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BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the matter of, )
) Docket No. 15-AAER-02
) Pool Pumps and Spa Labeling

STAFF WORKSHOP ON

APPLIANCE EFFICIENCY REGULATIONS FOR

REPLACEMENT POOL PUMP MOTORS

CALIFORNIA ENERGY COMMISSION
FIRST FLOOR, ART ROSENFELD HEARING ROOM
1516 NINTH STREET
SACRAMENTO, CALIFORNIA

WEDNESDAY, NOVEMBER 28, 2018
10:00 A.M.

Reported By:
Peter Petty
APPEARANCES

CEC Staff Present

Leah Mohney, Supervisor, Appliances Unit, Efficiency Division

Sean Steffensen, Mechanical Engineer, Efficiency Division

Stakeholders Present

Charles Kim, Southern California Edison, on behalf of California Investor Owned Utilities (IOU)

Chad Worth, Energy Solutions, on behalf of California Investor Owned Utilities

Shajee Siddiqui, Zodiac Pool Systems, on behalf of Association of Pool and Spa Professionals

Rob Boteler, Nidec Corporation (Via WebEx)

Dan Delaney, Regal Beloit America, Incorporated (Via WebEx)

Public Comment

Kitt Butler, Advanced Energy (Via WebEx)

Kevin O'Donnell, WEG (Via WebEx)
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MS. MOHNEY: Good morning and welcome to the Replacement Pool Pump Motor Workshop.

My name is Leah Mohney. I'm the Supervisor of the Applicants Unit, in the Efficiency Division of the Energy Commission.

I wanted to go over a few housekeeping rules before we get started. For those of you in the room, there are bathrooms across the hall and there are more bathrooms behind the stairs.

In the event of an emergency, please follow staff out the doors, to the park that's catty-corner across the street.

If you have a cell phone, please put it on silent.

And as a reminder, if you are speaking, please introduce yourself and the company or entity that you represent.

We will have the opportunity for public comments at the end of the presentation, so please hold your comments until then. If you're participating via WebEx, you can raise your hand or submit your comment in the chat feature.

Our agenda for this morning, we will have Sean
give the Replacement Pool Pump Motor Proposal. After
that, we will have several presentations by different
stakeholders. And at the end we will have the open
discussion and public comment, at which you can
participate, if you so choose.

The purpose of this workshop is to give you an
overview of the staff analysis on the Proposed
Replacement Pool Pump Motor Standard. And I wanted to
make sure that you understand that this is a separate
effort from the Petition to the U.S. Department of
Energy.

We're also seeking feedback from stakeholders in
this workshop.

Just a brief history on prerulemaking for this.
We've been working on this for a long time. March 2012,
we issued the Order Instituting Rulemaking. March 2013,
we released the Invitation to Participate. May 2013, we
had workshops. June 2013, we released the Invitation to
Submit Proposals. May 2014, requested additional
information on pool pumps and motors. January 2016, we
published a Draft Staff Report. February 2018 [sic], we
had our first workshop. June 2016, we published a
Revised Staff Report. July 2016, the second workshop.
January 2017, the DOE published a Direct Fund Rule-
setting Standard for Pool Pumps. July 2017, we
published the Second Revised Analysis of Standard for Pool Pump Motors and Portable Electric Spas. August 2017, we had the third workshop. And November 2018, we published the Third Revised Analysis for Pool Pump Motor Standards.

As you can see, we are here where the blue arrow is. We've had many opportunities for public participation. Everywhere you see a green bubble, that is your opportunity to participate.

We're in a 45-day feedback period right now, seeking comments on the proposal. Comments are due by 5:00 p.m., on January 4th, 2019. You can submit them electronically at the first link here. Go to the link and click on submit e-comment, and you may submit your comments. You can also send a hardcopy to the address listed. And if you wish to send a digital copy, you can send it to docket@energy.ca.gov. Please include the docket number, which is 15-AAER-02 and indicate Replacement Pool Pump Motors in the subject line.

At this time, I would like to introduce Sean Steffensen. He is our mechanical engineer on the Replacement Pool Pump Motor Standards.

MR. SIDDIQUI: Leah, if I may, before Sean gets started, I just got a text from one of the people trying to attend.
THE REPORTER: Can you get closer to the microphone?

MR. SIDDIQUI: Oh, sorry. I just got a message from one of the folks that's trying to download onto the WebEx. They're not able to get on. They can hear, but they can't see. So, I'm not sure if that's something that someone can look at.

(Pause for technical issues)

MR. STEFFENSEN: Good morning. My name is Sean Steffensen. I'm a Mechanical Engineer with the Efficiency Division.

Welcome to both everybody in the room and online. Thank you for your participation.

Here's the agenda for my presentation. I will summarize the updates to the Draft Staff Report and end by suggestions for topics for discussion. Pool pump motors, including motors sold as replacement motors use a significant amount of energy, as much as 2,500 kilowatt hours per year, per pool.

The California Energy Commission first regulated pool pumps and motors starting in 2004. Before that time, pool pump motors were single speed and utilized inefficient motor types. There are current standards for replacement residential pool pump motors. The standards prohibit inefficient, split-phase, and...
capacitor start, induction-run motors. They require all pumps and motors of one horsepower, or greater, total capacity to be capable of two-speed operation.

The U.S. Department of Energy has completed regulations that will go into effect in 2021, for pool pumps. Our focus today will be on the replacement pool pump motors.

As I present today, I will attempt to say replacement pool pump motors. From time to time, I will say replacement motors to briefly mean replacement pool pump motors.

These are words of our Governor, Jerry Brown. “It's up to you, and it's up to me and the tens of millions of other people to roll back the forces of carbonization and join together to combat the existential threat of climate change.”

We are living in changing times. The small changes we make can make a big difference.

So, why energy efficiency? We live in changing times. How can we protect ourselves from the threat of climate change? Well, how we use energy matters. In California, we have goals of using only clean, renewable energy. The cleanest energy is the energy we never need. It also is the cheapest and does not harm the environment. Energy efficiency fights climate change.

We heard you. This is a summary of the comments that Commission staff considered while drafting the Proposed Regulation for Replacement Pool Pump Motors.
The words shown on the screen are those that I heard during either the negotiation at the federal level, during the negotiation for the petition with DOE. And we sought to align, where possible, with the DOE Dedicated Purpose Pool Pump Regulations, and also the petition that was submitted to the DOE on the pool pump motors, whether it be the definitions or the timing of implementation.

We sought to eliminate loopholes, set a level playing field between the pumps and motors, and to propose regulations that were clear and enforceable.

If we don't address the motor, we won't realize the full potential of energy savings from the DOE Pool Pump Standard. That's something I heard somewhere. That is a good way to express the motivation of this proposal. We seek to set a level playing field between the pool pumps and motors sold separately.

The proposal seeks the simplicity of the Pool Pump Motor Petition through prescriptive speed requirements. We seek to align the motor implementation date with the DOE's pool pump date.

We have met many times on this proposal. This proposal contains elements that are both new and old. The Commission recognizes that expanding the scope to include pool pump motors, regardless of intended use,
will help to close loopholes and level the playing field. The proposal updates the test method and sets a minimum motor efficiency in place of prescriptive motor type prohibitions.

It sets a prescriptive variable speed motor control standard to better align with the DOE, while providing a simple, implementable standard.

Finally, staff proposes to incorporate the DOE Dedicated Purpose Pool Pump Regulations into the California Appliance Standards.

Here's a slide that shows a side-by-side comparison of the current and proposed California standards to show both what is changing and the reasons why. I've shown this slide before and I've highlighted where I've updated, to emphasize that this is both a proposal that has been worked upon and improved. This has been shown previously. And I have highlighted the incremental changes and improvements.

Much more detail is shown in the Draft Staff Report at this link. We hope to receive public comments today and in the upcoming weeks as part of the workshop process.

So, I'll spend a little time talking about the details of this proposal. First is proposed a single equipment class. I show three types of pool pumps to
illustrate the similarity in the pool motors intended
for the various pool pumps covered by the DOE Pool Pump
Standard.

Motors for different pumps are very similar and
lack distinguishing physical characteristics, such as
different mechanical or electrical interfaces.
Proposing a single equipment class and the term
Replacement Dedicated Purpose Pool Pump Motor will
provide a simple and enforceable regulation and level
the playing field.

The replacement dedicated purpose pool pump
motor is a motor that either complies with UL 1004-10,
that's currently in work, or is designed and marketed
for use in a dedicated purpose pool pump application.

