I'll mention briefly, is
10 an additional protocol that was developed by utilities
11 entities including Pacific Gas and Electric and the
12 Northwest Energy Efficiency Alliance, to evaluate the
13 energy performance of residential tumble dryers. It was
14 developed as a supplement to U.S. Department of Energy test
15 procedure, to gather additional information above and
16 beyond what DOE gathers.

17 A couple of things I'll point out. These are
18 some characteristics, and this is also in the report, but a
19 couple of things -- the test series ranges from about 5 1
20 run to 5 runs per dryer. Sometimes program time is
21 measured and sometimes it's not. So that's just a couple
22 of ways that these vary.

23 AHAM and Alliance Laundry Systems submitted
24 comments to the docket earlier, indicating their concerns
25 with trying to apply the residential test procedure to the

1 commercial market. Some of the comments are shown here on
2 the slide. Commercial dryers tend to dry larger loads than
3 residential. The cycle time is shorter. Times drying is
4 typically used as opposed to automatic termination. And
5 there's a wider range of drum volumes and so forth.

6 In addition to those, we also identified that
7 there are different load types, compared to residential in
8 terms of the textiles. That the air intake can differ from
9 commercial to residential. And finally, that the range of
10 facilities where these are installed is broader than
11 residential. It's not just installed in homes and
12 apartments, but we're installing them in a wide range of
13 facilities; hotels, motels, and dedicated laundry
14 facilities, apartment buildings, where the users that
15 operate those appliances have varying levels of training
16 and understanding of the device.

17 So the California Investor Owned Utility CASE
18 team undertook a project to develop a new test procedure
19 that more appropriately addressed commercial tumble dryers.
20 And our objectives when developing this test procedure were
21 to meet what we call the four Rs. We want to test
22 procedure to be representative. We want it to be
23 repeatable, meaning if we test the product multiple times
24 in the same facility we get the same results. We want it
25 to be reproducible, which is if you take the same product

1 from lab to lab and test it, you'll get a highly similar
2 result. And we want it to be reasonable, which means we
3 don't want it to cost too much to perform the test relative
4 to the benefit that we get from the information.

5 In particular, we really tried to balance all of
6 these. It was particularly important for us to balance, to
7 have a representative test procedure. No test procedure is
8 exactly as you will -- you can't test as exactly as it will
9 be in the field in terms of exactly how it's going to be
10 used. But we made efforts to try to represent what could
11 be possible in the field with the test procedure.

12 We took a number of methods as we investigated
13 what would be the best approach. We did a lit review,
14 expert interviews, site visits, and then lab testing,
15 extensive lab testing of products that exist.

16 So in summary the scope, this is similar to what
17 Ryan said. We're looking at commercial dryers up to 65
18 cubic feet of drum capacity. That includes residential
19 platform and large chassis-style tumblers. We are looking
20 at gas and electric only, not steam models. And based on
21 our market information that we have from the TRC market
22 study that also published to the docket our estimates for
23 this covers about 85 percent of dryer energy use in
24 California.

25 So next I'm going to talk a little bit about some

1 of the requirements in the test procedures. And walk you
2 through a little bit, or I should say kind of a sequence of
3 what the testing looks like.

4 There are a number of installation requirements
5 for the test procedure. The purpose of this is to ensure
6 repeatability and reproducibility. So we have a lot of
7 specifics about the room, which is a picture shown on the
8 far left that the dryer should be tested in, what's the
9 humidity and temperature of that room and how much can it
10 vary. We had a standardize exhaust simulator that
11 simulates the back pressure that is placed on a dryer in
12 installation. This is modeled after the AHAM residential
13 exhaust simulator.

14 And then we have various other instrumentation
15 distances required in the setup to ensure repeatability.
16 So what you're seeing here on the far right side of the
17 screen is the end of the exhaust simulator, which blows
18 into our harnessing bell. (phonetic) This is within the
19 dryer chamber and this is the way we get the exhaust out of
20 the chamber without -- and enabling us to maintain the
21 temperature and humidity of the room.

22 There are a number of other requirements that I
23 won't go through in detail here, but I'm happy to take any
24 questions about after the presentation.

25 The test load specified, as we start to move to

1 okay once we have the dryer installed let's put the other
2 test load of textiles. We specified the IEC-60456 test
3 load. It's a cotton test load that's been in use. It's
4 used in the AHAM test procedure, so it's well established.
5 It's available from U.S. suppliers. It's also tightly
6 specified for the purposes of repeatability and
7 reproducibility. Our studies of this test load indicated
8 that it behaves very similarly to a real world test load at
9 full capacity, so in fact almost identically. So that was
10 the other reason why this was chosen is because it's
11 relatively representative of a real test load.

12 The way it's specified is there are three
13 articles, a bedsheet, pillow case and a hand towel. It's
14 roughly equal sizes, or excuse me roughly equal weights
15 from each make up the load. There are two load sizes, a
16 filling factor of 2.5 pounds per cubic foot. That is meant
17 to represent full size and then there's a partial size,
18 which is half of that.

19 Again, we don't have any statistically
20 significant data on what the actual load sizes are in
21 commercial dryers. We know from our site visits and our
22 expert interviews that they vary, that partial load size is
23 present. And because partial load size is an important
24 component and effects efficiency, the test procedure
25 includes those two load sizes.

1 Finally, the test procedure harmonizes with the
2 IEC, not only in the types of articles that we specify, but
3 also in the way that we keep those articles repeatable
4 through normalization. So there's a sequence that's
5 required every 9 to 12 runs where we normalize. There's an
6 age weighting requirement for the load. All of that mimics
7 and harmonizes with the IEC and the AHAM test procedures
8 that are already in use for residential.

9 Once you have the load built specification, then
10 the next step is to precondition the textiles, bone dry and
11 moisten them for testing. The photo that we're looking at
12 here is the site that we use to do that in the PG&E San
13 Ramon facility.

14 I'll just note that we do have requirements for
15 water hardness and electrical conductivity for certain
16 parts of the preconditioning and normalizing sequence. And
17 we use the bone dry procedure that harmonizes with the U.S.
18 Department of Energy. We have two initial moisture
19 contents: 60 and 75 percent, to represent the range of
20 classical moisture contents in the field. And I mentioned
21 the normalization here.

22 So the other thing that we did when we started
23 this process is we looked at the U.S. Department of Energy
24 specifications for measurements and looked at the error
25 that we would expect to have -- in the error that we would

1 expect from each measurement in the energy value that we
2 wanted, basically the total energy use over the cycle

3 And we evaluated the DOE tolerances for each
4 piece of equipment including relative humidity,
5 temperature, etcetera. And said, "Is it worth the extra
6 cost of getting equipment that is more expensive?" Because
7 every time you get equipment, that is more precise with
8 smaller error, it costs more to purchase. So we did a
9 detailed error analysis, because residential dryers are
10 different from commercial and made some changes. In some
11 cases we tightened certain tolerances and in some cases we
12 relaxed certain tolerances on equipment and the test
13 procedure.

14 So two examples where we did that, we increased
15 the accuracy of the scale for weighing the textiles. Part
16 of that is because for larger loads it's easier to get you
17 air down with a large scale, so that incremental cost is
18 not as high as it might be for a smaller load. But then it
19 also significantly improves our moisture content, which
20 impacts the way we adjust for efficiency.

21 But on the flip side of that, we also decreased
22 the accuracy of the electrical supply and electrical
23 measuring equipment required for gas dryers, because on
24 average gas dryers, the total energy use is of the gas and
25 maybe up to 5 percent of that energy use is actually

1 electric, for a gas dryer. So it doesn't matter very much,
2 essentially. So we reduced the tolerances on that.

3 Roughly, once you've wet the textiles, you've
4 normalize the textiles, they come out of the washer, you
5 put them on the scale, that's the picture that's shown on
6 the left-hand side. Then you take the textiles, you put
7 them in the dryer, tumble it, measure the gas and electric
8 use. You're monitoring the chamber temperature and
9 humidity to make sure everything is within tolerance. And
10 then the dryer itself terminates you remove the textile and
11 measure it again on the scale, so that's basically how the
12 test works. We also measure program time and report that
13 as well.

14 One unique feature of the test procedure,
15 compared to DOE, but more similar to other test procedures
16 for dryers and washers is that the DOE conducts a single
17 test with a single point, with a single load, so you get
18 one number. So what we're looking at here just a
19 comparison of DOE tests and IOU proposed tests. The
20 vertical axis here is combined energy factor. That's the
21 DOE metric. It's pounds of bone dry textile, per total
22 kilowatt hour gas and electric.

23 And so this is just an illustration that in the
24 IOU proposed test, given the range of circumstances that we
25 see where commercial tumble dryers are used and installed,

1 we felt it was important not only to represent one number
2 that might be an average use. But to also represent a
3 range of use, because in some facilities use may look more
4 a very challenging condition, where you have a wet load
5 that's a partial load.

6 An example of this is like a textile jean
7 processing facility, where the jeans are heavy. They're
8 put into small loads and dried. And in some facilities,
9 you may be using automatic termination over favorable
10 conditions. So we wanted to represent not only the
11 average, but also the range of use that we could reasonably
12 conduct in a laboratory.

13 The specifics of those tests are shown in this
14 table. The runs are labeled A through F. We chose these
15 runs, because first of all we know that for the first test
16 shortest time is a common -- time is often the most
17 important feature, so we included that. We also included a
18 condition that we observed regularly in the field and the
19 experts told us happens a lot, which is an over dry.
20 Basically that the dryer's run for longer than it needs to
21 be to dry the textiles.

