

**DOCKETED**

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CALIFORNIA ENERGY COMMISSION  
PUBLIC HEARING

In the Matter of:	)	Docket No. 18-AAER-05
	)	
	)	
	)	
	)	NOTICE OF AVAILABILITY
	)	RE: Initial study and
<i>Commercial and Industrial Air</i>	)	negative declaration for
<i>Compressors</i>	)	commercial and industrial
_____	)	air compressors

NOTICE OF AVAILABILITY AND PUBLIC HEARING FOR  
INITIAL STUDY AND PROPOSED NEGATIVE DECLARATION  
COMMERCIAL AND AIR COMPRESSORS APPLIANCE EFFICIENCY  
STANDARDS RULEMAKING

CALIFORNIA ENERGY COMMISSION  
THE WARREN-ALQUIST STATE ENERGY BUILDING  
ART ROSENFELD HEARING ROOM - FIRST FLOOR  
1516 NINTH STREET  
SACRAMENTO, CALIFORNIA 95814

THURSDAY, JANUARY 3, 2019

10:00 A.M.

Reported By:  
Gigi Lastra

## APPEARANCES

STAFF:

Leah Mohney, Appliances Office  
Alejandro Galdamez, Appliances Office  
Sean Steffensen, Appliances Office  
Pat Saxton, Appliances Office.

PRESENTERS:

David Prator, Atlas Copco Compressors LLC  
Brian Boyce, Energy Solutions

PUBLIC COMMENT: (\* Via WebEx, phone, chat)

Chris Knuffman, Quincy Compressor  
Russell Randle, Atlas Copco  
Mark Lessans, Ingersoll Rand, Inc.  
\*Steve Eaton, Ingersoll Rand, Inc.  
\*Louis Starr, Northwest Energy Efficiency Alliance, NEEA  
\*Chris Granda, Appliance Standard Awareness Project, ASAP  
\*Chris Johnson, Compressed Air and Gas Institute (statement  
read into the record)  
\*Matt Smith, Curtis (phonetic) (statement read into the  
record)

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

2 JANUARY 3, 2019

10:00 a.m.

3 MS. MOHNEY: Good morning. Welcome to the  
4 Commercial and Industrial Air Compressors Public Hearing.  
5 My name is Leah Mohney and I'm the Supervisor of the  
6 Mechanical Appliances Unit in the Appliances Office for the  
7 Efficiency Division here at the Energy Commission.

8 This is our meeting agenda. We will have opening  
9 remarks. We'll talk a little bit about where the snack --  
10 it's not really a snack bar, they're vending machines, and  
11 other housekeeping items like that. We'll have a little  
12 bit of background. Then Alex will present the Commercial  
13 and Industrial Air Compressors information to you. After  
14 that we'll have some stakeholder presentations and then we  
15 will open it up to public comment.

16 We anticipate that this will last until  
17 approximately 12:00 o'clock, but we will hear all comments  
18 and we will not leave until all comments are heard. So as  
19 I mentioned we anticipate leaving approximately 12:00  
20 o'clock.

21 For housekeeping items, there are bathrooms  
22 located outside the door and across the hall. There are  
23 also additional bathrooms located underneath the stairs to  
24 the right as you exit this room. As I mentioned, there are  
25 vending machines on the second floor. Around 11:00 o'clock

1 there's going to be a food truck out front, so when the  
2 hearing is done they'll still be there if you're interested  
3 in getting food immediately. That's the only hot food we  
4 have in the building. We do have a microwave on the second  
5 floor. I think there are things you can heat up, but you  
6 are on your own there.

7 Just a reminder that this is being recorded, so  
8 all of your comments are recorded. I want to remind you to  
9 please identify yourself when you come to the microphone,  
10 as well as any organization that you represent.

11 Public comments from participants on WebEx,  
12 please use the raise your hand feature and you'll be  
13 unmuted. Once you're unmuted, again, please state your  
14 name and your affiliation clearly for the court reporter,  
15 prior to starting your comment.