There are exceptions to this scope, such as a
polyphase motor that is not sold with a drive to convert
single-phase power to three-phase. Replacement
waterfall pump motors. And replacement rigid electric
spa pump motors.

A single equipment class and the replacement
dedicated purpose pool pump motor term are consistent
with the approach in the Pool Pump Motor Petition to
DOE.

Staff proposes to measure the motor performance
at maximum speed and full load. The test point aligns
with one of the test points from the DOE Pool Pump Motor Standard and will provide a representative performance metric to determine the motor efficiency.

Staff also proposes a measurement of the power factor. Staff proposes a minimum motor standard, motor efficiency standard to take the place of the prescriptive motor prohibition against split-phase and capacitor start induction-run motors.

Staff selected the motor efficiency levels from comments from industry, received in 2016. Staff believes the approach will lead to greater energy savings and technological innovation by removing the prescriptive motor ban.

Staff added freeze protection setting requirements, consistent with those adopted through the DOE Pool Pump Rule.

Staff proposes a prescriptive variable speed requirement for pool pump motors .5 horsepower and above. Motors that meet the definition of variable speed will meet the prescriptive requirement.

What is a variable speed motor? It has a user-determined speed that are separate by, at most, 100 RPM increments over the operating range and the lowest operating speed is less than or equal to 1/3 of the maximum operating speed and greater than zero.
Additionally, it will be sold with a user interface or without a user interface, but is unable to operate without the presence of a user interface.

This definition is similar to the DOE definition for a variable speed, with the DP3 Pool Pump Standard.

Staff limited the prescriptive variable speed requirement to motors that are 0.5 horsepower or greater. This was done to be consistent with the U.S. DOE DP3 Standard. The DOE set a minimum low-speed hydraulic output of the pool pump. Pumps that could not achieve the low-speed hydraulic output were scored as if they were single speed.

Following this reasoning, staff chose the 0.5 horsepower threshold to be consistent with the DOE Pool Pump Standard.

So, why variable speed? Determining the required pool pump capacity ahead of time is difficult. Nearly every pool is different. Pool plumbing layouts can be complex and the layout may change with the flip of a valve. A pool owner would not want a pump that cannot meet the demand of the pool, so pumps are often oversized. If the pump is single or two speed, the pool owner is left with excess capacity and the excess energy consumption every time the pool pump is used.

Variable speed control solves this dilemma. A
pool owner can select an oversized motor to protect against unknowns, but not be forced to use this excess capacity. A variable speed pool pump motor will provide the flexibility to meet the demands of the pool user, while using the least energy.

This chart shows system curve C, with estimates by Commission staff as to the required motor output to provide the flow and pressure and the various points along the curve. The strength of the variable speed control is a motor can be any of these sizes to meet any need the pool owner requires. Every pool deserves a pump that is the right size.

Our goals continue to be to modernize the standards to take into account the current market trends, and technology advances, and to extend statewide energy savings.

Why does the Commission propose to move the threshold for speed control requirement? For over a decade the standard has been one or more horsepower, two or more speeds. We propose 1/2 or more horsepower and variable speed. The answer is there is a significant market share of pool pump motors below one horsepower that deserve energy savings.

The graph shows a Southern California Edison Utility survey of pool pump motor sizes. Over half of
the motors are either one horsepower or below. A significant market share will lead to significant energy savings.

Commission staff reviewed the certifications of pool pump and replacement pool pump motors to the California Appliance Efficiency Database, or MAEDbS. We compared for both the proposed motor efficiency and variable speed standards.

The slide shows the results of the pool pumps certified to the Commission. In each size class, zero to just below .5 horsepower, .5 horsepower to just below one horsepower, and one horsepower and above there are pool pumps that contain motors that meet the proposed standards. The green wedges represent the compliant products.

Similarly, staff reviewed replacement pool pump motor certifications and found compliant products for both .5 horsepower to just below one horsepower, and one horsepower and above. Staff did not find any certifications for below .5 horsepower. Staff believes that this may be due to the preference to offer the pump and motor together for those replacements.

Staff concludes a technical feasibility for below .5 horsepower from the pool pump certifications, shown on the previous slide, since motors within pumps
can be prepared to be sold as replacement motors.

The proposal is cost effective, with payback periods well within the product lifetimes.

Staff found substantial statewide energy savings for the proposed standards. When fully implemented, the standard will save 472 gigawatt hours per year.

Staff received comments that differed on how often consumers choose to replace just the motor, rather than the pump and motor combination. The estimates differed between 25 percent to 60 percent. The estimates assumed 25 percent of consumers choose to replace the motor, while 75 percent of consumers choose to replace the pump and motor at the end of the motor life. A higher percentage of consumers choosing to replace the motor would lead to greater savings.

The proposed standard provides millions of dollars of savings for California businesses and consumers. At full stock turnover, there will be $88 million of electrical cost savings to Californians.

Well, what can $88 million buy? Perhaps a trip to Mars.

The electrical energy savings are roughly equivalent to the energy for the City of Roseville, a city near Sacramento, with about 135,000 residents.

Now, I have listed some items to facilitate discussion at the workshop. The proposal's goal is to
transform the replacement pool pump motor market to variable speed.

One question will be how will the proposal interact with the DOE Pool Pump Motor Standard and how best can we achieve savings?

Do the terms and definitions communicate a clear, accurate, and understandable description of scope and requirements?

Are there gaps in the proposal? And if so, how may they be closed?

Are the terms clear?

I'd like to discuss the Motor Performance Standard, the efficiency levels and, of course, the segments where the requirements change from one to the other, such as at 0.5 and one horsepower. Are these the best segments to choose?

And I'd also like to discuss the approach to measuring motor performance, both the efficiency and power factor. Are there areas to improve the proposal?

Staff is aware that many motor types are used to drive dedicated-purpose pool pumps. Some replacement motors may be covered under the DOE Electric Motor Rule, or Small Electric Motor Rule. Staff seeks your comments to identify overlap between the staff proposal and existing DOE rules.
So, how best to exclude what is already covered?

And then, finally, how well does the proposal map the DOE Dedicated Purpose Pool Pump Regulations into the California Appliance Standards? That's a fairly lengthy part of the proposal that's located at the back of the Draft Staff Proposal. So, we wanted to look at both the scope, the definitions, the testing, the standards and the marking with an eye for that we want to copy over and map in these requirements as they are written in the Federal Code of Regulations for the pool pumps.

Staff has received -- or, release a Draft Staff Report. We are in a comment period, now. Comments may be submitted electronically at the link above or emailed to the docket. Hardcopies may also be sent to the Energy Commission at the address shown on this slide.

For those of you on the phone, this entire slide package has been docketed and is available in Docket 15-AAER-02.

Comments are due by 5:00 p.m., January 4th.

Once we receive comments, we will analyze the issues, compare the comments to the proposed standard and figure out the best path forward. We look forward to your feedback and will work hard to incorporate it into our next draft of the standards.
Thank you for your participation today. My
contact information is shown here.

We will next proceed into formal presentations,
followed by an opportunity to receive comments from the
public and further discussion.

I will take clarifying questions on this
presentation, but substantial comments and statements
should be saved for the public comments following the
remaining presentations. Thank you.

I'll look to the room if there are any questions
regarding my presentation. And then we'll look to
online. Okay.

So, next up, I would like to invite Charles Kim.

MR. KIM: Hello, I'm Charles Kim. I'm with
Southern California Edison Company. I'm speaking on
behalf of California IOUs.

First of all, thank you so much to CEC for your
leadership. This has been a very long journey and this
measure is very important for the Californians. We have
more pools than any other states, and the energy savings
opportunity is bigger than any other state, as well.
And California has been working very hard to transform
the market, including variable speed incentive programs,
and et cetera.

And now, we are at the juncture of moving to the
next step here. And we have many meetings before at the DOE, at the CEC, and I think this is the direction that CEC's taking and California IOUs are very supportive of the direction that CEC is taking. And we are looking forward to having opportunities to collaborate with the incredible manufacturers and associations. And as we have been working together. And this is going to address the need for Californians. Not just saving energy for the small changes that we can do here, to help the environment as well.

So, once again, I thank CEC for this wonderful opportunity and an effort put on for such a long, long time. Once again, thank you so much.

And I'll introduce Chad and he is going to go over more in-depth discussion about this measure.

MR. WORTH: Thank you, Charles. Thank you, Sean, and the Commission for having us here today.