22 But then in addition to those, we combined all
23 the variables that we know make the efficiency higher. And
24 we called that the favorable condition, or favorable test.
25 And then we combined all the variables that make the

1 testing more challenging.

2 We do not believe that D or E, the challenging or
3 the favorable condition, is a normal condition that you
4 would see all the time in that particular facility. The
5 purpose of these tests is to create the range.

6 I should also mention there's one test with
7 automatic termination for those dryers that do have
8 automatic termination capability.

9 Our testing investigation included eight dryers
10 in 2016. The characteristics of those dryers are shown
11 with the same graphic I showed earlier. The size of the
12 dryers roughly corresponds to the weight capacity of those
13 dryers. We selected four dryers that were standard or
14 baseline and then four dryers that we believed or at least
15 were advertised to be more efficient. Those were shown in
16 green.

17 The filled in yellow circles are the ones that we
18 did detailed investigation on before we developed the test
19 procedure to understand about how initial moisture content,
20 load size and load composition, etcetera, affected the
21 performance of commercial tumble dryers.

22 These are a summary of all the results from the
23 test procedure that we have so far. The black dots as
24 markers are the test from 2016. These are included in the
25 CASE report that is docketed. The blue markers that you

1 see on screen are for data that just recently were
2 produced. And so those are not on the docket.

3 Again, just to orient you here the vertical axis
4 is site energy factor. So this is the pounds of bone dry
5 textile that the dryer produces per kilowatt hour.
6 Kilowatt hours include both gas and electric energy use.
7 In this case, higher is better from an efficiency
8 standpoint.

9 What we see along the vertical axis is a cubic
10 feet of drum volume. And just for annotation I've kind of
11 grouped those together that are approximately 30, 55, 75
12 and 120 pound categories. These are roughly categories
13 that are considered in the market when purchasers go out to
14 buy.

15 A few things that I'll point out, Ryan already
16 pointed out the 60 percent difference between these two
17 dryers. But the more recent data that we've collected
18 shows that there's also variation in the larger dryers. So
19 this is about a 20 percent improvement from here to here,
20 with the dryer we tested just recently. So not only are
21 there differences in the average, but there are also
22 differences among the range of use.

23 So for example, if you look at the dryer, this
24 particular dryer, the 75-pound dryer, it has a very tight
25 distribution. You know, maybe only a variation of 0.5

1 pounds per site kilowatt hour regardless of how you use it.
2 You give it a wet load. You give it a small load. The
3 distribution is pretty tight.

4 Let's compare that to this dryer that we just
5 recently tested in the 55-pound category, where the range
6 of use is quite wide. So even though the average is just
7 similar to the other two dryers that we tested in 2016, in
8 a challenging condition this dryer performs significantly
9 worse, from an efficiency perspective than the dryers that
10 are also in that category.

11 But it also performed significantly better in the
12 most favorable conditions.

13 So one thing that we're noting, as we consider
14 the test procedure is that the test procedure gives us
15 visibility on this range, which could be important to
16 buyers who may care a little bit more about consistency in
17 the efficiency values.

18 We can also look at these data in terms of costs,
19 because that's something that businesses care about a lot.
20 And so when California business owners go to out to buy a
21 dryer one of the ways the test procedure can be used is we
22 can consider dollar values. So what we have in this axis
23 here is U.S. dollars to dry 100 pounds of bone dry
24 textiles, so this is basically in this case lower is
25 better. We want a lower cost for the utilities, for the

1 utility bills.

2 If we just look at two extremes there, just for
3 illustration dryer four is about \$3 per 100 pounds of
4 undried textiles. On the utility bill, dryer five's under
5 \$2. That may not seem like a lot when you go to buy a cup
6 of coffee. But with the volumes of laundry that our market
7 research showed happen in California, that's a lot of
8 dollars that businesses are spending.

9 So if we just consider three different scenarios:
10 universities and colleges, hotels and motels and nursing
11 homes, each of which had an increasing number of pounds of
12 textiles per year that they have to dry and process, this
13 is the difference in the operating costs of those two
14 dryers, at \$2 and \$1.85. And over the course of a year, it
15 can be thousands of dollars. Over the course of the
16 lifetime of the dryer, it can be tens of thousands of
17 dollars. So these differences really do matter when it
18 comes to businesses and as they try to cut their
19 operational costs.

20 In addition to the site energy, which is shown in
21 the test procedures and the costs, which I just showed
22 here, the test procedure can also be used to look at dryer
23 performance in terms of other metrics, like for example
24 carbon dioxide emissions. So the way that the test
25 procedure is set up the values that we get out of the test

1 procedures can be used in a lot of different ways for
2 utilities, policy makers and other stakeholders that might
3 be interested in different types of costs of the dryers.

4 We talked a couple of times about the metric, but
5 just very specifically what is in this metric? There's two
6 metrics defined in the test procedure in Version 2.6, which
7 is the most recent version published about a month ago to
8 the docket.

9 The energy factor is the one that CEC is asking
10 for a collection of. It's a site energy factor. It's
11 basically you take the bone dry weight, which is the weight
12 of the textiles without any water in them at all, and you
13 divide that by the sum of the energy used , over the course
14 of the cycle, the electric energy use over the course of
15 the cycle and a portion of the electric energy used that's
16 attributed by the low power modes.

17 I didn't talk very much about low power mode
18 today, but the test procedure specifies that the
19 measurement of low power modes including power in standby,
20 the power in network mode and the power in wrinkle
21 prevention mode, which is a mode that often occurs by
22 default after the dryer has finished its cycle to ensure
23 that the textiles don't wrinkle. It's a periodic tumbling
24 of the textiles from time to time.

25 You can also put constants in front of these

1 values and get some kind of other metric. That's how I
2 developed the cost metric I showed you earlier. But the
3 test procedure provides for that although values of alpha
4 and beta, although values of alpha and beta are not given
5 in the test procedure. And that's called a cost benefit
6 factor.

7 In addition to the individual metrics for the
8 run, the test procedure proposes an average. And I showed
9 that to you earlier. It was the open dot on the screen in
10 the dryer data slide. We're proposing a simple arithmetic
11 average of runs, of the shortest energy run, over dry mode,
12 favorable and challenging. And then if the dryer has an
13 automatic termination function, we also proposed that that
14 be tested and included.

15 In addition, we proposed an average cycle time.
16 So in every run the cycle kind of included performances and
17 important part of dryers, basically how fast we can finish.
18 It's important to the business owners and as they're
19 working to move through the textiles they have to process.
20 And so we also include an average cycle time and we're
21 proposing a written mathematic average.

22 For those of you that have not had an opportunity
23 to review the Version 2.6, which was the post a month ago
24 to the docket there are track changes on to Version 2.5 as
25 well as a clean copy. Just at a high level we changed just

1 a small number of things. We did some revisions to the
2 calculations to enable discrete gas and electric values to
3 be reported. We changed some information or I should say
4 we added information to enable clearer guidance for
5 measurement in son of a largest tumble dryers. We refined
6 for language in automatic termination test to be more
7 appropriate for the commercial programs that we see. And
8 then finally, we added information about dual pocket dryers
9 and washer-dryer combination units to clarify how those
10 should be tested.

11 So in summary, there are a number of benefits to
12 this test procedure. Especially as we look in comparison
13 to the residential test procedure, we feel that we have a
14 good proposal and we look forward to folks commenting on
15 it. We are balancing the four Rs: repeatability,
16 reproducibility, representativeness and reasonableness for
17 the test procedure. We feel that we've come up with
18 something that's a good starting point for the commercial
19 market.

20 We feel that it's more representative than the
21 U.S. Department of Energy, because we're conducting
22 multiple tests instead of just a single test in one
23 condition. And that the commercial market really dictates
24 the need for this, because there's such a variety of news
25 and there's not data on average load sizes and so forth,

1 while these is in the residential market.

2 And we made every effort to harmonize where we
3 could with existing test procedures to reduce burden and to
4 leverage the work that's been done before. And from a
5 burden perspective, it's significantly less burdensome than
6 for example the U. S. Department of Energy washer test
7 procedure where 9 runs are required on up to 3 washers,
8 which results in as many as 27 tests. By comparison, we're
9 looking at 6 here.

10 So this is really the first step for the
11 California IOUs to realize savings in California, through
12 utility programs, in future mandatory standards when that
13 becomes appropriate. The savings are large. We're looking
14 at \$90 million in utility bill savings for just a 20
15 percent reduction in energy use for these devices. And
16 that's 360,000 metric tons of CO2 equivalent.

17 So thank you for your time. I appreciate your
18 attention, and Kevin for your understanding and an interest
19 in finishing in the time that I have allotted. And I look
20 forward to any questions that you might have. Thank you.

21 MR. NELSON: Thank you, Suzanne.

22 We'll take comments from the room first. Does
23 anybody have questions or comments?

24 MR. MESSNER: I have a lot. So I'm happy of
25 other people have just one or two to go, if they want to.

1 Okay.

2 MR. NELSON: Why don't you start? Please state
3 your name for the record then.

4 MR. MESSNER: Kevin Messner, I'm with the
5 Association of Home Appliance Manufacturers. Thank you for
6 the presentation and you actually answered a few of my
7 questions. So thank you. And I'll just go through. It
8 may not be the most -- well I don't know if the best way is
9 if you want to go through is slide by slide, because I was
10 taking notes.

11 MS. FOSTER PORTER: That's fine.

12 MR. MESSNER: Okay.

13 MR. NELSON: Kevin, let me say this. Please ask
14 your questions and comments. If they're very technical in
15 nature, maybe we can put those in writing and respond to
16 those later. But general, in the presentation what was
17 presented, say we can definitely handle those.

18 MR. MESSNER: Okay, sounds good. Yes, we will
19 definitely put it in writing. And I don't think it'll take
20 too long.