16 Phone-only participants will be unmuted during  
17 the public comment time. When you're given the floor,  
18 please state your name and affiliation. Remember to speak  
19 clearly, so that the court reporter can record your  
20 comments accurately.

21 A little bit of background we are holding this  
22 meeting pursuant to Government Code 11346.8. We are  
23 accepting public comment the proposed regulatory language  
24 and proposed negative declaration. No Commissioners will  
25 be present and no decisions will be made during this

1 meeting.

2           Just a little overview of the rulemaking  
3 timeline, the U.S. Department of Energy issued a  
4 Prepublication Final Rule Notice December 5th of 2016.  
5 However, they never published in the *Federal Register*.  
6 Therefore, California is not preempted from setting state  
7 energy efficiency standards for commercial and industrial  
8 air compressors.

9           November 16, 2018 the rulemaking documents were  
10 published in our docket. November 28th, the California  
11 Environmental Quality Act document was posted. There was a  
12 concurrent public-comment period running for the CEQA and  
13 the rulemaking documents that ended December 31st of 2018.  
14 January 3rd, which is today, we are holding the public  
15 hearing. On January 9th is a proposed Business Meeting  
16 adoption. And January 1st, 2022 is the proposed effective  
17 date.

18           Thank you. And I would like to introduce Alex  
19 Galdamez, who is our Mechanical Engineer for the Appliances  
20 Efficiency Division.

21           MR. GALDAMEZ: Thanks, Leah. So good morning,  
22 I'm Alejandro Galdamez. I go by Alex, to make it easier.  
23 I'm a Mechanical Engineer in the Appliances Office.  
24 Welcome to the public hearing for commercial and industrial  
25 air compressors.

1           Prior to accepting verbal comments, I'm going to  
2 present the proposed regulation and the process. Pursuant  
3 to Government Code Section 11346.8, the Commission is  
4 holding this public hearing to accept verbal comments from  
5 the public on the proposed regulatory language and proposed  
6 negative declaration for Commercial and Industrial Air  
7 Compressors Appliance Efficiency Standards. No  
8 Commissioner will present, nor a decision will be made at  
9 this hearing.

10           As Leah mentioned before the proposed regulation  
11 has been reviewed for 45 days, which concluded on December  
12 31st, of 2018. In parallel, as part of the California  
13 Environmental Quality Act, the negative declaration was  
14 available for a 30-day review, which also ended on December  
15 31st, 2018.

16           The next step is the possible adoption of the  
17 proposed regulation at the January 9th, 2019 California  
18 Energy Commission's business meeting. If the Commission  
19 decides to publish 15-day language to address any other  
20 comments received during the written comment period, or at  
21 today's hearing, we will be sending out a revised agenda  
22 that strikes the item from the January 9th business  
23 meeting, so that the 15-day language can be considered.

24           The proposed standard will reduce electric  
25 consumption and therefore greenhouse gas emissions,



1 criteria pollutants and other particulates associated with  
2 the electricity generation primarily from natural gas power  
3 plants.

4           The proposed regulation will not change the type  
5 of materials currently used for the manufacturer of air  
6 compressors and will not increase or generate new waste  
7 streams that could be considered hazardous.

8           Energy Commission staff has found that there are  
9 no significant adverse effects to the environment from the  
10 proposed efficiency standard.

11           A Prepublication Final Rule Notice was issued by  
12 the U. S. Department of Energy on December 5th, 2016. The  
13 standard was not published as scheduled in the *Federal*  
14 *Register*. Since the rule was not published, California is  
15 not preempted from setting a state efficiency standard for  
16 these products.

17           In general, air compressors have a lifetime of 13  
18 to 14 years, with a shipment calculated to be around 3,700  
19 units in California. Commission staff relied on DOE  
20 analyses including the Technical Support Document dated  
21 December 2016; the Final Rule of Air Compressors dated  
22 December 5th, 2016. In addition, Commission staff also  
23 used the analysis from the California Investor Owned  
24 Utilities Code and Standards Enhancement Team.

25           In response to reading comments I took another

1 look at the shipments analysis and updated the numbers of  
2 shipments used to calculate the statewide energy savings.  
3 I will discuss this on the savings slide.