Building upon what's been said, my name's Chad Worth. I'm with Energy Solutions, on behalf of the California IOUs, and we're happy to continue this conversation about pool pump motors, specifically replacement pool pump motors today.

The California IOUs have long been involved in pool energy efficiency. PG&E created the first voluntary incentive program for pool pumps back in 2001,
so we're approaching 20 years of engagement on this effort. We've been very involved in the previous Title 20 rulemaking, the Title 24 rulemaking. The IOUs helped develop the energy factor standard, which is now used by Energy Star and serves as the basis for the DOE Dedicated Purpose Pool Pump Rulemaking and, most recently, we've been engaged with this rulemaking and efforts at the federal level to address replacement pool pump motors.

I thought Leah did a good job of going through the history of this particular rulemaking, so I won't restate that. But there have been many meetings, as have been noted, and we've been happy to be here along the way. And I think we, you know, continue to move in a good direction.

The current Title 20 Standards, as they are, I guess most of us here in this room know what they are, but I do just want to reiterate. We do have a Replacement Motor Standard in California, as is. It seeks to be improved upon. This word, residential pool pump motors has caused some challenges in the market and how this standard is implemented, interpreted, and ultimately enforced. And I think that is one of the big things this proposal will help fix.

In addition, we're only talking about a two-
speed requirement with the current standard, over one
total horsepower. And, obviously, the market has moved
in the last ten years, significantly, to where a
variable speed standard is appropriate. So, we do have
a replacement motor standard, but in order for this all
to work and to get the energy savings we've been, I
don't know if promise is the right word, that we've been
hoping for, we need to close this loophole.

As Sean mentioned, there's a pool pump rule
nationally coming in, in July 2021, but it's covering
all the four categories of pool pumps, non-self-priming,
booster pumps, large self-priming, and small self-
priming based on the weighted energy factor (WEF). And
we know manufacturers are working towards this right
now. Energy Start is working towards the WEF. And
we're -- the replacement motor loophole is one that
needs to be closed for this all to work.

The need for a replacement motor standard, again
has been said but, really, what it comes down to is
nationally we're going to have regulated pool pumps and
we want to ensure that those are not replaced with
unregulated, inefficient, single-speed motors
nationally. And to a lesser degree, because as I was
mentioning, we do have somewhat of a replacement motor
standard here in California. But we need to -- we don't
want really efficient pumps being replaced with inefficient motors.

We were, we being the IOUs, and CEC, and some of the other folks in this room, were all party to the Joint Stakeholder Proposal that was docketed to DOE in August, after a months' long collaboration, talking through many of these issues.

In September, DOE published this proposal for public comment. We and many other stakeholders wrote letters of support and had even more letters of support on the docket, and have yet to hear anything back from DOE. Thought we had, I think, what, 30 letters of support and essentially no opposition, which is promising.

However, as Charles mentioned and as Sean mentioned, California is the largest pool market in the country, with roughly 20 percent of the eight and a half million pools in the U.S. And we need something here in case things at the Department of Energy do not work out.

The updated replacement motor standards are necessary to ensure the savings from the DP3 rule that's been talked about. And overall, you know, we're still digesting the staff report that just came out two weeks ago. Sean, I thought you did a great job with your presentation, a really clear and crisp analysis of
what's at stake. And going to Mars, I will forever associate with pool pump motors now. So, good job on that.

And we look forward to working with you and the manufacturers that we've worked with so well over the years to continuing this conversation, to save the energy that we know is needed. So, thank you.

MR. STEFFENSEN: Thank you, Chad. Next up will be Shajee.

MR. SIDDIQUI: I don't have a presentation. I'm going to read some statements. So, do you want me to come up there or can I sit at the table?

MR. STEFFENSEN: Wherever you'd like.

MR. SIDDIQUI: Okay, I'll just stay here. Thank you.

First, to just introduce myself, my name is Shajee Siddiqui. I'm with Zodiac Pool Systems, based in Vista, California. We're one of the premier manufacturers or one of the largest manufacturers of swimming pool equipment, and that includes pool pumps.

I'm not only speaking on behalf of Zodiac here, but I'm also speaking on behalf of the Association of Pool and Spa Professionals, APSP, in response to the Third Revised Staff Analysis of Efficiency Standards for Replacement Pool Pump Motors.
APSP appreciates the opportunity to provide comments on behalf of its membership, including the pool pump and pump motor segments, which are most directly affected by this proposal.

Just a quick blurb about APSP. The Association of Pool and Spa Professionals represents over 3,100 company members nationwide and is the world's oldest and largest association representing swimming pool, hot tub, and spa manufacturers, distributors, manufacturers' agents, designers, builders, installers, supplies, retailers and service professionals. APSP is the only industry organization recognized by the American National Standards Institute to develop and promote national standards for pools, hot tubs, and spas.

Now, having said that, I'll get into the comments that the APSP and its members have. APSP and its members have a long history of working with the Energy Commission. We appreciate the opportunity to continue a positive collaboration to ensure that the citizens of this state, along with the rest of the country, hopefully, are provided with energy regulations for pool pump motors that balance both energy savings and other critical factors important to consumers and the industry.

We've also worked with the CEC and other
stakeholders over the last few years, as has been
alluded to earlier by my colleagues, on taking good that
started here in California, and encouraging federal
regulations for both pool pump motors -- for pool pumps
and motors that would ensure savings nationwide, thus
avoiding a patchwork approach to regulation. A
patchwork approach that is neither in the consumer's
best interest, nor in that of our industry members.

APSP members participated in the Department of
Energy, DOE, ASRAC Negotiated Workgroup on Dedicated
Purpose Pool Pumps, which I'll refer to affectionately
as DP3, which resulted in a unanimous agreement and a
direct federal rule, or a DFR for pool pumps.

We were very pleased to see this occur in 2017
and our members continue to prepare for the July 2021
compliance date.

APSP members who participated in the DP3
negotiations voiced concerns that DP3 motors must also
be addressed. Otherwise, a significant loophole would
occur. Over the past year and a half, we have continued
to work with the stakeholders, which include the CEC, to
request a DFR for dedicated purpose pool pump motors.

This painstaking effort resulted in a
unanimously agreed-upon joint petition, which Chad also
referred to, which was submitted to the DOE on August
14th of this year, by the stakeholders.

In this case, the stakeholders included the motor and pump manufacturers, consumer advocates, pool service professionals, states, efficiency advocates, utilities, and others.

APSP and our industry members stand behind that joint petition to the Department of Energy, and all stakeholders continue to work towards the goal of seeing that the department issues a DFR based on the joint petition.

That being said, although we appreciate the fact that this Revised Third Analysis from CEC staff captures much of the joint petition submitted to the Department of Energy, we feel that it still runs somewhat counter to that agreement. We would strongly urge the Commission that if they intend to move forward with this proposed rulemaking, while they wait for the DOE to act, that they align their proposal to ensure consistency with the approach agreed upon by all the interested stakeholders and which was submitted to the Department of Energy for consideration.

Having two different approaches will most certainly cause disruption and market confusion, which will adversely affect consumers and the industry.

Alignment across all 50 states is of utmost importance.
And we, therefore, believe that the approach provided to the DOE should also be the one adopted by the Energy Commission, instead of one that may conflict with or otherwise deviate from that agreement.

Industry has spent and continues to spend significant resources to prepare for the DP3 Pump Rule of 2021, and we'll do the same for the motor rule in an expedited fashion, if a DFR is issued with that same July 2021 compliance date, which is our intent and goal.

To have to also prepare for a CEC rule that takes, albeit a similar, but somewhat of a different approach, with require financial, or additional financial commitment, which could be quite or would be quite burdensome.

Therefore, if the end goal is the Joint Petition submitted to the Department of Energy, we believe California should follow that proposal. In doing so, California would simply be ahead of the federal action and would not have to make changes when that rule went into effect.

Furthermore, motor manufacturers would then have a clearer path towards compliance and would be able to prepare for either possible rule, the California one or the federal one, without having to make significant adjustments which could arise from having to prepare for
two different approaches.

And the industry is still reviewing the revised analysis, since the timing was just -- it was a bit short. It was before Thanksgiving and we didn't have time to provide written comments. And we will do so by the deadline, of course.

However, in addition to the overreaching comments made, we also want to go on record by voicing our concern that we're not aware of anything that is formalized and in place to address the methodology that's proposed in the analysis.