21 So I guess starting on slide six, I had a
22 question. You mentioned that there's about two-thirds of a
23 500 megawatt coal fire power plant at a bottom row. And I
24 was curious on how much energy you think this would be
25 saved. At the end you mentioned that if you assume a 20

1 percent increase in energy efficiency -- I'm just curious
2 out of -- the total energy's two-thirds. So how much would
3 even under your best estimate, how much energy you shaved,
4 does that two-thirds of a power plant go down to one-eighth
5 below it? Or I mean, really how much energy are we talking
6 about?

7 MS. FORSTER PORTER: So of course in the test
8 procedure we're not proposing any specific savings
9 estimate, but we did in the case report that docketed
10 provide two estimates for savings based on the empirical
11 data that we collected in the marketplace and the
12 technology review that we did.

13 From that we might remember some of those ranges
14 were pretty wide. But we made two savings estimates. The
15 first is a 20 percent reduction. And so the numbers that
16 you saw at the end of my presentation, the \$90 million off
17 the 20 percent reduction, we think it is possible to get to
18 a 50 percent reduction. So in that case that two-thirds of
19 a power plant would become a third of a power plant of use,
20 is one way to think of it. So that's just a 50 percent.

21 So we're looking at between 20 and 50 percent
22 savings is what we think is possible based on what we've
23 observed empirically and through our literature review.

24 MR. MESSNER: Okay. Thank you. And the next
25 slide, you said that -- we were curious on the age and the

1 price points of the units you had and maybe it would be
2 helpful if you could give us the model of the units that
3 you tested. And then that would help too to try to
4 understand this as well. You said the price points were
5 very similar. But would it be possible to get the models
6 that you guys tested, so as we develop our written
7 comments, we can be a little more educated?

8 MS. FORSTER PORTER: Unfortunately, for legal
9 liability reasons, we do not provide manufacturer or model
10 information for any of the products that we subject to
11 testing. And the reason for that is the purpose of our
12 engagement for the utilities is to not to endorse or to
13 disparage any specific manufacturer, but rather to reveal
14 the opportunity that is in the marketplace. So that
15 there's no confusion about what we're trying to do, we do
16 not reveal any factor and model information.

17 There is a table at the end of the case report
18 that's docketed, which gives additional information about
19 each dryer. They're identified by number. So that's about
20 the information we're able to provide.

21 MR. MESSNER: Is the age and the price point
22 range in that data that's available to us? Because it
23 makes a difference whether you tested a dryer that's a year
24 old or 50 years old.

25 MS. FOSTER PORTER: So I can speak to that. All

1 of these -- let's see, so we did -- these dryers were
2 procured in 2015, late 2015, so they are new models. They
3 are still, the last time I checked, which was a couple of
4 months ago, these models are still available on the market
5 list.

6 MR. MESSNER: Okay. And then the next slide you
7 mentioned a lot of options that are out there as feasible
8 heat exchange or heat pump. Yeah, I noticed there was
9 different things. I was wondering if you also looked at
10 how much each of those options would cost. I mean, sure
11 there's a lot of things that are feasible for a price.

12 MS. FOSTER PORTER: So the report that we have
13 published on the docket does not do a detailed cost
14 analysis. That wasn't the primary purpose of the report,
15 however the CASE team is preparing in this calendar year an
16 engineering report that will include detailed cost analysis
17 of different technologies.

18 MR. MESSNER: Okay. Thank you.

19 MS. FOSTER PORTER: So stay tuned for that.

20 MR. MESSNER: When did you say that you think
21 that would be? You said fall or later?

22 MS. FOSTER PORTER: It will be in this calendar
23 year.

24 MR. MESSNER: Okay. Great. And then on the heat
25 pump models, did you see any or have you seen any heat pump

1 dryers that were not using HFCs as their refrigerant?

2 MS. FOSTER PORTER: So I am only aware of one
3 commercial heat pump model that's available for sale in the
4 U.S. There may be others. I did not, when I spoke with
5 that manufacturer about their model, I did not specifically
6 ask them about the refrigerants that they used, however I
7 could follow up. So I don't know the answer to that
8 question.

9 MR. MESSNER: Okay. All right, thank you.

10 Let's see, the next slide nine, yeah so I guess
11 this goes to and maybe -- yeah, in the next slide too, you
12 talked about how there's opportunities for efficient
13 technologies and the Coin Laundry Association, I guess did
14 their study. And did you look at whether the operators,
15 how much they're more they're willing to pay? I mean
16 there's a cost benefit they could save on their energy
17 bill.

18 And I guess I should also clarify that AHAM
19 represents just the residential platform, residential
20 dryers that are on the same platform that are commercial,
21 so in that space. But if your just rough of the back of
22 the envelope estimations, your increase of let's say 10
23 percent of the energy you're going to save people about 80
24 cents a month. And on their energy bill that's not a lot
25 to a laundry mat owner if he's going to have to pay I don't

1 know how much more for that.

2 So if you ask a question to somebody, "Hey, do
3 you want to save on your energy bill," the answer's going
4 to be, "Yes." If the answer is, "You're going to save on
5 your energy bill, but you're going to have to pay X number
6 of dollars more for this unit," then you're going to get a
7 different answer.

8 I'm wondering if you asked the question in that
9 way or whether you don't want to piece meal out answers
10 that are, you know, polling questions. It depends on how
11 you ask the question.

12 MS. FOSTER PORTER: Yeah. So we did not conduct
13 the study that I cited from the Coin Laundry Association.
14 And the specific way they asked the question I did put up
15 on the slide. "What are your biggest problems that you
16 face?" Their response was high utilities.

17 So but fundamentally from a policy perspective,
18 what matters most is cost effectiveness in terms of the
19 state has a long history of adopting standards that
20 increase first cost, because it saves energy over the
21 lifetime of the product.

22 So from that perspective, that's the test that
23 we're most focused on for our investigation that we're
24 doing this year.

25 MR. MESSNER: So I would just encourage you to

1 maybe think about payback and talk to laundry mat owners.
2 And if their answer is, "Yes, the high cost of utilities,"
3 then that does not necessarily equate to, "I want to pay
4 more for my dryers," to have more efficient dryers. That
5 to me is a leap, if that's where it's heading.

6 So that means I want lower rates from PG&E. It
7 doesn't mean to spend more on their dryer necessarily. And
8 there's a payback too if you if you say, "Okay, you're
9 going to save 80 cents a month and the life of the dryer is
10 14 years." Usually from a residential side it's two to
11 three years, so payback where people actually start
12 thinking. So I think you should, if you haven't delved
13 into those a little more as well.

14 MS. FOSTER PORTER: Yeah, so I keep using the
15 term 80 cents a month, but from AHAM's own estimates that
16 they submitted to the docket, the duty cycle of these
17 dryers is significantly higher than like a residential
18 dryer. And so the energy use per month is going to be more
19 than residential. So we are looking at payback periods.
20 You know you're talking about simple paybacks. We do look
21 at that.

22 Because of the higher duty cycle, there are a lot
23 of technologies that can be cost effective. And eventually
24 you reach a point if you keep applying technologies. The
25 way the theory goes is that you apply technologies and the

1 first ones are less costly, but as you apply technologies,
2 eventually you approach maxed tech. (phonetic) We've all
3 seen this in some of the DOE documents. It's the same kind
4 of analysis that we're dealing with.

5 MR. MESSNER: Okay. So then this maybe gets to
6 (indiscernible) on Slide 12, where you talk about the
7 different test procedures. And this may go to the heart of
8 where we're thinking. It's two things: one is -- and you
9 hit on the repeatability, reproducibility and then the
10 representation. That's a balance that it's always the
11 discussion. And it happens at the federal level,
12 obviously, and I see it everywhere for dryers. And that's
13 we had the DOE test procedure that uses the test cloth.
14 And that is for the purposes for reproducibility and
15 repeatability that then is in the ENERGY STAR database,
16 it's in the DOE database. It's in the CEC database for
17 residential dryers.

18 And for certifications issues, we have the CEC
19 with new authority on providing fines to the manufacturers
20 even if they do a paperwork error, and there's no consumer
21 impact. But these are the things that we are worried
22 about. So we understand that theoretically in a lab it
23 would be great to show consumer representation, but then
24 you lose, as you have that lever, you lose the balance.
25 And you can't have it repeatable and reproducible.

1 And that's where there's a reason why you talk
2 about the IEC and AHAM test procedures are being used.
3 They aren't. They're in the sense of DOE has the dryer
4 test procedure. That's the test procedure we'll use for
5 energy and IEC is not a test procedure. There's a draft
6 form and that type of thing, but for energy it's the DOE
7 test procedure that's being used. So by creating a wholly
8 unique, very unrepeatable irreproducible test procedure
9 that then will create data in a CEC database that conflicts
10 with the residential dryer database -- where consumers
11 wouldn't have conflicting -- different test procedures I
12 guess conflicting is the wrong thing. But differing test
13 procedures, one that's not very reproducible, we oppose.

14 And the other thing is that you mention is that
15 DOE only runs one test. And I don't know, I have to check
16 on this, but generally what happens with DOE is you
17 manufactures have the option of just testing one product.
18 But that's at their own risk, in the sense of during
19 verification, there could be two, three in their standard
20 deviations. There's a little mathematical and statistical
21 formula and they have to be sure they're under that.

22 So one test does not necessarily mean A, it's
23 just one test for DOE, so it's not very good. It means
24 that it's less burdensome and it's risky for the
25 manufacturer that they were to rely on one test and how

1 they want to rate. So I think that's little
2 mischaracterized that DOE is one test, so this is better
3 because there's more tests. Better or more tests means
4 more burden, and less really that -- no benefits based on
5 that burden. So that's a comment.