4 For the scope of the regulation, we proposed to  
5 cover compressors that are rotary, lubricated, liquid or  
6 air cooled with a fixed or variable speed process motor.  
7 Air compressors that operate between 75 and 200 pounds per  
8 square inch gauge of air pressure. The proposed scope is  
9 consistent with DOE's Pre-Publication Final Rule and does  
10 not expand or narrow it.

11 In Section 1602, we proposed to add new language  
12 that is consistent with the DOE definitions in test  
13 procedure, as well as the Pre-Publication Final Rule.

14 A minor modification was done to the language to  
15 change "distributed" and "commerce" to "sold or offered for  
16 sale in California," to align with the state's traditional  
17 authority. Also, we used the term "state regulated  
18 compressors," since the regulation only affects compressors  
19 sold in California.

20 All other definitions are consistent with the  
21 DOE's final rule.

22 In previous rulemakings, which took effect on  
23 October 1st, 2018 the Energy Commission adopted into  
24 Section 1604, the federal test procedure for compressors.  
25 In this rulemaking we proposed to allow manufacturers to

1 use alternative efficiency determination methods, or AEDMs,  
2 in accordance with the procedures listed in Section 422.63  
3 and 429.70 of Title 10 of the Code of Federal Regulations.

4           The purpose of this change is to help lower the  
5 test burden on manufacturers by allowing them to use  
6 software or calculations to predict the efficiency of a  
7 compressor without having to test every single model. The  
8 standard was included in Section 1605.3 and be applicable  
9 to compressors sold or offered for sale in California.

10           The standard is based on a calculated isentropic  
11 efficiency of the unit compared to the minimum package  
12 isentropic efficiency calculated and dependent on the  
13 volumetric flow rate and the percentage loss reduction.

14           The isentropic efficiency is calculated by the  
15 ratio of isentropic pressure compared to the real pressure  
16 as defined in ISO 1217. The volumetric flow rate is used  
17 to calculate the package isentropic efficiency that results  
18 in combination with percentage loss reduction value. It is  
19 used to calculate the minimum package isentropic  
20 efficiency.

21           This is a table, which has the different  
22 equations used for the type of compressor to calculate the  
23 minimum package isentropic efficiency. We're proposing an  
24 efficiency level that aligns with DOE proposal at Standard  
25 Trial Level Two.

1           The proposed efficiency for compressors is  
2 identical for the one proposed by DOE. Staff proposed an  
3 effective date of January 1st, 2022. This provides about  
4 five years from the time the DOE originally published its  
5 Pre-Publication Final Rule in about three years from today.

6           From Section 1606, we propose to remove the  
7 clause that exempted compressors from submitting data, as  
8 we are adding requirements for compressors that will be  
9 verified through the data submittal requirements in this  
10 section. In order to validate the data submitted for  
11 compressors under this proposed rule, additional fields  
12 other than the ones proposed in the DOE regulation were  
13 included. The Commission uses this additional information  
14 to crosscheck the information submitted.

15           The Commission requires data to be submitted at  
16 the time the efficiency standard takes effect, and before  
17 the unit subject to those standards is sold or offered for  
18 sale in California.

19           The proposed regulation does not have any  
20 specific marking or label. However, each unit of covered  
21 compressor will be required to have the manufacturer name  
22 or brand name, the model number, and the date of  
23 manufacturer marked permanently, legibly and conspicuously  
24 in an accessible place on the compressor. This is  
25 effective on the same date as the standard.

1           Exceptions from enforcement was removed from  
2 Section 1608 of the California Code of Regulations, Title  
3 20.

4           The proposed regulation is technically feasible  
5 since there is existing technology available, and currently  
6 used to increase the efficiency of covered compressors.  
7 This includes multi-staging air and improvements, as well  
8 as auxiliary component improvement.

9           This graph demonstrates for one class of  
10 compressors that there are products already available that  
11 meet the proposed efficiency level. The data points above  
12 the blue line meet the proposed efficiency levels.