The analysis makes some assumptions. We believe that there is a lot more to consider. It is important to recognize that everyone's product is different. The concern is that the revised analysis is not a prescriptive method like that which was agreed upon in the joint petition to the DOE. A performance metric is being added, which is not an accepted methodology in the industry today.

My industry colleagues that will, hopefully, speak after me, can provide more details about these specific concerns.

So, in closing, we appreciate that the Energy Commission recognizing -- or, we appreciate that they recognize the importance of addressing the replacement
motor aspect. We certainly support that.

As we have stated to the DOE, if a DP3 motor standard is not put in place, an enormous loophole will certainly occur. This could drive nearly all replacement motor business towards the lower cost, lower quality, unregulated motors. Again, a point made by Sean -- and I'm sorry, Sean, Chad and Charles.

This will have a significant and detrimental impact on both the pool industry and consumers, as well as on the expected energy savings from the DP3 final rule.

Therefore, while we applaud the fact that California wants to move forward as we all wait for the DOE to act, we believe the best course of action would be to stay completely aligned with the joint petition that was unanimously agreed upon by all those who signed on, including the Energy Commission. And that we hope not to deviate from it in any manner.

APSP and our member companies look forward to providing more detailed written comments and working with the Commission towards a final rule. Appreciate the time, thank you for allowing us the opportunity.

MR. STEFFENSEN: Thank you, Shajee, for your comments.

Next up, we'll have Rob from the Nidec
MR. BOTELEER: Yes. Can you hear me okay?

MR. STEFFENSEN: Yes, we can.

MR. BOTELEER: So, I can hear my echo. I'm not going to talk on a technical side. Oh, I'll get rid of the echo.

Can you hear me okay?

MR. SIDDIQUI: Rob, you might be on the phone, as well as your computer microphone might be on, so you might have to shut off your computer microphone or your -- or just use one, not both.

MR. BOTELEER: Hmmm, I don't know how I do that. So, I'm Rob Boteler. And I'm --

MR. STEFFENSEN: Hi Rob. We believe we've lost the connection, if you can hear us.

MR. BOTELEER: You can hear me okay?

MR. STEFFENSEN: I can hear you now.

MR. BOTELEER: Okay.

MR. STEFFENSEN: If you can just start your comments from the beginning?

MR. BOTELEER: Okay. So, I'm Rob Boteler. I have been involved with the Department of Energy. I've actually met with the CEC and talked to a number of people years ago. I'm the father of NEMA Premium. And I want to just kind of take a couple of comments that --
MR. STEFFENSEN: Hi Rob. We're having a lot of trouble hearing due to the feedback. Is there anything we can do on our end?

MR. BOTELEIR: If I do that, can you hear better?

MR. STEFFENSEN: That's much better, thank you.

MR. BOTELEIR: I can't hear you. Did that help?

MR. STEFFENSEN: Yes, it did.

MR. BOTELEIR: It did help, okay. I'm going to turn off my speaker, but then I can't hear you.

All right, so one of the things that I just wanted to make a point on is the last speaker mentioned the DOE and consistency with the DOE. And from a motor manufacturer's perspective, that is probably the most critical thing.

Even though, as Sean said, California is a very large market, 20 percent or more of the pool pump market, it is still a submarket of the overall pool market. And that consistency allows us, as manufacturers, to develop the best products at the best price. It also makes sure, I think, that we don't eliminate some competitors because they choose not to participate in a market because it is, in fact, a submarket.

Prescriptive programs really need to be well defined. And I think when we start to look at an
application and we get away from the test methods that are in place, and we look at revising test methods, it becomes very critical. And Dan is going to talk about that in a minute as to just what we have to do there.

We talk about the test methods and load points, and I think one of the things that motor manufacturers look at historically is the interval product was done at 100 percent load and that was the numbers -- well, the numbers that were used within the regulations. But yet, we know, we have data from Department of Energy that over 50 percent of the motors in application weren't below 50 percent load and the actual efficiency is significantly less.

We certainly are looking, and applaud CEC in the support of variable speed. And, Sean, I liked your chart where you recognize the benefits of variable speed by allowing the end user to actually tune the load points and the speed for what his application needs.

And we've been trying to make that argument, that position known with DOE. We look at that as a new metric, where the metric becomes power management, instead of efficiency. And I think that's one of the issues we had with this regulation is we're talking about efficiency, but yet, the benefits that we're trying to gain are really coming from managing power.
One of the other issues that we continue to have is enforcement. And I think when we have a regulation or a requirement at the state level, it becomes difficult for enforcement. And when we have product that's imported, we have an additional element that comes in where we need the Homeland Security and CVP to come into play and have import declarations, and work through the import process to make sure that things are not being imported that are not compliant.

When we look at the current small motor regulation, it's a regulation that was done for a subsegment of the product area only for general purpose, only for open motors. And I think none of us knew exactly what was going to happen, but it became a case where a great many of the end users of the product, be they OEMS or others, avoided the regulation by simply changing to a different technology or revising some of their products. Moving from a Cap-start, induction run, to a PSC. And we've got to be careful of that I think, with this regulation, that we need to avoid loopholes like that and work together.

And again, I think it's more of the reason why we need to stay with the DOE. And I think, if anything, it motivates us to move quicker with the DOE.

With that, I'm going to turn it back over and
let Dan talk about the test procedures.

MR. STEFFENSEN: Thank you, Rob.

The next up is Dan Delaney.

MR. BOTELED: Okay.

MR. STEFFENSEN: All right, next up will be Dan.

You're speaking now.

MR. DELANEY: Great. Can you hear me, Sean?

MR. STEFFENSEN: Yes, thank you.

MR. DELANEY: I have that echo issue as well.

Is there any way you can mute me on the -- there we go.

That's better. No, it's not. Do you guys -- are you getting the echo from me?

MR. STEFFENSEN: No, Dan, we hear you fine here.

MR. DELANEY: Okay, then I'll proceed. I think you've -- I think whenever you mute me out, I'm fine.

So, I'll speak and I don't know if you guys have to unmute me.

But thank you very much, first of all, for the opportunity to present. Appreciate the CEC giving us an opportunity to share. My name is Dan Delaney. I'm with Regal Beloit. I'm speaking on behalf of, obviously, Regal Beloit. We sell pool pump motors, pool pump ECM type motors, both OEM and replacement into this market.

Much of the product is brand-new this century.

I also am a member of APSP and as well as NEMA,
and also represent those members as well in these comments.

So, first of all, I appreciate Sean and Chad presenting your details. That was a very good summary of the document in the docket that you guys have put forth.

One of the things that kind of struck at me, from Sean's presentation, you know, you used those key words on what was most important, you know, in your petition and moving forward in alignment. That was obviously a key word in there. And clearly CEC, clearly Sean, clearly Chad, both of you, it was with a passion in the work we did over a past year or so, our goal was alignment. Our goal was to do that.

And as Shajee put forth that position, we want to continue to see that alignment, continue to work with both of you as strong partners in the growth of that petition.

For many reasons Rob mentioned, alignment of that industry and ensuring that industry stays in alignment with each other. The last thing we want to have happen is the situation where you have uncompetitive type of positions where products now are finding loopholes and other ways around different products. So, the federal process we believe is best.
And we certainly hope that CEC will continue to see that as a good path.

So, appreciate you putting this together and putting these comments. Specifically, there was a comment in the docket that I really want to address. It was that motor efficiency test procedure. I believe this is page 27 and 28. You start with a Table 6.1 of that variable speed control with minimum motor efficiency. So, I really want to talk a little bit about minimum motor efficiency and maybe some of the challenges there.

Certainly, when you talk about the less than half horsepower, I think you guys have hit it correctly. I think the efficiency number is reasonable. That's a fairly large gap of product. You don't see a huge number of products below that realm, of at least replacement pump motors. Integral, obviously you see more, but not so much in the replacement. So, I think the efficiency and the test method prescribed for that first row of pool pump motors is accurate.

Now, when we go to the next two rows in variable speed, that's where there's some concern of myself, and our members, about the challenge there. And, of course, as Chad and Sean have been along with the petition and remember our decision to go prescriptive was really
motivated primarily by the challenge that the minimum motor efficiency around variable speed motors exists.

So, I'll just speak a little bit about how an ECM, that's a term that's used in the docket, so I'll use it. A variable speed pool pump motor, commonly referred to ECM, an integrated controlling motor.