6 And then --

7 MS. FOSTER PORTER: I'd like to respond to that
8 if I can?

9 MR. MESSNER: Sure.

10 MS. FOSTER PORTER: So what I heard, just to make
11 sure I understand you Kevin, this is Suazanne. I'm sorry,
12 I haven't been saying my name, but I guess there's only two
13 of us here.

14 So to respond to your question or comment about
15 the test clause, so we did detailed investigations to
16 identify the best test load that would be a balance of
17 repeatability, reproducibility and representativeness. We
18 considered real world clothing, but specified in the
19 utility test protocol -- I'm not sure if you're familiar
20 with that, but it's basically buying clothing from a U.S.
21 clothing manufacturer and then it includes jeans and so
22 forth. And so we looked at that. We looked at the U.S.
23 Department of Energy, test clause. We looked at the IEC
24 cotton and we looked at the IEC synthetic. So we compare
25 for looks, before we made this choice to try to balance

1 what would be real world.

2 What we found was utility test protocol load and
3 the IEC test cotton load that was specified were very
4 similar in their performance. They weren't identical, but
5 they were very similar. And the DOE test clause has been
6 shown multiple times to not be representative of a
7 residential test clause -- excuse me, residential clothing
8 and loads, which is part of the reason why the utilities
9 developed the utility test protocol. So --

10 MR. MESSNER: Right, but the reason for that is
11 because you are breaking the law if you submit a non-energy
12 amount that ends up being verified as incorrect. And as
13 far as we can tell you did no repeatability or
14 reproducibility test at all in the same lab. And the real
15 world clothes is not reproduced when not repeatable, so
16 (indiscernible) Okay.

17 MS. FOSTER PORTER: So I'd like to finish please,
18 Kevin.

19 MR. MESSNER: Okay.

20 MS. FOSTER PORTER: So we did a lot of work to
21 look at different loads. We selected the IEC protocol
22 commercial, excuse me, cotton load and we did repeatability
23 studies with that load in our lab. We did that for two
24 dryers and then we calculated no (phonetic) standard
25 deviations and so forth.

1 What we found was that the IEC cotton load was
2 very repeatable. Specifically, at the 95 percent
3 confidence interval was plus or minus 2 percent of the
4 energy value for one of the dryers and a 95 percent
5 confidence interval for another dryer, it was plus or minus
6 1 percent. So I'm happy include more about the
7 repeatability studies in the California Investor Owned
8 Utility CASE team's comments, because we did do those
9 studies on the test procedure with the IEC cotton load.

10 Furthermore, in order to verify our test at the
11 San Ramon Lab we conducted round robin testing on a dryer
12 that was also tested by Underwriter's Laboratories, so well
13 established test protocol. We tested that dryer. It was a
14 residential dryer, under the DOE test protocol and verified
15 that we were within the error expected for that dryer.

16 So furthermore, the test lab that we have is in
17 the process -- part of the lab is ISO, IEC certified to
18 17025, which is the quality standard for laboratories. We
19 are in the process of certifying to that standard.

20 So we have high confidence that the data that we
21 have submitted under this test procedure is repeatable and
22 reproducible with the IEC cotton test cloths. And that we
23 can have both representative load, in addition to having
24 repeatable loads, without using the DOE test cloths, which
25 are not as representative of real world use.

1 MR. MESSNER: Okay. And that's -- we'll submit
2 comments on that, but there's a reason that no one else in
3 the galaxy is using that. So when you do round robins, and
4 I hear you went to UL and you had two dryers, but there's a
5 reason why there's a test cloth. And there's a reason the
6 test cloth is very -- I mean, when we -- it goes to mark
7 there are the batch sizes they go through to make that test
8 cloth consistent that all manufactures can use. It's very
9 precise and it's there for a reason.

10 And so from our perspectives, we get fined by CEC
11 and DOE if a mistake or something is made. So it's not
12 just a lab exercise for us. There's enforcement issues as
13 well that come to it and so the tolerances have to be
14 extremely tight on this. And that's why nobody uses these
15 -- that's why we use the test cloth. So --

16 MR. NELSON: Can I just real quick? This is Ryan
17 Nelson from the Energy Commission. And I appreciate your
18 comments and everyone's comments discussions in the room.
19 But I welcome evaluation of the test procedure, having the
20 manufacturers run a test procedure and submitted their
21 comments during this rulemaking process. I think that's
22 very valuable information moving forward.

23 If there are claims of repeatability and
24 reproducibility please tell us how and why we can improve
25 it, or why the test procedures failed to meet those

1 requirements.

2 So I think the conversation's great in the room,
3 but I think further study or data submitted would also
4 support some those arguments. So I invite those comments.

5 MR. MESSNER: Okay. That sounds good. And then
6 that gets to the other point of this test procedure is so
7 expensive, you have to set up cranes in the room and move
8 hundreds of pounds over on the scales. I mean for the
9 larger loads, it's very, very expensive, very, very
10 burdensome.

11 And then the ambient issue too. I wanted to
12 raise that. The ambient, the tolerance was ratcheted down
13 on the ambient temperature. And it was to 65 degrees,
14 which is only California. So that's not going to --
15 California, usually if they're looking at things, they're
16 usually under the impression that this will spread
17 nationally. But 65 ambient is not representative
18 nationally and the tolerance level of plus or minus 1.5
19 degrees is much tighter than what is seen at DOE.

20 MS. FOSTER PORTER: Yeah. May I respond to the
21 second part about the tolerance, because you highlight an
22 important difference in the U.S. Department of Energy test
23 procedure compared to this one.

24 So when we did our temperature investigations,
25 what we found is that the energy use of a dryer can differ

1 up to 4 percent within the range that DOE allowed, which is
2 the 6-degree range. That if you were to test at the low
3 end of the range and test at the high end of the range, it
4 could be a difference of put to 4 percent in the energy
5 use. And that was a very high error from one variable in
6 the test procedure.

7 So going back to your earlier point that when you
8 submit data, you really want to make sure that it can stand
9 up and that you won't get penalized, we wanted to tighten
10 that down so that that 4 percent error essentially, could
11 be eliminated from the test procedure.

12 From a cost perspective to adjust that
13 temperature range to 1.5 degrees was just a matter of
14 adjusting and tuning the HVAC equipment more appropriately.
15 It didn't require extra HVAC equipment above and beyond
16 what would have been required for the DOE tolerance. So
17 it's a relatively low labor cost to increase the error by
18 or significantly decrease the error. So I did want to
19 speak to that, because I think it addresses your earlier
20 point of just being able to be repeatable.

21 MR. MESSNER: Yep, no it does. And it's a tough
22 balance for all these things. That's the thing, is you
23 have repeatability and reproducibility, cost and burden and
24 representation. It's hard to balance.

25 And that's where it takes years to go through

1 this, where manufacturers at the table doing round robin
2 testing and things like that or the DOE, which goes through
3 that type of thing and that's why we would achieve the
4 thing.

5 But the RMC, I wanted to point out the 2 to 4
6 percent RMC, that's -- I don't even know what to say on
7 that. For these larger loads it is so sensitive to the
8 ambient moisture. You set it out and just transferring it,
9 it absorbs. The remaining moisture content can go up a
10 percentage or so just in the transferring of the load.

11 So it's already an issue with the residential
12 units, the smaller side, and the bigger it gets it
13 skyrockets or exponentially it gets more problematic.

14 MS. FOSTER PORTER: So Kevin, we had that same
15 concern. And so I'm not sure you had a chance to read
16 through the section for textile handling. But we specify
17 the vessels to be impermeable to water vapor.

18 You know, we had some more details in there that
19 are kind of common sense, that a lot of labs are doing, but
20 weren't written into the DOE test procedure before.

21 We also have time limits for advance work to try
22 to address that. So we were aware of that issue with the
23 DOE test procedure and tried to improve upon it, again with
24 very little cost. You can put a plastic bag in a vessel
25 and it really helps with the repeatability, just as an

1 example.

2 MR. MESSNER: Okay. Thanks. Well, each little
3 cost ends up being a lot of cost in the end. So all these
4 little things, it's just a little cost, each one's a little
5 cost, but at the end of the day it's a lot more expensive.
6 And these larger units are a lot of times built to custom.
7 There's thousands and thousands of SKUs.

8 All right, going through these others quickly, so
9 how long did you -- how long was the test? When you
10 finally ran it, how long did the test end up being? You
11 compared it to a clothes washer test, which I'm not sure
12 why that's a comparison, because that's different product,
13 but how much --

14 MS. FOSTER PORTER: So there's a memorandum on
15 the docket that details the amount of hours that we expect
16 for the test protocol. I don't have that off the top of my
17 head in terms of the very specific that we have cited
18 there. So I don't want to give a specific number, but I
19 encourage you to go to the docket. There's a memorandum
20 that summarizes how much time is needed as well as labor
21 costs associated with the runs.

22 And that was posted Ryan, when?

23 MR. NELSON: That was posted about two months
24 ago, I believe.

25 MR. MESSNER: Okay.

1 MS. FOSTER PORTER: Yeah, so please go there to
2 refer for that question.

3 MR. MESSNER: Okay. Thank you.

4 MR. NELSON: And to those testing costs we did do
5 a -- there is a short section in the draft. Whoops, I
6 think my (indiscernible) in the draft report table.

7 MR. MESSNER: Oh. Okay.

8 MR. NELSON: Again, we're proposing testing
9 certification and marking requirements. We are always
10 sensitive to costs associated. However we're not proposing
11 efficiency standards this time. That's not in the
12 proposal. So we are sensitive to costs, but there is a
13 short section in the draft report also relying on some of
14 the values in that memorandum that's posted.