13           I did not include graphs for all the product  
14 classes in this presentation, but they all similarly show  
15 that many products will meet the efficiency standard. This  
16 graph was taken from the technical support document from  
17 DOE.

18           The proposed standard is cost effective for each  
19 class compressor. This chart shows that the life cycle net  
20 benefit, meaning the savings over the life span of the  
21 compressor, exceeds the one time incremental cost of the  
22 compressor in each product line. Per unit monetary savings  
23 per year range from 364 to \$1,000, depending on the type of  
24 compressor.

25           In response to written comments we took another

1 look at the shipment analysis and updated the shipments to  
2 3,700 units for 2022 to calculate the statewide energy  
3 savings. The proposed standard will have significant  
4 statewide energy savings. After 13 years, the proposed  
5 efficiency standard is expected to save a net benefit of  
6 \$22 million per year. Even with the updated numbers, this  
7 proposal is still cost effective.

8           Based on written comments received, we think  
9 there may be some confusion on the last certification.  
10 First, test labs do not have to have a specific  
11 certification to obtain approval as a Commission-approved  
12 test laboratory. The requirements for test lab approval  
13 are in section 1603.

14           Second, the test lab does not have to be approved  
15 before running the test that supports the data submitted to  
16 the Commission. However, the test lab does have to have  
17 run the test procedure in the last year.

18           Finally, test labs can obtain approval at any  
19 time, but must be reapproved annually.

20           In conclusion, California Energy Commission staff  
21 finds the proposed regulation technically feasible and cost  
22 effective over the lifetime of the appliance.

23           If we move forward without 15-day language here  
24 is the information for the Business Meeting of January 9th.  
25 It will be held in this room, the Art Rosenfeld Hearing

1 Room, at 10:00 a.m. on the 9th. For the participants on  
2 the phone, the address here is 1516 9th Street, Sacramento,  
3 California, 95815. The Art Rosenfeld Hearing room is  
4 located on the first floor.

5 With that, I would like to open the hearing for  
6 public comments. Hold on, first we have some  
7 presentations, right? So first presentation, will you  
8 prefer presenting here or from the podium?

9 MR. PRATOR: From the podium.

10 MR. GALDAMEZ: Okay. For the first presenter we  
11 have Atlas Copco Compressors.

12 (Colloquy to set up presentation.)

13 MR. PRATOR: Thanks, Alex.

14 We would like to thank the Commission for  
15 allowing us to come today and present these comments.  
16 Atlas Copco has already submitted comments previously. I  
17 think we have an additional one we filed this morning. My  
18 name is David Prator. I'm with Atlas Copco. Just for  
19 reference purposes my declaration is attached to our first  
20 set of comments we submitted previously.

21 Atlas Copco is very supportive of this effort by  
22 the Commission to enforce an EL2 rating to the industry.  
23 We think there is a lot of advantage to that. We're  
24 supportive as long as we can sort out what we consider an  
25 issue with the data usage. So for the next few minutes,

1 I'd like to talk a little about that and present a  
2 recommendation on how we think that the Commission can  
3 resolve that issue.

4           So our first slide is kind of the Executive  
5 Summary of all of the points that we are going to try to  
6 cover today. First, we think that the proposal that was  
7 published amidst 10 C.F.R. Section 431.343, which includes  
8 by reference some of the very important information that's  
9 included in the DOE presentation.

10           Because of the smaller size of the California  
11 market relative to the U.S. size market the testing costs  
12 are proportionally and a major impediment to keeping many  
13 of the compliant rotary models on the market. Allowing the  
14 use of currently existing data, July 2020 and before,  
15 industry test data will greatly reduce the adverse impacts  
16 of the proposal.

17           And finally the DOE and the Atlas Copco agrees  
18 with this statement, one fourth of the current rotary air  
19 compressor models fail to meet the proposed standards.

20           So I think we will all agree that the U.S. market  
21 is a larger market. In 2013, the number of compressors  
22 sold, covered by this standard, was about 23,700 units. In  
23 comparison, in the same year, the number of units sold in  
24 California was about 3,100 units. So it represents about  
25 13 percent of the US total.