Yes, it absolutely allows variable speed, but it also allows other intelligence. Other intelligence to properly keep the motor safe, properly keep the motor operating at its most optimum point. So, it is able to do that dynamically. And as a result of those features, it doesn't allow itself to be tested easily in the same manner an induction motor would be tested.

So, to simply pull an ECM motor out of a box, connect it in the same manner an induction motor would be to a dynamometer, which is able to load that at a fixed speed and load, that ECM motor may or may not operate as an induction motor. Some may have intelligence to allow it to hold load across speed. Some may fall back and do other operations as it was designed for that pool pump operation.

So, my concern would be a pool pump ECM is not designed for max efficiency for load and speed. It is designed for max efficiency of a pool pump operation and it does so by studying that curve C and the other
information that's outlined as part of the DOE DP3 Rule. And it does it very effectively. It's a very, very good cost-saving effort.

So, there is concern on our industry that there is a gap there. There's a gap that has to be filled between the test method, which I believe you have correctly chosen, the CSA C747, which allows a good method to test an ECM motor, connecting it and how to load it, but it was not intended, obviously, for a verification or assignment of a very specific point. It was designed to evaluate the range of the operation of the pool pump. So, by assigning a single point of efficiency, that is a gap. That is a gap that needs to be closed. A gap that we, as a petition group, had decided we did not have the time and energy. It was agreed upon by the Department of Energy in the context that we consulted through that time.

It is certainly not to say it can't be done. It just requires the additional work necessary. One example could be that through the development of manufacturers, pool and motor manufacturers, it's possible we could come up and develop a test procedure. but it's also likely that as a result of that test procedure ECM motor manufacturers may have to design a test point within the parameters of the operation so
that the motor can be tested at what we sometimes refer to as max efficiency, not operating efficiency across wide sweeping.

So, it just depends on what our mode of operation is. And I just wanted to explain that complication of a simple point versus how the product is designed to save, obviously, energy as you explained it and showed it perfectly, Sean, on our Curve C example of the curve.

And then, secondly, I did want to note that industry, today, has a very specific detail when it comes to identifying motor efficiencies. It has, you know, metrics and tolerances around those. And those are referred to as a NEMA nominal efficiency. And I would recommend that we pursue that.

What, essentially, the NEMA nominal efficiency ability is, it's Table 12.10 of NEMA MG1, it takes a look at all the characteristics that go into the manufacturing and tolerance of efficiency. And it shows, basically, a statistical, normal distribution of what would be expected around an efficiency point and provides that tolerance as necessary for induction motors today.

So, I'd recommend, if we're going to choose an efficiency, a performance metric, that we look to
industry to help us choose the number around the value,
as well as the performance metric around that.

So, with that, that concludes my comments.

Again, thank you for allowing me to share my notes.

Thanks.

MR. STEFFENSEN: Thank you, Dan.

Sean Steffensen speaking again. And I'll want
to look to open -- I guess I should say is there anyone
else in the room that is here to comment on the
proceeding or when we start a discussion.

We'll look to online, then. Are there
participants online that would like to speak and make
public comment at this time?

Okay, hearing none, what I would like to do is
I've been listening and I appreciate the participation
today. And I know that there will be further comments
to help guide this process.

I'll start by saying that the Energy Commission
strongly supports the DOE petition for pool pump motors.
We hope that effort to be successful and look forward to
the response from DOE.

This proposal is a separate process and we look
to move it along so that we can be ready, in the event
of whatever else may occur. So, that's why we want to
continue to receive comments on this proposal so that we
can put our best foot forward in the event that we do move forward.

So, I appreciate the comments. I did hear very much into the details, and I believe I did hear details as to specific issues that are raised. And I think I want to just, if I can, extend the conversation to go through, I guess, some of the comments regarding the proposal.

I guess starting out with, you know, I'll look to receive comments as to how better to improve the regulatory language. As Dan concluded, he was talking about the need to perhaps settle on an industry-established measurement of motor efficiency, citing NEMA nominal.

And I think looking to the staff proposal, as I flip through the pages here, my intent had been to -- I said, "Shall meet a nominal full-load efficiency." If those words are unclear or fall short, that was my intent was to call out the NEMA nominal efficiency. If there's additional words that need to be provided, that would be a valuable comment that we would like to understand and see.

Just working backwards through the comments, I am very interested in understanding how electrically commutated motors may differ from other motors.
certainly, we want to ensure that the test method is accurate and fair, and representative of the motor performance.

And so, I'd like to understand, you know, the reasons why and how an ECM motor, when tested under a certain set of circumstances, which are dictated by the speed, and torque, or load on the motor, and measuring the electrical draw, how that may differ from one motor technology to another.

The intent was to propose a proposal that makes the technology blind. Ultimately, I think that's what the consumer will be faced with. They won't know how to identify the different motor types. They'll just be concerned on what the flow rate and pressure that's delivered by the pump, and that will be their judge as to the quality of the product they've received.

So, that's where I would want to understand, you know, how perhaps the ECM motor has a certain wrinkle to this. That's new information to me and I just am expressing a curiosity and making a request for understanding, to understand how perhaps an ECM motor may need to be tested differently. That could be maybe the first topic of discussion.

So, again, and I understand that perhaps, you know, there maybe needs to be some time to prepare
comments. But as I go through this, I'll be listing some items of what I heard, that are of interest to me. Not to say that all the comments are of interest. I may have missed a couple of things as I was taking notes.

Yes. And feel free to just -- I won't call on anyone, so just feel free to speak up as I pause.

MR. WORTH: This is Chad with the IOU team. Dan, I had a follow-up question. I guess I'm somewhat confused as to your concerns about the CSA test procedure. You know, we've been talking about this test procedure within this rulemaking for many years and how it was -- I think it was even Regal, or the pool industry in general that supported using the CSA test procedure as opposed to the IEEE test procedure which is currently used as kind of a voluntary reporting right now.

Is it that the levels -- you know, let's just take the 80 percent efficiency level is too high for what you were talking about? Or, is it that actually using the test procedure to get that number is not accurate?

MR. DELANEY: Let me test this. Can you mute on your end, so I can speak? Okay, better for me now.

So, yeah, just to clarify again. And I'm sorry, Sean, I didn't try to ignore your question. I certainly
want to work with both of you to try to better explain this situation.

So, in summary, the easiest way to look at an ECM is it is not designed for a max efficiency, as the proposal has been made. Some ECM motors can simply be taking out of the box, connected to a dynamometer, loaded at a max speed load point that's in alignment with the nameplate, and efficiency can be reached.

Other ECM products, even within the same family, obviously different competitors. I don't want to speak for others on how their products react. There are modes of operation that allow fullbacks, that allow changes in result to, obviously, the pump curve that would not fully allow the motor to be tested at its true max efficiency under a constant load, like a dynamometer.

So, as we had talked about this in the petition rule, it's got nothing to do with the level or the test method. So, either one of those two, I don't have any major concern. I haven't looked at it in detail. At first glance, the numbers seem fine to me.

Obviously, I was involved with 747. That test method will work fine for outputting and efficiency. Everything has an error that is an acceptable error for small motors and ECM, as evaluated and as commented in the test method.
The concern solely is that ECM motors are not designed in the same manner by which induction. Therefore, it would require us to discuss and talk about a test procedure by which manufacturers should be aware of so that when you do take it out of the box, and do try to load it on a dynamometer you can get repeatable results which is a max efficiency, so you can have a determination of, really, what this ECM product would be, since it is not designed to do that today.

So, that's my comment is that an ECM motor cannot be assumed it can simply be loaded and tested at a single point of efficiency at its max load speed and able to output its true max efficiency as it is sold today. It can certainly be done, speaking from Regal Beloit's end, in the future with, potentially, a test point. With a selectable point that allows it to be tested as that. But it's simply taking it out of its box and selecting the different speeds would -- it gives it a potential error, depending on the user, or the government official, or the regulator, or whoever it is, inspector that is trying to evaluate that product.

So, there's additional steps that are necessary to close that gap between test method and what the actual ECM product is really designed to do. It is not designed to be pulled out of the box, ran at max load
speed, and tested at efficiency.

I'll go on mute.

MR. WORTH: This Chad with the IOUs. Thanks Dan. So, just so I understand, you're basically saying that the full load, full speed test point for an ECM motor is not necessarily its max efficiency point. Therefore, it's perhaps not the appropriate place to set an efficiency regulation level? Is that -- like, is it at 80 percent speed or 80 percent load? It's efficiency actually goes up, which is different from induction motors that it drops off as it goes lower. Does that sum it up properly?