15 MR. MESSNER: Okay. Thanks, Ryan.

16 MR. NELSON: And a couple of more comments.
17 We're --

18 MR. MESSNER: Yeah. Let me -- Yeah, I'll just
19 try to get through these quickly. I was curious, you
20 talked about the partial loads. One thing we had talked
21 about before this is your testing partial loads and looking
22 at partial loads. But then we thought from the report the
23 study confirmed that at least maybe for the -- maybe it's
24 OPLs only, but that nobody's putting in partial loads.

25 So and then so maybe if you help, this is one for

1 our written comments where we're a little perplexed or
2 confused maybe where these test procedures -- and I think
3 in a lot of cases maybe we're jumbling them together, but
4 we're really talking about three separate instances.
5 There's the residential coin ops in a laundry mat or multi-
6 family. And then you have the OPL and then you have the
7 larger commercials in a laundromat and each one's a little
8 different.

9 But if the OPLs already have a full load, then
10 adding a partial load for test procedure seems to overly
11 complicate and create more burden. And for the smaller
12 loads, it's time. You're paying for time. And those
13 California weights and measures you have you put in however
14 much money, you get that much time.

15 So the whole RNC auto-termination partial load,
16 full load, conceptually you're talking about going to the
17 engineers, they don't understand how it all fits together,
18 because it doesn't relate to reality on the laundry mat and
19 so if you could clarify that or (indiscernible) that'd be
20 helpful.

21 And then at the same time, then as we look at the
22 larger load, larger commercial stuff, which you're saying
23 is already full load, it just doesn't -- we don't
24 understand how this all fits together, partial load RMC,
25 with everything else.

1 MS. FOSTER PORTER: So the market study that
2 you're referring to did not -- so this is for other
3 people's reference, TRC, as a consultant to the investor
4 owned utilities that consulting group prepared an OPL or an
5 on-premise laundry market study. And that is posted to the
6 docket. The OPL load or I should say pounds per year of
7 textiles that we use in the CASE report to talk about the
8 energy use, comes from that report. So that's what Kevin,
9 or I should say Mr. Messner, is referring to.

10 And so your questions is about you know if the
11 OPL study assumes full load, in order to calculate the
12 pounds of textiles per year, why are we including partial
13 load scenario? The OPL market study that we have for TRC
14 is they didn't ask specifically about load sizes. They
15 assumed that all the loads were full sized. That's the
16 best available data we have on total pounds per market in
17 California. So that's what we used to generate the energy
18 estimates.

19 For the purposes of then why do we have something
20 sort of partial load? Well, TRC assumes full load, but
21 what we have observed subsequently since that study was
22 produced, in our site visits and expert interviews is that
23 they're not all full load.

24 So you make a point that perhaps for the OPL
25 portion of the market maybe those loads per pounds per year

1 need to be reduced slightly, per the energy calculations.
2 But from all of our expert interviews and our own
3 observations, partial loads happen regularly. So that's
4 the reason why they're included in the test procedure.
5 Hopefully that helps. It's a little bit -- if you want to
6 talk more afterwards I'm happy to explain it further.

7 MR. MESSNER: Okay. No. That's helpful I think.
8 It's just hard to -- since the partial load, you have time
9 dry and then you have folks that are in the OPL, which have
10 an economic incentive to put a full load into increase
11 let's say in a hotel the number three through. And then on
12 the time no one can control if someone puts four quarters
13 in the coin -- wants to dry their sneakers and they're
14 paying for the time to dry.

15 So it's just not making sense, but all right
16 that's all.

17 MS. FOSTER PORTER: Yeah, and Mr. Messner or
18 Kevin, I'm happy to -- you said your engineers are having
19 trouble making sense of how do the different test runs
20 apply to their market. If you'd like to talk further, I'll
21 get offline and happy to do so.

22 MR. MESSNER: Thank you. Thank you. All right,
23 we already got to that. I think we covered everything.
24 Yep, so Sean? Thank you for answering the question.

25 MR. SOUTHARD: Yeah, this is Sean Southard.

1 MR. NELSON: Sean, please turn on your mic and
2 introduce yourself.

3 MR. SOUTHARD: Okay. Thanks. I'm all the way
4 from Michigan, so I want to make sure I get my word in here
5 today.

6 So I'm Sean Southard. I represent Whirlpool
7 Corporation. We're a U.S. based manufacturer. We run
8 everything from small residential appliances, large
9 residential appliances to commercial appliances, including
10 commercial dryers. And within commercial dryers, we
11 manufacture everything from multi-family, coin operated, to
12 on-premises laundry.

13 So our brands are Whirlpool, Maytag, American
14 Dryer Corporation, ADC, KitchenAid, Amana, a lot of brands
15 that all of you guys have in your home.

16 So specific to dryers, we have manufacturing both
17 in Ohio and Massachusetts. We have about 2,800 people
18 employed making dryers. I just mentioned this, because we
19 have a wealth of experience. We're combined the largest
20 manufacturer of appliances, period. We combine small,
21 major and commercial together. So we have a wealth of
22 experience working on both test procedures and standards,
23 with DOE, with CEC, over the past several decades.

24 So we appreciate things like this for CEC. You
25 know, the whole workshop to engage stakeholders in this

1 matter. But frankly, we're just very disappointed to see
2 the lack of engagement with manufacturers like us, from the
3 CASE team and from CEC, prior to having this workshop
4 today.

5 You know, I know (indiscernible) CASE report
6 mentioned that you interviewed manufacturers several years
7 ago. We just didn't see it this time around, where you
8 guys reached out to us and asked us questions or if we have
9 any data or input on this proposed test procedure. You
10 know, it kind of runs counter to how DOE develops standards
11 and test procedures, where it's a several year iterative
12 process and manufacturers are engaged right from the start
13 before even talking to anybody else.

14 So we would have liked to see that, but like I
15 said thanks for engaging us now. And obviously, I also
16 want to recognize the great amount of work that the CASE
17 team has done to put this together. We know from
18 experience how long it takes to develop a test procedure
19 and do the type of analysis that you guys did. So it was I
20 think pretty well put together. You guys thought through a
21 lot of different things, but at the same time we still have
22 some concerns that we want to address with you guys.

23 So I also want to say that we appreciate the
24 desire from the utilities, the IOUs, as well as CEC to save
25 energy in the commercial laundry space. And as you

1 mentioned, a lot of owners, operators of commercial
2 laundries want to save energy, which is a good thing. But
3 obviously, there's always tradeoffs involved, right? So in
4 general, for residential appliances and I think it's true
5 for commercial, they'll always want to save energy as long
6 as they're not going to have to trade off on cost, or cycle
7 time, or features, or capacity, or a number of other
8 things.

9 So once you start to rank those together,
10 efficiency starts falling down that order. So I don't
11 think you guys have done the analysis quite yet to say that
12 there's a demand from owners, operators and consumers for
13 efficiency if these are the tradeoffs that they're faced
14 with.

15 So our recommendation for now is that we don't
16 think it's appropriate to propose any commercial dryer
17 standards or test procedures at this point and time or into
18 the future. And I'll go through a couple of reasons why I
19 think that's the case. And obviously I'm aware that CEC
20 isn't proposing standards now, but I'm just trying to
21 caution you against it in the future and some things to
22 think about.

23 Number one, we think there's a lack of benefits
24 in relation to the cost of the standard. Obviously,
25 there's a fairly low number of shipments into the

1 California, especially as you go up the larger on-premises
2 laundry segment. There's minimal energy savings potential
3 I think. I know you guys did two dryers or two units and
4 compared the energy savings based on those, but you really
5 can't make conclusions based on two units that you think
6 are similar. I mean there's obviously a lot of different
7 factors in place and to have a more robust analysis
8 requires more than two units to be looked at.

9 And I think you acknowledge this, but there's EU
10 energy saving potential technologies out there on the
11 market today. So how are you really going to analyze known
12 technologies that are being (indiscernible) today, but just
13 don't exist. Where at least for residential there's some
14 efficient technologies being used by key manufactures.
15 Like you said, there's one heat pump for example being used
16 today. And there's a reason why there's one heat pump
17 being used today, right? There's a reason it's not more
18 popular than it is. So we would like more robust analysis
19 in the thinking on that.

20 And also, we have to think about our customers,
21 both from the person that uses it from the coin op side.
22 And they're typically a lower-income consumer, you know,
23 that's going to be going to a coin store to use the dryer
24 there. And as you know, most of them are timed. And as
25 Kevin was pointing out they're paying for the minute that

1 they use. So you have to be cognizant of are you going to
2 make them pay more by increasing the time. Or are they
3 just going to have to pay more for the per minute, because
4 the dryer now costs more for the route operator or the
5 owner of the laundry mat. So some things to think about,
6 especially when it comes to low-income consumers.

7 Also, for the on-premises laundry, multi-family and
8 some of the larger coin op, there's distributors, route
9 operators and the small businesses that are going to be
10 impacted, like I said, if there's a longer drying time.
11 There's potentially increased product costs within the
12 technology in there and few returns available in a given
13 day. So you have less revenue coming in for the route
14 operator or the owner.

15 And to talk about OPLs, there might be lower
16 worker productivity if you have few turns on a given day,
17 because the cycle is now taking longer. So we think all
18 things should be examined especially when it comes to
19 California-specific customers. And we can obviously help
20 put you guys in touch with some of them, if you don't have
21 any contacts in that space.