1           And this is really an important point, I think  
2 this last point, there's about 6,000 distinct rotary  
3 compressor models offered for sale in the United States in  
4 California. Of the 6,000, because there are only 3,100  
5 units sold, of the 6,000 units there were few if any of  
6 many of those models that were sold in California.

7           ISO 1217 has been a recognized global standard  
8 for determining compressor efficiency standards for many  
9 years. It was developed actually jointly between  
10 Compressed Air and Gas Institute, PNEUROP, which is the  
11 European equivalent of the CAGI, and many manufacturing  
12 companies and customers around the world. It was issued as  
13 an ISO standard and then later it was issues as an ANSI  
14 standard, American National Standard Institute standard so  
15 it's not only a global standard, but it's also a US  
16 standard.

17           There's no reason, really, to question the  
18 accuracy of the ISO 1217 data. We in the industry have  
19 used this standard for many years, with many of our  
20 customers, most of our customers, and there's not been a  
21 question about the accuracy of the test method itself. So  
22 many of our sophisticated customers have relied on this  
23 data for many years and it's not really come into question  
24 yet.

25           So DOE adopted basically 1217, as the foundation

1 of its test method, and used the 1217 data to help develop  
2 the efficiency standards that were not released yet, but  
3 have been developed.

4 So most existing rotary compressors models have  
5 been tested with ISO 1217. And that's certainly true with  
6 those members that are in CAGI.

7 As I said the DOE used ISO 1217 as the foundation  
8 for the development of its test standard. And they've said  
9 on many occasions since that the 1217 data was usable to  
10 certify compliance with DOE efficiency standard.

11 DOE postponed the test rule effective date to  
12 December 30, 2017, and suspended any enforcement of the  
13 test rule for at least five years until after the  
14 compliance date of their yet-to-be-published energy  
15 standards.

16 As a result of that DOE action, most of the  
17 industry has yet to start using the DOE testing for their  
18 standard test for compliance. We continue to use ISO 1217,  
19 so it's been very slowly adopted within the industry.

20 The compliance certification, thank you Alex, for  
21 presenting some information this morning. The proposed  
22 rule requires the listing of each rotary air compressor  
23 model offered for sale in California on the Modern  
24 Appliance Efficiency Database. It requires that this is  
25 based on a compliance certification used to test -- use of

1 DOE test rule or mathematical modeling, validated with the  
2 DOE test rule.

3           This is very interesting and very important, the  
4 last point, so far there's not been a single lab certified  
5 to provide such testing yet. Lab certification apparently  
6 does not retroactively validate prior test data.

7 Conservatively, when we rate the standard is that we have  
8 to retest up to 6,000 models for the sale of units in  
9 California.

10           AEDM requires some DOE testing to validate the  
11 model, presumably also at a California-certified lab. And  
12 when CAGI, many years ago initiated a program for third-  
13 party testing and we contracted with a laboratory that does  
14 that on our behalf. And so we have a very good idea of  
15 what it costs for members to test and so this is going to  
16 be about \$4,000 per model. Many of the smaller  
17 manufacturers have reported much higher costs for testing  
18 of their machines.

19           So if you consider the 6,000 models that are sold  
20 in California today, or offered for sale in California, the  
21 cost to retest all of those machines would be in excess of  
22 \$20 million. The DOE actually suspended the application of  
23 the test rule for various reasons, but one of the reasons  
24 that they stated was that there was a high cost of testing  
25 to small businesses, so DOE actually backed off of

1 requiring that testing early on.

2           So we think that many manufacturers will simply  
3 withdraw from California models that have fewer or no sales  
4 of the 6,000 units. And these can be units that fail.  
5 They can also be units that would pass testing the EL2  
6 level testing, and yet they will be taken off of the market  
7 here in California.

8           ISO 1217 is a basis of the DOE test rule. They  
9 both measure the same parameters and then calculate  
10 efficiency in exactly the same way. The data is reliable.  
11 The 1217 data is a reliable measure of compressor  
12 efficiency and it has long been used in the marketplace.