MR. BOTELE: Chad, this is Rob. I mean, I think maybe where we're headed is the motor that's going to save the most energy, the one with the highest efficiency at a selected point or the motor with the flattest curve. And I think what we would say depending upon the application, it's more likely the one with the flattest curve.

MR. DELANEY: So, Chad, a very good summary of my comments. Exactly the point. The max efficiency of an ECM -- there's always the question we come back to a customer when they ask, what's the efficiency of this ECM? And we come back to them as do you want running efficiency, which means whatever the point the
customer's using the product at, or would you like max
efficiency, which means the max efficiency that it could
be run. It may or may not align with your -- in power,
your operation, or whatever curve.

So, our point would be that it would be best
that this would be tested under a test point of
efficiency that would give, you know, the ability for a
max efficiency of the product to be displayed and maybe
not how it is going to operate on that specific pump,
pump and power pool pump combination. Because we're
testing a replacement ECM motor and not a system. So,
we think it should be fairly judged against itself and
not its potential operation point.

MR. WORTH: Thanks Dan. I think I certainly
understand where you're coming from. And yeah, I guess
I'd just like to point out, you know, I think this was
acknowledged years ago which is why originally, I think
the IOUs and the CEC proposed a couple of different
efficiency levels to try to capture that curve. And I
think the CEC, in this latest proposal, in the guise of
trying to make it simple and perhaps taken in previous
feedback chose the full load, full speed. And now,
we're back to, you know, it's kind of a tradeoff between
simplicity and accurately capturing what might happen in
the market. But I think I at least understand your
concern now, and thanks for sharing.

MR. STEFFESEN: Hi, Sean Steffensen. Thanks Dan. And I'll just chime in on my motivations. I mean, one is I've heard the comments that the prescriptive ban may not serve the market as well. That's why we are proposing a performance metric to allow all motors, regardless of technology, to compete to a performance metric.

As we proposed previously, there was a full speed and half speed requirement in the -- I guess in the sense of providing a more simple framework, recognizing that under the DOE Dedicated Purpose Pool Pump Standard that there's definitely a full speed test point. But then as to where a manufacturer may elect to test the motor at a lower speed, that's really left at the discretion of the manufacturer within some bounds.

And so, it was just felt that we want to make sure that there's a quality motor out there. If we remove the prescriptive ban, let's look to make sure that there is a metric that can show that there is a measure of quality and energy savings.

So, I think that's the motivation of exploring this area. I think that we're trying to be very clear as to where the motor shall be tested in this rulemaking. What we want to do, though, is to listen
and understand, well, if it's not at full load and full speed, well, where should it be. But we want to recognize that our goal is to be technologically neutral. So, if we want to -- I would look to see what other suggestions participants can come up with, if full load and full speed aren't. But we would want to be in the spirit of that it's level, it's uniform, it's a level playing field.

MR. DELANEY: Sean, I appreciate your comments.
I think -- am I back off mute? Good, okay. I'll just add that the industry has been spending a large amount of time here, meaning the motor industry in variable speed, obviously both with system regulations, system standards in the marketplace. And there's been a lot of advancement there. Even though, maybe it's still closer to the academic level, than at the industry.

The industry still believes that the products are best represented by a sweep or a replication of what the system is doing. So, that collaboration between us as the component motor control providers and the system providers, the handshake must happen.

I appreciate your comments recognizing that. Because it's important that the technology be fairly judged, as well, meaning across its operating range.

Max efficiency, max load, probably not the best measure
of the savings a pool pump, as you've clearly shown in your demonstration. So, that's where I think the pool pump motor manufacturers can engage and can help you through that process, and would be willing to.

But I just wanted to point out it's simply not something that we can pick. I just wanted to make sure it was clear. It wasn't just simply a test method and a value of efficiency, it's a little more complicated than that. And you can read that in 747 to understand the sweeps and the goal there is to try to get more of an idea of the operating, you know, range of efficiency. And, you know, let's say its range of operation. So, thank you.

MR. WORTH: And this is Chad, again. I think Dan and -- I guess I think that part of the thought -- you know, I thought Rob put it nicely that, you know, power management versus efficiency, and the variable speed is definitely the power management side of things and the motor efficiency is kind of the efficiency, more old-school way of looking at some of these -- how we save energy from products.

And, you know, the efficiency I think in this case is kind of met, just to somewhat level the playing field and like account for the worst-case scenarios. So, someone buys a variable speed pump and just like
ramps it up to full blast and walks away from their pool, at least it would be efficient.

So, you know, perhaps there's some -- you know, I think Sean alluded to it. It just got me thinking like, you know, we have this 80 percent turndown availability in the WEF test procedure. Like, if there's a better way to do that, that captures real-world conditions at perhaps a higher efficiency point for some of these motors, like maybe there's some ideas.

I think, unfortunately, and correct me if I'm wrong, none of the DOE motor regulations really cover ECM motors. There's not a lot to point to in terms of a good way to set efficiency standards. But if you guys have ideas, you know, I think we would certainly be open to hearing that.

MR. STEFFENSEN: I would say much the same that we would look to specific proposals as to how to test these motors to deliver a performance metric. So that way, that the consumer -- and the concern would be that, well, we know the motors are very high quality now, with motor efficiency, but what would happen if somehow things change? This is a check to ensure that there's quality and energy savings as we remove a prescriptive ban. So, we want to understand just how best to update the proposal. And, of course, the reasons why go a long
way to helping to make a persuasive comment.

MR. BOTELE: This is Rob. I think what you get into here is really -- and I see Kitt Butler's on the line. But in kind of his world, too, is you have test standards that we work to and then we have test methods or test processes. And I think it's that process that needs to take the variable speed and the variable load into consideration and decide how to deal with that. And it needs to be dealt with because if we're going to do a prescriptive program, it has to be very, very concise.

MR. STEFFENSEN: Thank you, Rob. Going back to a comment that Rob stated regarding the small motor rule and how manufacturers and consumers reacted to the rule. I mean, obviously, I do not want to motivate the market to somehow skirt this regulation, find a loophole, change technology. I'm very interested in achieving the energy savings.

So, a lot of the way we've structured this proposal is single equipment class. The test being that it's a pool pump motor because it's being called a pool pump motor as it's designed or marketed, or as it's certified to UL 1004-10.

I do want to explore though, I mean and this could be just an ask for the comments that will be
coming is, you know, we want to look hard for loopholes. We really want to have a level playing field. I don't want to end up with somewhere where, again, it becomes hard at the time of reckoning to say that either someone, you know, lived within the rules or lived outside of the rules. We want everyone to say that they need to follow the rules so that everyone else who's following the rules, there's a level of fairness.

And that starts here, where we identify those loopholes and create a very strong regulation where it can't be circumvented. That's where a lot of this -- going back to the previous discussion as to where best to test the motor, trying to come up with a simple framework of single test point, the very clear instruction as to how the motor shall be tested, in the hopes that it becomes very enforceable and very clear as to what the requirements are.

But I do want to hear, if there's a better place, a better approach, that's what I'm hoping to uncover.

And I really appreciate this level of conversation that we're having.

MR. BOTELER: This is Rob, again. When you get into the enforcement side, you kind of get away -- and that's not the motor manufacturer's role. We're not
enforcers. We build product and put it into the marketplace, and sell it.

But the example that we've heard and used is in the pool pump market, the pool pump contractor is Bubba, with a pickup truck. And the lowest cost motor that fits into the application is available from a multitude of motor distributors. It's probably even -- I'm sure it's available online today.

And how you enforce at that level, we really don't know. I mean, we had that argument with DOE. DOE tells us that they enforce, they have attorneys. And my argument with them is, yeah, but you don't have policemen. You have nobody that's actually out looking at the marketplace, trying to uncover discrepancies and noncompliant product.

And how you do that with a product like this, I don't know.

MR. STEFFENSEN: Hi, Sean Steffensen. I'll respond to the comment as to how enforcement has worked here. I mean, certainly, we perform a lot of outreach. We want to head off any problems before they occur. Outreach both within my office, as well as we have the Office of Enforcement and Outreach.

What we want to do is first make sure that the regulations are clear. But in the event that something
happens, where someone is not following the rules, we
want to make sure that the regulation can be enforced.

Some of the mechanisms by which the regulations
are enforced is that members of the public come forward.
As recently as last week, we received a call from a
consumer that believed that they had been sold the wrong
motor. And so, that consumer was encouraged to contact
our Enforcement Unit where an investigation could be
pursued.