22 And on the test procedures specifically, we
23 caution you against using -- I don't think that you guys
24 have necessarily hit those four R's quite yet. And this is
25 kind of why I wish you would have engaged us beforehand,

1 because we could have helped you think about some of these
2 things. This is the things that we think about when we
3 develop test procedures. But I don't think that you guys
4 have given the state of quote yet to say, "Yes, that's
5 repeatable, reproducible, representative, and reasonable."

6 And especially in the reasonable portion, you
7 guys need to probably better quantify the manufacturer
8 burden. In terms of procuring all this new equipment that
9 we have to have, new lab spaces, thousands of pounds of
10 test cloth. And I noticed you didn't mention how much the
11 test cloth costs, because it's very expensive. It's
12 thousands of dollars for a single load, especially if you
13 talk about a 210-pound load that's thousands and thousands
14 of dollars just for that one load. And it's already making
15 me wonder if you guys are kind of in it with the suppliers,
16 that are making all this cloth, just because it costs so
17 much. And now they have this new business, right?

18 And another point I wanted to mention is the on-
19 premises business is mostly built to order, as Kevin
20 mentioned. These are custom SKUs in most cases and there's
21 thousands of them. Just Whirlpool alone, we have thousands
22 of SKUs in the on-premises laundry space. So you have to
23 balance how much of these can we feasibly test and certify
24 for our customers without delaying product development and
25 launches.

1 So I know you guys had stuff in there like
2 testing basic models, but it's not the same in commercial
3 dryers as it is for residential appliances where a basic
4 model might be color variant or a different door handle.
5 These are things that the customer is asking for
6 specifically to be different. So it's not the same in
7 residential as commercial, to try to get just a basic
8 model. And you might have to test thousands of SKUs, you
9 know?

10 And you have to kind of think about what's the
11 benefit to that purchaser to having this data? They might
12 be buying it and then -- okay, so you buy it, you
13 manufacture it for them, and then we test it afterwards.
14 Well, why does it help to have that data after they already
15 bought the dryer, right? They probably would want that
16 data ahead of time, but it's custom, you simply don't have
17 that data available. Okay.

18 And we have other specific issues with the test
19 procedure. I'm not going to go into the detail on most of
20 these, but we'll definitely follow up with written comments
21 on them, including the RMC as Kevin was mentioning, the
22 scope. I'm not sure why you guys landed at 655 cubic foot,
23 but I'd like an explanation of that.

24 A standby power measurement? I'm going to point
25 out for DOE that we don't measure standby power for

1 commercial washers. And there's a reason for it, because
2 commercial laundry you have to show that the product's
3 turned on, so the customer or route operator doesn't think
4 it's broken. So if you try to do anything to route a
5 standby you might turn off the displays or something like
6 that. And now you might get a service call, because they
7 think it's not working. So I would encourage you to look
8 at that and what DOE has done for commercial washers.

9 Kevin mentioned the environmental tolerances and
10 there's a few other things, but I won't go into detail on
11 those right now.

12 And then it brings up this larger point that I
13 had that the CASE team only did a limited amount of testing
14 in that single lab. And I think you guys mentioned you did
15 some, one or maybe two tests at UL as well. We don't want
16 to call seven or eight units tested at one and maybe two
17 labs, equally reproducible and everything that you
18 mentioned.

19 The test procedure coloration or
20 it's supposed to be a collaborative process, it takes a
21 long time to get it right. And it's not just developed in
22 a black box somewhere in California and then handed down to
23 the manufactures. It's iterative and it doesn't take six
24 months. It's usually several years of development. So we
25 really don't have an appropriate amount of time by
September 1st to meaningfully use this test procedure and

1 comment on it. So I would recommend, for now, just to
2 abandon the proposal entirely to test and certify.

3 If CEC really does want to move forward with it,
4 despite our concerns that I highlighted, I would suggest
5 working directly with us, associations, other manufacturers
6 and we can talk in more detail about the proposal itself.
7 And we'll help you get a proposal that works for
8 manufacturers as well, the ones that are actually going to
9 use this to test and certify.

10 So I'm not sure what that looks like. I'll let
11 you guys think about that. But maybe it's, like I said an
12 iterative process, round robin type testing with
13 manufacturers, using third-party labs. Maybe an in-person
14 workshop once we all have some experience with it to go
15 through these details with some of our engineers. Kevin
16 and I aren't engineers by training, but we would love to
17 have them here to debate specific points on this.

18 So that's I guess all my comments. Thanks for
19 letting me talk.

20 MS. FOSTER PORTER: This is Suzanne Foster
21 Porter. Can I ask you one clarifying question, just one
22 clarifying question about your comment? You mentioned
23 remaining moisture content as one of your concerns, but
24 neither of you elaborated on that. Could you please --
25 would you mind elaborating just a bit on your concern with

1 that, just for clarification?

2 MR. MESSNER: So there are two maybe higher
3 arching concerns. One is that the auto termination concept
4 doesn't even -- I can't even get my head around it, to even
5 fit in a laundry mat situation or when you're paying for
6 time. So that it just doesn't even make sense. And so
7 that's one. And then other is that the ambient moisture
8 gets into to loads, which you already talked about that,
9 creates significant problems when you have a 2 percent or
10 even 4 percent RMC to hit that, pull the load out with
11 cranes or whatever.

12 And no one here is going to -- maybe you guys are
13 strong, but 200 pound loads or whatever, people aren't
14 lifting those up with their hands and with their backs.
15 You have to have cranes or something to lift loads around.
16 And by moving those loads around, as soon as they're out of
17 the dryer, the ambient moisture collects in that RMC. You
18 could have a bone-dry load and in a few minutes it could be
19 2 percent RMC. That's how quick it changes. And so it
20 could depend on what's going on.

21 So those are two high-level concerns that doesn't
22 match with the low stuff and it's hugely sensitive and to
23 the ambient moisture content with the larger products.

24 MR. SOUTHARD: And then just one other concern,
25 Sean again from Whirlpool. Generally, how did you arrive

1 at those RMC targets? Per DOE for D2 dependencies in test
2 procedures, there is a lot of work with manufacturers to
3 figure out what consumers believe to be a reasonable RMC
4 that they would determine to be dry. It seems like your
5 guys's targets were more arbitrarily chosen. I didn't see
6 the research that went into -- we believe that all the way
7 from coin op multi-family on premises this is a reasonable
8 RMC target, where consumers and users believe that the
9 cloths are dry.

10 I mean there's reason to believe that in a lot of
11 those cases, they want them to be very dry at the end.
12 It's not like you're at home where you can just hang them
13 up at the end and let them get that other couple of RMC out
14 of the clothes. Especially for like a hotel. You want
15 those towels to be bone dry when they come out at the end.
16 You might not want them at 5 percent RMC or at 4 percent
17 RMC, because they're going to smell like mildew once you
18 fold them and leave them somewhere in a closet.

19 So I think you guys probably need to talk to us,
20 interview other users, owners of these to figure out what
21 those appropriate RMCs targets are. And it just seems like
22 it was more arbitrarily chosen at this point.

23 MR. NELSON: Thank you, Sean and Kevin. And
24 again, I appreciate the comments. By all means, contact me
25 if you have any questions regarding dryers. If you have --

1 I appreciate your statements. If you have data to support
2 your comments today, I highly suggest you submit that data.
3 All that data is very valuable in our rulemaking process.

4 Our process is slightly different than the DOE's
5 process. We just had a presentation on Tuesday on that.
6 I'm sorry, Kristen you're raising your hand. And that
7 presentation is available on the Web. If you contact me, I
8 can put you -- just to clarify some of the differences of
9 how this process will move forward. And I encourage
10 reaching out to other groups in the room to work
11 collaboratively to work together and help each other out in
12 this process. So I appreciate all your comments today.

13 Kristen?

14 MS. DRISKELL: Hi, this is Kristen Driskell from
15 the Efficiency Division. I just wanted to clarify or
16 correct something for the record, which is that we didn't
17 just start this rulemaking. We started it back in 2013.
18 We had an invitation to participate with Whirlpool and AHAM
19 who participated in that process. They participated in the
20 invitation to submit proposals.

21 It's been a long time for this rulemaking and I
22 know it went silent for a while. So we really do
23 appreciate the feedback that we're getting now, especially
24 since this is within the last six months, the first time
25 we've seen this proposed test procedure. So it's important

1 to get that feedback, so we really appreciate that.

2 MR. SOUTHARD: Thank you. This is Sean again.
3 So like you said, it was started several years ago and
4 there were opportunity for stakeholders to submit comments.
5 But from our perspective, it went away in like 2013 and we
6 had nothing for four years until maybe like 2016.

7 So for us, it seemed like it just kind of went
8 away and all of a sudden, now we have a proposed test
9 procedure, which was developed outside of our knowledge.
10 So like I said, test procedures are a very long process to
11 develop and they're usually open and very collaborative.
12 Like I said, I'd recommend looking at what the ANSI process
13 is, the DOE process developing test procedures. It's not
14 just a consultant or one agency just developing it on their
15 own. So thanks again.

16 MR. NELSON: Are there any other comments in the
17 room? I think I have one hand raised online and then we'll
18 -- Carlos?

19 MR. BAEZ: Online we have a hand raised from Mike
20 Nelson. Did you have a comment, Mike?

21 MR. MIKE NELSON: I do. Can you hear me okay?

22 MR. BAEZ: Yeah. We can hear you.

23 (Audio cuts in and out.)

24 MR. MIKE NELSON: Okay very good. Thank you for
25 the opportunity to speak here. Two comments real quick, we

1 are from Dexter Laundry. We are a commercial and hotel
2 laundry manufacturers only we don't do household. So
3 unfortunately, Kevin and Sean can and can't represent me,
4 but some similar comments and I won't (indiscernible) I'll
5 just add those to my notes.