13           We think the use of existing 1217 data to certify  
14 compliance will reduce compliance cost and reduce the  
15 number of efficient models withdrawn from California. 1217  
16 data results are fundamentally equal to the DOE test rule  
17 results, so there's no material conflict between the two.

18           We provide it here and we provided in our earlier  
19 comments that we submitted, I think page 17 through 18,  
20 some language that we think that the Commission would  
21 consider or could consider to help rectify the problem, the  
22 data issue problem. And again we support the proposal  
23 that's out there, but we need a way to manage the data, to  
24 use the preexisting data, which has been fundamentally  
25 proven to be accurate.

1           And finally Atlas Copco would sincerely support a  
2 request that the Energy Commission remove item four from  
3 the January 9th, 2019 Business Agenda, in order to  
4 accommodate the 15-day comment period on the proposed  
5 revisions regarding the prior test data. We think that  
6 this would help alleviate the manufacturers' problems. And  
7 we think that this would continue to provide all of the  
8 menu of products that are models that are offered today in  
9 California and would be a definite win-win for both of us.

10           I would also like to include the revised language  
11 to include omitted 10 C.F.R. Section 431.343

12           And that's it for my comments. Thank you very  
13 much.

14           MR. GALDAMEZ: Thank you.

15           And now we're going to have a presentation by  
16 Brian for PG&E right, or?

17           MR. BOYCE: Investor owned utilities.

18           MR. GALDAMEZ: I think, so yeah.

19           MR. BOYCE: Thank you, Alex. I'm Brian Boyce,  
20 with Energy Solutions on behalf of the California Investor  
21 Owned Utilities. And I'm here to present a restatement of  
22 our written comments from a few days ago on the commercial  
23 and industrial air compressors 45-day language.

24           So the investor owned utilities also known as the  
25 Codes and Standards Enhancement Team in California, has

1 supported the federal process for a number of years and  
2 then over the last year, we've supported the state process  
3 here in California. We submitted a CASE report back in  
4 March of 2018 and in general, we support the Energy  
5 Commission with moving ahead with standards for air  
6 compressors.

7 A quick recap, this has already been presented by  
8 Alex and Atlas Copco, but there was 45-day language  
9 released on November 16th, and here we are today at the  
10 public hearing.

11 Here's a little side-by-side comparison of our  
12 CASE report with the proposed express terms. We proposed a  
13 higher efficiency level than was proposed by the Energy  
14 Commission, which we would note is still cost effective.  
15 We proposed a one-year gap between adoption and effective  
16 date. And we also proposed test limits requirements for  
17 reciprocate compressors that would allow data to be  
18 gathered for potential efficiency programs or a possible  
19 future energy conservation standard.

20 So first we'd like to note that TSL 3 is still  
21 cost effective for the class of rotary compressors that are  
22 in the scope of the Energy Commission's Energy Conservation  
23 Standard. According to our own figures, which we do use  
24 shipment on the order of about 31,000 to 35,000 per year,  
25 there is about 223 gigawatt hours per year more of stock

1 energy savings, after stock turnover. And 36,507 metric  
2 tons of CO<sub>2</sub>e of greenhouse gas emissions reductions after  
3 stock turnover, while still being cost effective, as  
4 compared to TSL 2.

5 We recommend that the Energy Commission shorten  
6 their gap between adoption and compliance to early 2020.  
7 We note that the Warren-Alquist Act only requires a one-  
8 year gap between adoption and compliance.

9 We also note that the Energy Commission has made  
10 several concessions to manufacturers. Like, this was  
11 written kind of with the assumption that the older test  
12 data could also comply with DOE's test procedure, but I  
13 understand there's some issues that need to be ironed out  
14 there. However, there's also the AEDM process that allows  
15 test burden to be reduced.

16 And so due to these concessions we think that a  
17 shorter compliance period is appropriate to start  
18 generating energy savings more quickly for the state.