So, there's that awareness of the consumers. We
try to put out -- or, we have put out a memorandum to
contractors, through the Contractors State Licensing
Board, to instruct contractors of what the current
regulations are. We certainly review other reports that
come in from various sources.

I would say, you know, I mean the industry
itself is self-policing. A lot of the enforcement leads
come about from industry, looking at what their
competitors are doing and, in a sense, feeling a sense
of unfairness.

So, we do have an Enforcement Unit. They do
seek compliance with the regulations. And, of course,
we look to try to settle those things and look at all
the circumstances. And it could lead up to penalties in
a financial sense.
So, there is enforcement that can occur. It certainly is another part of the conversation. But as we look to these regulations we have currently, we want to see how best we can improve them, and modernize them, and move them forward as technology has changed. And so, that is the emphasis here. We're looking to leave behind the prescriptive ban, which is the best we could -- we had at the time. We had data as to say that certain motor types were perhaps more efficient than other motor types.

As we move this conversation forward, well, what's a good test method to move to a performance metric where all motor types are allowed to perform to it?

How best to capture these energy savings from variable speed and what motors deserve the energy savings from variable speed?

So, again, and our experience has informed us that loopholes do not serve anyone well, and so we want to review that. So, I was -- I think part of that conversation, looking at the comment from Rob, and the experience with the small motor regulation.

MR. BUTLER: This is --

MR. STEFFENSEN: I think we can hear you.

MR. BUTLER: Hello?
MR. STEFFENSEN: Hi. Could you identify yourself?

MR. BUTLER: This is Kitt Butler with Advanced Energy. Rob mentioned me a minute ago.

MR. STEFFENSEN: I'm sorry, you may need to mute your --

MR. BUTLER: I wanted to respond to that and also talk about enforcement a bit. Enforcement can be done as long as the Commission continue to do the things that they are doing. Which is clear standards, clear labeling requirements. And it can go beyond just legal issues, where there can be, as you know, the public, or there can be other entities that actually would pull product from the market and have it tested to agreed-upon metrics that are clearly defined through regulation. (Indiscernible)

MR. STEFFENSEN: Hi. We're having trouble hearing you and we also would appreciate it if you would identify yourself and affiliation?

MR. BUTLER: I'm sorry. It's Kitt Butler with Advanced Energy. Maybe you can mute me.

MR. STEFFENSEN: Kitt Butler with Advanced Energy.

MR. BUTLER: I wanted to respond to the discussion regarding enforcement, as well as the
discussion around test methods for ECM motors.

Enforcement can be done beyond just lawyers just reviewing what's been filed. It's done best along the lines of the way the Commission is addressing this now, with clear test standards and clear labeling requirements.

I'm not sure why one test standard has to be applied here, when we're talking about different motor types. There may be different test methods to consider.

I think that enforcement can happen beyond that, as well. Once a rule is set and it's clear, the test method is understood and recognized by all, your product can be pulled and tested to that standard and become enforceable. And that does happen.

MR. STEFFENSEN: Hi, Sean Steffensen again. Thank you. We did hear those comments clearly. Thank you. And we would appreciate further comments, especially if you believe there are test methods that pair well with certain motor types and the reasons why that pairing would be advantageous.

MR. BUTLER: Okay.

MR. DELANEY: Yeah, Sean, this is Dan.

MR. STEFFENSEN: Yes, please, Dan, go ahead.

MR. DELANEY: So, I appreciate Kitt sharing, you know, some of his knowledge and his experience. And
he's familiar with, obviously, some of the complication
of some of these advanced technologies, bet it ECM, you
know, for example.

One of the reasons, you know, we talk about
loopholes and enforcement, very, very important to the
motor industry. We spend large sums of money,
obviously, designing this product, ensuring its
compliance. But that doesn't even speak of all the
investment that, obviously, Kitt, and the other motor
manufacturers understand when it comes to motor testing
and the amount of investment there that is necessary to
validate this.

So, one of the real big motivators for us -- I'm
not saying it's the number one, but it's certainly high
on the list, was performance metric and validation. So,
you talk about loopholes or playing by the rules, when
you add the efficiency, then you have to add the
appropriate equipment, accuracy, competency of the test
technician, and all those resources. Obviously, Kitt
knows that as manager of one of the top independent labs
in motors, in the industry.

So, I'm glad to hear that, obviously, he echoed
those same thoughts of both the efficiency test method
has to be well understood. It's wrought with
unfortunate loopholes and landmines if it is not a good,
clear test procedure with motor manufacturers and other experts contributing and ensuring.

So, the last thing we want to do is create a performance metric that ends up creating another loophole.

And I just wanted to express some of the investment necessary. Obviously, motor manufacturers have a huge investment in motor testing and efficiency. And even in a mature market, like industrial three-phase integral horsepower motors, there is still a lot of effort and work done to ensure accuracy and improvement of the test standards. As Kitt's employees are involved with that, as well as motor manufacturer employees involved in the improvement of those test methods and those accuracies.

But it's important that CEC understand that investment that's there to get an accurate test. The amount of money it takes, potentially millions of dollars of investment to have accurate test equipment to do these types of tests. So, it's a significant investment and one I would think that CEC, obviously, would want to try to monitor as close as possible. And the amount of time, energy, investment necessary to do that to ensure there isn't loopholes. So, thank you.

MR. BUTLER: This is Kitt Butler, again. If you
can mute me, maybe I'll sound better. Dan's right on the mark there. I agree with everything he said.

And I would just add that, you know, at a minimum if anyone is submitting test data, for any database the CEC is using or going to rely on, that those tests be conducted in a motor efficiency test lab that is, at a minimum, 1705 accredited. I'm sorry, 17025.

MR. STEFFENSEN: Thank you for the comments Dan and Kitt. Certainly, our intention is not to incur large expenses, and that is the reason for our selection of the CSA 747, as not to invent a new test procedure. We want to try to ensure that the -- we embrace the best practices of industry.

And, you know, I did -- I'll say I did go out somewhat on my own in choosing a test point. And that's, I think, where I think the discussion is and that's where I think, you know, comments in the record will help me to uncover what is the appropriate test point.

I guess as far as the levels go, I mean I heard Dan say that the below 1/2 horsepower, 66 percent was appropriate. I do want to understand what the levels at 72 and 80 percent, for those motors above a half horsepower.
I mean, I did this check a while ago, but I believe that the more stressing case was, whether or not the motor had variable speed rather than the motor efficiency. And, certainly, my selection of embracing the APSP's suggestion from two years ago, of 72 and 80 percent, was really not so much to set a high bar that only a few motors could pass but, really, as a backstop to make sure that something in the future doesn't undermine the savings through variable speed.

But I would want to welcome comments as to what is the -- what are the appropriate levels. And these thresholds that I've chosen, whether it's a half horsepower, one horsepower, are they set at the appropriate levels? And are they adequately defined, in a sense, that we understand exactly what we think we mean?

As well as, you know, the previous experience of where we set a threshold at one horsepower and then there were a number of new entrants to the market that came in right underneath the threshold. That certainly is something that's informed the selection, now.

MR. BOTEKER: This is Rob. One question I have, and I'll show my ignorance here. When you talk about the motor efficiency, is that only looking at the losses of the motor or does that include the losses of the
motor and the control?

MR. STEFFENSEN: Yeah, I'm leafing through the proposed regulations so I can quote it more exactly. So, on page 63, just to -- "If a drive is sold or offered for sale with a replacement dedicated purpose pool pump motor, the input power of the drive while the drive is connected to the motor shall be used to determine motor efficiency and power factor per the test procedure, which is the CSA 747."

So, I think our intent is, of course, the power that goes into the drive that's in turn delivered to the motor is what's used as one input to the calculation of motor efficiency. And then, the mechanical motor output is the other measure for the determination of the motor efficiency.

MR. BUTLER: This is Kitt Butler, again. Dan can probably speak to this, as well as some of our folks that work here. But I believe CSA 747 does do a fair job of isolating the motor efficiency from the drive, Rob.

MR. DELANEY: I think this brings up -- can everybody hear me?

MR. STEFFENSEN: Yes.

MR. DELANEY: I hope I'm not on mute. The motor and drive separation is an important point. I
understood the table that was presented as a system efficiency, and that does present a challenge. And I'll speak of that because below the one horsepower, I know when we, as a petition group, we really looked at that area it was diminishing returns below the one horsepower for variable speed, mainly for operation hours and other.