6 But my two comments I do want to talk about is
7 cost. Being a non-household producer, we really don't have
8 facilities like the household manufacturers do for doing
9 testing. I've seen the Whirlpool. I've seen Alliances
10 test facilities for doing DOE and AHAM and I worked for you
11 all for a while. I've seen UL facilities that do the
12 testing. But we don't have that type of infrastructure.

13 So to do very large dryer, the air conditioned,
14 humidity-controlled room would be a huge investment for us.
15 In fact the equipment, I would like to buy new gas meters,
16 power supplies, power regulators, but the room would just
17 be a terrible expense for us for doing that.

18 And on top of that, I'm going to have to probably
19 contract this work out. And your labor estimates that were
20 posted back in June by Ryan, I think probably look like the
21 effort needed to do the test, but it's probably missing
22 some stuff. It's missing the markup. And OEM's going to
23 charge -- you know they've got to make a profit margin on
24 doing this testing. They've got project management.
25 They've got formal reporting. They've got to ship this

1 stuff back to us. So you're \$600 to \$1,000 test for labor
2 is actually going to be about \$3,000 to \$5,000 per unit
3 charge for me to test per model.

4 And then we have comments around the standards.
5 Obviously you're proposing testing and listing, because I
6 think in the future you want to set some minimum
7 guidelines. And based on the machines that were tested,
8 you're going to set some standard. And ultimately there's
9 going to be testers out there that may need some help,
10 that's going to have to make changes to their machines.

11 And like just the product testing costs, the
12 actual products, I'm going to have to pass those costs on
13 to the distributors and ultimately the end users that buy
14 the equipment. And unless they're saving significant
15 amounts of money on energy, they're going to have to add
16 that to the VIN price. Or if it's time, they're going to
17 have to add people or work overtime in the OPL situations
18 to finish the same amount of loads.

19 Again, I appreciate the opportunity and thank you
20 again.

21 MR. RYAN NELSON: Thank you for joining us and
22 thank you for the comment. If you have data on what you
23 think the tests would cost, as compared to what has been
24 proposed, I invite you to submit those to the docket. That
25 would be very valuable information also.

1 MR. SOUTHARD: (Indiscernible).

2 MR. MIKE NELSON: (Indiscernible) No, go ahead.

3 MR. SOUTHARD: Sorry, I was just going to make a
4 point. You know, it's hard for us to give you these costs
5 without actually purchasing the equipment and conducting
6 the test procedure. So like I said, it just goes back to
7 my main point about we need more time if you're really
8 going to move forward with this to help flush out some of
9 those costs and figure out what the exact manufacturer
10 burden is. Just the one estimate that came already, as
11 Mike was saying, probably doesn't reflect the reality for
12 us when it comes down to actually performing the test
13 procedure.

14 Sorry to interrupt you Mike.

15 MR. NELSON: That's okay. We're having --

16 MR. MIKE NELSON: Go ahead, Mike.

17 MR. RYAN NELSON: Yeah. It's just that I'm not
18 going to do a quote to do a facility, because that's
19 unreasonable for me to think I would spend that type of
20 money. So I will get some competitive bids to do this test
21 procedure from some NRTLs.

22 MR. MIKE NELSON: Thanks, Mike.

23 Yes, in the room?

24 MS. ANDERSON: So this is Mary Anderson, from
25 PG&E. I recognize it would have been lovely if we could

1 have reached out. I reached out at least to a few of you
2 through a friend of yours, Pat Kilroy. And I believe we
3 are planning on having meetings soon to address this and a
4 few other opportunities. I think we were told maybe
5 October would work. We are happy to move at a quicker pace
6 than that, if that be helpful.

7 MR. MESSNER: Yeah, I think what the -- yes. I
8 mean, we're happy to talk through this. But I think what
9 Sean's trying to get at, is that we realize these
10 rulemakings, we have the history of what's been going on
11 for years and that's all fine. But what the frustration is
12 I think that you're hearing is that this test procedure --
13 and is mentioned I think in your presentation or somewhere
14 that this was done in conducting and included
15 manufacturers. I don't know what manufacturer, appliance
16 manufacturer or say an AHAM member that you actually talked
17 to. You said you said you talked to someone, but maybe it
18 wasn't Whirlpool and it wasn't some others that I've talked
19 to.

20 So by going to in this test procedure -- it's
21 better done in an open collaborative process, in an ANSI
22 driven process instead of PG&E and your consultants. I'm
23 just being frank, going in and dropping this test procedure
24 on and making up your own new test procedure when there's
25 already a DOE one out there that, which I know that's what

1 started in the first time. But then you go from DOE, which
2 has some issues and then come up with an entirely new one,
3 way off. I mean if you just leap from one to the other and
4 PG&E, you guys are utilities. We're manufacturers. We
5 deal with the tests.

6 And so that's the frustration that you're
7 hearing. And so now you come up and now we're stuck with
8 yes, we have a lot of criticisms over it, because it
9 doesn't make any sense. Because it was done by utilities
10 and no manufacturers were in the room. And so by ANSI
11 process, it doesn't mean that we'd do the test procedures.
12 That's included in NRDC and that's what's in every PG&E and
13 every one and works to see coin operators all. You get a
14 balanced standards committee and work through this stuff.

15 And it is hard. Test procedures are a pain. And
16 they're very difficult for us and for everyone. And we,
17 AHAM has its own test procedures. And we have a home
18 laundry test procedure, which is cleanability and we -- we
19 continually say we need to change that as well. And so
20 it's tough. And but they're the backbone of everything
21 that then drives from that. If you get those wrong then
22 everything else is flubbed up.

23 And so we need to get this right. And it has to
24 be done open. And I don't know the best way to do it,
25 whether it's through maybe CEC or workshop or whether some

1 ANSI or a standard setting body or what. I don't know
2 this. I don't have any -- but that's what we're after. I
3 mean just you talking to us and then going and doing
4 shuttle diplomacy, I'm not sure how well that works either
5 necessarily. It's good to get everybody in the room and it
6 takes a lot of meetings where we get engineers in there.

7 So that's kind of what you're hearing our
8 frustrations with, and maybe not the most -- maybe our
9 tone. I mean, we're trying to -- it's just we're
10 frustrated, so that's what you're hearing. So that's where
11 we are at, but yes we'll be happy to meet as soon you can.

12 MS. ANDERSON: We are happy to meet with you and
13 work in a way that works well. So the one thing to note,
14 PG&E is working on this through our EE program. The
15 parties that we are looking to make -- we have to work with
16 them the processes we're given, but absolutely we look
17 forward to working with manufacturers and industry groups.

18 MR. NELSON: Thank you, everyone. Are there any
19 other comments? If not, we're going to take a short break
20 and come back at the top of the hour. Is that enough time
21 for everyone? Ten minutes. We'll come back, let's just
22 call it, 3:05. We'll come back at 3:05 and you get 15
23 minutes.

24 All right, thank you everyone.

25 (Off the record at 2:53 p.m.)

1 (On the record at 3:07 p.m.)

2 MR. SAXTON: Can I get started again? This is
3 Pat Saxton. I'm an Engineer in the Appliances and Outreach
4 in Education Office in the Efficiency Division. And I'll
5 be presenting on the draft air filter testing certification
6 and marking requirements.

7 We'll cover today's purpose, a quick background,
8 proposed changes to the existing regulations, have an
9 opportunity for public comments, and then talk about next
10 steps.

11 We're a little different, because this topic has
12 been presented multiple times. We have existing
13 regulations. So rather than present any new concepts,
14 we're just going to review proposed modifications to the
15 existing regulations.

16 As background, in case someone is new to the
17 issue, the building efficiency standards that required the
18 installation of air filters that were labeled for filter
19 efficiency and static pressure drop beginning July 1, 2014.

20 And the appliance efficiency regulations required
21 residential air filters sold in California, to be certified
22 and marked with the same information for filter efficiency
23 and static pressure drop, beginning July 1, 2016. This
24 compliance date was subsequently delayed to April 1st, 2019
25 through emergency regulations that were adopted by the

1 Commission earlier this spring. Next week, at its August
2 9th business meeting the Energy Commission will consider
3 making permanent that delay in compliance date.

4 Just for a quick refresher, the product types
5 that are currently covered by the existing regulations, the
6 types of filters that we see in residential mechanical
7 systems, they could be fiberglass, pleated paper,
8 electronic, I'm not showing adjustable size air filters,
9 but those are in the current scope.

10 So jumping right to that regulatory language we
11 are proposing modifications to the scope, because we
12 typically want product coverage requirement to be done in
13 the definitions rather than the scope. So we're
14 eliminating the language in the scope for this topic,
15 except just leaving air filters. And then we'll make
16 changes in the definitions.

17 The goal for the definition changes and really
18 the products that get covered, because of those definition
19 changes, are to better align with the scope that's in the
20 Title 24 Building Efficiency Standards. And just roughly
21 paraphrasing that, it's residential mechanical systems,
22 supplying air through duct work that exceeds ten feet in
23 length.

24 So the change that we're proposing for Title 20
25 is to eliminate that phrase, "Installed in forced air

1 heating or cooling equipment" and then add phrasing that
2 says, "Designed for installation in residential ducted
3 forced air heating or cooling systems," adding a sentence
4 that says, "Air filter does not include models that allow
5 the consumer to adjust the dimensions of the end use
6 device."

7 This does three things. It limits the coverage
8 of air filters to be those designed for installation in
9 ducted systems. It removes from coverage air filters that
10 have a filter face area that's adjustable by the consumer.
11 And it leaves electronic air filters within product
12 coverage.

13 We're also proposing to add a new definition.
14 This would be for the basic model of an air filter. The
15 proposed definition is all units of a given type of an air
16 filter, with the same depth and the same construction,
17 including type and grade of air filter media, pleat
18 spacing, pleat height, pleat support, and filter frame
19 pattern. The basic model of an air filter includes air
20 filters with different filter face areas. The reason for
21 adding this definition, which could be roughly considered a
22 definition for a product family, the reason for doing that
23 is it facilitates reducing the number of products that must
24 be tested.

25 In Section 1604 test methods we're proposing to

1 update to the current version of the test methods currently
2 cited. Those are ASHRAE 52.2 and AHRI Standard 680. (

3 More importantly, we're proposing modifications
4 that do reduce the number of products that must be tested.
5 And we're trying to increase the specificity and the
6 particular product that's selected for testing. So we're
7 striking the small, medium and large-size filter language
8 in the existing regulations and proposing that
9 manufacturers shall test each basic model of air filter.
10 And that the tested filters shall be the one with the
11 dimensions closest to 24 inches wide by 24 inches long. We
12 do want to make clear that manufacturers may test
13 additional air filters of other dimensions if they chose to
14 do so.

15 In Section 1606 filing by manufacturers, we often
16 call this certification. Just as a reminder tested models
17 of air filters must be certified. Under this proposal,
18 that would be at a minimum of each basic model. And then
19 we want to be clear that models that haven't been tested,
20 in our case that'll be models that have calculated data,
21 that they cannot be certified.

22 The Section 1606 data submittal fields, we're
23 proposing some very modifications. We're removing the
24 field air filter sizes tested, because we've eliminated
25 small, medium and large, so that's no longer relevant. We

1 proposed to add the model number of the tested air filter
2 and then we're making minor changes to the allowable values
3 for MERV. We're eliminating 17 through 20, because those
4 are no longer referenced by the test method. And actually
5 not applicable for filters tested for ANSI/AHRI 680 is,
6 we're just maintaining that. It is in the current
7 standard.

8 For the marking of the air filters, we're
9 splitting those requirements into three subsections. One
10 for filters that have been tested for ANSI/AHRI Standard
11 680; two, filters that have been tested for ASHRAE 52.2.
12 And then three, the filters that have not been tested and
13 will have calculated information.

14 For those first two types this would be filters
15 that have actually been tested, first two categories,
16 excuse me, filters that have actually been tested. We're
17 not proposing any substantive changes. If you look at the
18 staff report you'll see a couple of minor edits that are
19 just wording and verbiage, but no change of intended
20 effect.

21 However for filters that have not been tested,
22 this is the new information that's being proposed and
23 covered in the staff report. And the goal is to mark a
24 filter that has not been tested with information based on
25 that from an air filter of the same basic model or same

1 product family, which has been tested. And to derive or
2 calculate that information will rely on the relationship of
3 that volumetric flow rate equals the face velocity
4 multiplied by the face area.

5 When comparing untested filters versus the tested
6 filters, we're proposing to make the assumption holding the
7 face velocity equal, so that it simplifies some of the
8 calculations for the filter that hasn't been tested.

9 Specifically, the information that an air filter
10 has to be marked with, for a filter that has not been
11 tested, both the particle size efficiency or PSE and the
12 initial resistance for the untested filter would be
13 identical to that of the tested filter. So this is because
14 of one, the way we've defined the basic model and two,
15 because of this assumption that will hold the face velocity
16 to be equivalent.

17 Another thing, the calculations that actually
18 need to be completed are only for air flow rates. So to
19 determine the air flow rate for the untested filter we're
20 proposing to use the equation that the volumetric flow rate
21 of that untested filter is equal to the volumetric flow
22 rate of the tested filter, multiplied by the face area of
23 the untested filter and divided by the face area of the
24 tested filter. We've got a backup slide of how we came up
25 with this equation if anyone is interested in following up

1 on that.

2 And then for air filters that were tested under
3 ASHRAE 52.2, then they're required to mark a value for
4 MERV, it would also be identical to that of the tested
5 filter.

6 One item in Section 1607 is that the Energy
7 Commission provides a sample of what the marking on an air
8 filter might look like. We are not proposing any changes
9 to that and it is only a sample. It is not required to
10 manufacturers to follow that, but we did want to point out
11 that there was a small omission. And that's that asterisk
12 that should go along with air flow rate value 5, which is
13 to indicate that that is the maximum rated air flow for the
14 filter.

15 So that is really the end of my presentation.
16 We'd like to take any comments of feedback at this time.
17 Yes, in the room?

18 MR. STEUBEN: Good afternoon, everyone. This is
19 Jeff Steuben. I'm with Energy Solutions, representing on
20 behalf of the Investor Owned Utilities. Good afternoon to
21 everyone who's still here and still awake.

22 I just have a really general comment on this
23 topic, to say that the IOUs support the changes that have
24 been made to the procedure. We think that the testing
25 requirements are more clear and we think that that is a

1 good thing and that will help encourage industry
2 participation and adoption of this practice.

3 MR. SAXTON: Thanks, Jeff.

4 Carlos, do we have any comments online?

5 MR. BAEZ: (Indiscernible)

6 MR. SAXTON: Yeah, just so everyone's unmuted now
7 let's go ahead and -- Laura, do you want to go ahead?

8 MS. PETRILLO-GROH: Sure. This is Laura
9 Patrillo-Groh for the Air Conditioning, Heating and
10 Refrigeration Institute. I just wanted to thank the
11 Commission, and especially Pat for the excellent dialogue
12 and communication during this process to address air filter
13 labeling. We appreciate your attention to detail on
14 aligning Title 20 with Title 24.

15 And I had previously mentioned in an email to
16 you, just that CEC really has evolved on the issue of
17 scaling the tested filter. So has industry thinking as
18 well, regarding that procedure in AHRI 680. And I can
19 fully express this more in comments. I'm hoping that it
20 would be acceptable to conduct the testing at the max rated
21 air flow and scale down based on that to 25, 50 and 75
22 percent of that 100 percent rated air flow. And that will
23 get us to a good point of a scale test to the scale test
24 numbers from the packaged filters numbers.

25 MS. SAXTON: Okay. Thanks, Laura. Yeah, that

1 will help if you add that to your written comments. We
2 appreciate that.

3 MS. PETRILLO-GROH: Absolutely. Thanks, Pat.

4 MR. SAXTON: And Peter, did you want to make a
5 comment?

6 MR. MCKINNEY: Yes, I do. This is Peter McKinney
7 with StrionAir, Incorporated. I also really appreciate the
8 work that's been done here. It's been a lot of good work
9 on tightening up these regulations.

10 One question regarding electronic air cleaners
11 and particularly electric enhanced air cleaners that have a
12 removable filter element, I'm wondering if the marking on
13 filters should be the same. The filters are generally
14 designed for use only within the electronic air
15 (indiscernible) and only meet their efficiency when used
16 with that electronic air cleaner. So it could be
17 misleading to the consumers if the filter is simply marked
18 like other filters for use outside an electronic air
19 cleaner.

20 Showing (indiscernible) particularly a little
21 asterisk below the table that says, "Only when used in the
22 air cleaner for which it is designed," or is it maybe
23 something called out specifically in the regulations? You
24 may not have the answer now, but I wanted to make sure that
25 at some point that that could be thought about an answered.

1 MR. SAXTON: Great. Thanks. And if you can put
2 that in a written comment Peter that would be very helpful.
3 I don't have an answer right at the moment. But in
4 general, if a manufacturer chose to add an additional
5 explanatory information to the marking, that that should
6 generally be okay.

7 MR. MCKINNEY: Great. Thank you very much. I
8 will certainly put it in writing for you.

9 MR. SAXTON: Was there anyone else online who
10 wanted to make a comment?

11 MR. O'DONNELL: Patrick, this is Dan O'Donnell
12 with Honeywell. How are you?

13 MR. SAXTON: Hi, Dan. Good. Thanks. How are
14 you?

15 MR. O'DONNELL: Very well. One quick question
16 and I don't expect you to have an answer, but
17 (indecipherable) extension might be helpful.

18 I believe this regulation is intended to be
19 really geared towards consumers that will be purchasing
20 filters at retail. Is that correct?

21 MR. SAXTON: Yes.

22 MR. O'DONNELL: When we talk about the labeling
23 on the filter itself and on the packaging or being able to
24 see the information through the packaging, that all sounds
25 like it's geared towards the consumer purchase at retail.

1 And my question is therefore, what about wholesale
2 packaging? Is the requirement the same if we were to sell
3 or produce packaging or bulk packs for contractors?

4 MR. PAXTON: So yeah, Dan, I don't have an answer
5 offhand for you. But I would agree that generally intent
6 here is to provide the consumer with information, but the
7 appliance efficiency regulations are applicable to all
8 products sold or offered for sale in California, regardless
9 of if that is for distribution or at retail. The one
10 exception would be when they're sold for distribution
11 that's explicitly out of state. So if you could put that
12 comment in writing, that would be very helpful, Dan.

13 MR. O'DONNELL: Okay. Thank you much.

14 MR. SAXTON: Did anyone else online have a
15 comment? Kristen has a comment in the room.

16 MS. DRISKELL: No, I just wanted to follow up
17 (indiscernible) primarily consumer facing, but it's also
18 geared towards contractors who are installing air filters
19 in new construction. It's a requirement under Title 24
20 that the air filters in new construction have these
21 labeling requirements in residential buildings. So that's
22 the other intended audience for this label.

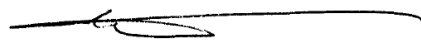
23 MR. SAXTON: Thank you. That is an important
24 addition.

25 Okay. I don't think we have any more comments.

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