I would be -- it's important to be responsible for the marketplace to ensure -- well, certainly, we can devise products and there's products available that can certainly serve those ranges. It's important that variable speed is used in the most cost-saving areas.

So, to me, that half-horse to one-horse, it seems like our team felt that that was well below the -- you know, like I say, the reasonable returns necessary within that scope. See, I brought that up, Scott -- or, I'm sorry, Sean.

And then, secondly, just talking about the motor versus drive efficiency, the system efficiency, you know, I imply that was a part of the numbers that you had showed. And when you get into that smaller segment, both the drive efficiency and motor efficiency get to be more of a challenge.

At the 72, I think that you had presented there, it can be very marginal at closer to that half
horsepower and very acceptable to the one horsepower. So, there's a pretty wide gap there. And there's not a lot of product down by the half horsepower, certainly. It's usually a larger product scaled down.

So, it's an interesting discussion because, obviously, motor efficiencies in much of this product are very efficient. The motor-plus-system efficiency can change dramatically depending on the size of that product.

MR. STEFFENSEN: Well, yeah, I appreciate the comment, Dan. This is Sean Steffensen.

What, I guess, had looked at was a comment from two years ago that really suggested that the framework for the half, one and above, in the motor efficiencies, looking for something that would be an adequate backstop in case something unexpected occurred in the future, to ensure the energy savings.

But certainly, that comment, if it needs to be revisited, please comment further in your comments to the record.

But I guess other areas of concern that I've heard is, of course, the investment. This proposal does reach further than the petition to the DOE, in that it would require variable speed down to a half horsepower.

I see motors that are entering the marketplace
that are within that range. Variable speed, because of
its nature, can mimic capacities at its maximum capacity
and below. So, it would seem that there are perhaps
motors that could already fill this market between .5 to
1, which is an area where we have reached further than
the petition to DOE.

It's an area where I have found significant
energy savings. And I heard the comment that we would
want to see the methodology and the assumptions of that
energy savings. That is presented somewhat in the
appendix here. And I know it's been not a lot of time
to review it, given the holidays.

But just briefly, the methodology of the savings
is very consistent with what we assumed during the DOE
negotiation, where we assumed variable speed that the
saving would occur because of an 80 percent speed
turndown. So, from a max speed to 80 percent speed,
that's the savings that we're seeing within the .5 to 1
horsepower range.

So, as the consumer's allowed that option of
turning down the speed from 100 percent to 80 percent,
due to the cubic nature -- excuse me, the power laws of
pumps, that's a 50 percent reduction in the power. So,
the consumer's allowed to select or turn down the power
that's being supplied to a pump and not having to employ
that energy where it's not needed, and they can get to
that setting.

That's a very brief sort of way in which the
energy savings are achieved, and it is through the power
range that I think that Rob has been referencing. So,
that's about -- I made, yeah, two comments there.

MR. BOTELEGER: This is Rob. And it also comes
back to the motor with the flattest curve wins, saves
the most energy, manages power the best.

MR. STEFFENSEN: And I think that's maybe my
perspective is that as I've tried to become informed on
this topic, in reading various sources, that it does
seem that motor efficiency versus load is fairly flat
for a lot of motor types. Certainly, not all motor
types. And that's where I think there have been some
comments to say that perhaps not all motor curves are
flat. That was an underlying assumption that motor
efficiency would be flat through a wide range of
loadings.

And that the other assumption is that of a pump
that is under not a lot of restriction, in the sense the
piping and the plumbing system is fairly wide open, that
the torque rises fairly high. I know I'm getting very
technical here. And so, it ends up the motor is fairly
heavily loaded in a case where there's not a lot of
resistance to flow so, therefore, there's a lot of mass
or water being moved.

And that's the underlying assumption as to why I
believe that, you know, moving towards a more full load
point is the appropriate point to test that.

But I guess returning to maybe the other
comment, I know I branched there. The adjustments, I've
heard significant adjustments. I really would
appreciate further details, either now or in the written
comments, as to the nature of the adjustments,
especially given what I perceive as available products
within the marketplace that do fill this market share,
that could be called upon to fill this if, say, the
preferred, currently now, single-speed product no longer
would meet the standard.

I also want to understand the timing of the
proposal. We do seek to align with the DOE Standard,
which will go into effect in July of 2021. Which at
this point, today, is about two and a half years in the
future. This is something where I believe there's time
to prepare.

And I do want to understand the supply chain,
what has to happen to provide the products to market.
That's something else that we do look at. It was
something that helped to inform a previous rulemaking I
worked on, with lavatory faucets. Where industry was very cooperative and persuasive in providing details that helped me understand their efforts that were needed to meet the standard.

So, I want to try to speak freely here. I really appreciate over the past three years, where I've been working on this product, how the participants have been forthcoming, how we've worked together to achieve a great success with the federal standard, how we've worked together to supply, to DOE, what is a good petition.

And in this effort here, I also want to extend an invitation. I look to everyone here, that I hope that we will work together on this effort, also.

So, yeah, I've tried, as I've listened here, to take notes and mark those comments that I wanted to try to emphasize and delve deeper into. I certainly don't mean to say that if I haven't discussed a comment, that it doesn't matter. I think it does matter to bring those forward.

I would invite anyone that -- you know, if I've missed something, where we want to try to discuss it a little bit more deeply -- I think that's where, when we have this conversation amongst stakeholders, we can kind of understand what the reasons are, the reasons why for
the comments, that help to build a better understanding
so that we can work to those solutions.

I guess I'll pause here and allow anyone here to
speak up regarding any other comments that they would
like to bring forward today.

MR. DELANEY: Thank you, Sean. This is Dan
Delaney, again.

MR. STEFFENSEN: Hi, we can hear you.

MR. DELANEY: I'm curious about two things. I'm
not sure if I heard this, I just want to ask it.

Federal preemption. So, obviously, the CEC is a partner
in our petition. We're hoping in the next few weeks we
can get some activity, hopefully see some action by the
federal government, from the Department of Energy, see
some action there.

Can maybe you speak a little bit about federal
preemption and this proposal versus if DOE comes back
into motion? Again, neither one, can we determine
really timelines.

But maybe what you can control is your timeline
and your thoughts on timeline against if DOE starts to
show reaction and providing us some direction there in
the next month or so? So, maybe I just want to get some
of your thoughts on federal preemption and maybe some
timelines on CEC, and/or if CEC and DOE are in parallel
on this. So, thank you.

MR. STEFFENSEN: Yeah, I mean, my thoughts on federal preemption is that it's complicated and would largely depend upon how DOE acts. And beyond that, I think I would ask my legal counsel for -- I think it's really hard to speculate because we don't know what would occur.

But as far as timeline goes, certainly, we will not act before the end of this comment period. So, January 4th is the deadline for comments. After that, I'll need time. I think we've raised some good issues here, a lot of good discussion. It will take me time to look through those comments.

Certainly, I would say, you know, we're not on the tip of doing something, issuing a NOPA. That's not where we're at. We're in a prerulemaking stance. We'll have time to review the comments and we'll have to just take it from there.

I'll look around the room, if there are any additional comments or statements? I'll look to online if there are additional comments or statements? Has anything landed in our chat box?

MR. O'DONNELL: This is Kevin O'Donnell. Hi, this is Kevin O'Donnell, with WEG.

MR. STEFFENSEN: Okay. Kevin O'Donnell, from
WEG, please speak.

MR. O'DONNELL: This is Kevin O'Donnell.

MR. STEFFENSEN: Yes, we can year you.

MR. O'DONNELL: Okay, with WEG Corporation. I wanted to comment that, you know, WEG supports the opening presentations by the Association of Pool and Spa Professionals, Nidec and Regal, and agree with those comments that were all presented this morning. I think having something that deviates from the federal rule, for California, would be confusing to the market. And I also wanted to thank you for putting this together today.

MR. STEFFENSEN: Thank you, Kevin.

So, we'll ask again if there's anyone, either in the room or online, or any comments to the chat box? Not seeing any additional comments, I will close here today by thanking everyone for attending and I'll look forward to your comments on January 4th. Thank you.

MR. SIDDIQUI: Thank you, Sean.

(Thereupon, the Workshop was adjourned at 11:47 a.m.)
REPORTER'S CERTIFICATE

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

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IN WITNESS WHEREOF, I have hereunto set my hand this 13th day of December, 2018.

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