19 This slide basically speaks to the fact that  
20 between DOE's NOPR stage and its final rule, pre-  
21 publications stage, there were numerous issues raised,  
22 legitimate issues raised by manufacturers. And DOE took  
23 great lengths to incorporate a lot of that analysis into  
24 its final rule. So, just as an example here on this slide  
25 we look at annual operating hours, which was pointed out by

1 CAGI and numerous other manufacturers to be -- it appeared  
2 to be a little bit overstated. So if we take a look at the  
3 TSD (phonetic) of DOE's final rule there is an annual  
4 energy consumption appeared to be reduced by about 18  
5 percent between the NOPR and Final Rule stages, which  
6 suggested a reduction in annual operating hours. And  
7 additionally the product lifetime increased, which would be  
8 the result of fewer operating hours per year. You would  
9 expect a longer overall amount of time for the compressors  
10 to operate.

11 So just to point to this one example, it does  
12 show that any issue that really was addressed in the NOPR  
13 stage, and this goes to the test procedures as well, it  
14 should not be re-litigated in this context.

15 The investor owned utilities support test-and-  
16 list for additional classes of compressors. We understand  
17 that there is a lack of data at this point on reciprocating  
18 compressors. It's understandable that you can't have a  
19 standard without enough test data. But we would like to  
20 see an EL 0 published for these other classes of  
21 compressors to generate important data that will  
22 immediately support energy efficiency incentive programs by  
23 utilities such as the California Investor Owned Utilities.  
24 But also throughout the country other jurisdictions could  
25 run incentive programs based off of California's database.



1 And eventually the Energy Commission or other regulatory  
2 bodies could adopt a future energy conservation standard  
3 based off of this data.

4 And we'd also note that the Energy Commissioner  
5 has, there were precedents for test-and-list examples for  
6 other products in Title 20.

7 So the investor owned utilities are, and the CASE  
8 Team, are supportive of the use of basic models and AEDM  
9 rules. We acknowledge that this does reduce test burden  
10 and it allows manufacturers to represent products that  
11 don't necessary have extremely high volumes of shipments in  
12 its standards compliance.

13 So this is obviously a main point of contention.  
14 We support the use of older data if it does comply with the  
15 DOE requirements. I'm eager to learn from the  
16 manufacturing experts here the nuances of the proof of this  
17 older data and some of the differences. I know that there  
18 are tighter tolerances in DOE's test requirements as  
19 compared to ISO 1217 and the existing CAGI program, but we  
20 do support the use of older data if it complies with DOE's  
21 requirements.

22 So in conclusion we support the Energy Commission  
23 moving ahead with energy conservations standards for air  
24 compressors. We note that higher efficiency standards are  
25 cost effective for rotary compressors and would generate

1 cost-effective energy savings higher than TSL 2. We  
2 support an earlier compliance date of 2020.

3 We note that issues raised in the federal  
4 proposed rulemaking step has been addressed by DOE and do  
5 not need to be re-litigated necessarily here. We support  
6 test-and-list for reciprocating compressors and other  
7 categories of rotary compressors. And we support AEDM's  
8 and basic model definitions that the Energy Commission is  
9 adopting from the federal example. And we also support  
10 older test data being used for compliance if it complies  
11 with the DOE test procedure. Thank you.

12 MR. GALDAMEZ: Thank you, Brian.

13 With that, I would like to open the hearing for  
14 public comments. Public comments from in-person  
15 participants please come to the microphone, the podium in  
16 the middle of the room. Please state your name and  
17 affiliation for the court reporter. A copy of your  
18 comments is appreciated, but not required.

19 Public comments from participants on WebEx please  
20 use the raised-hand feature and you will be unmuted. Once  
21 unmuted, please state your name, affiliation, clearly for  
22 the court reporter prior to starting your comments.

23 Phone-only participants, all lines will be  
24 unmuted when given the floor. Please state your name and  
25 affiliation for the court reporter. Remember please to

1 speak clearly, so that the court reporter records your  
2 comment accurately, so that we can address it.

3 With that I think I have Chris Knuffman from  
4 Quincy Compressors.

5 MR. KNUFFMAN: Good morning, my name is Chris  
6 Knuffman from Quincy Compressor in Bay Minette, Alabama.  
7 We'd like to thank the Commission for allowing us to  
8 comment on the proposed rulemaking. Quincy Compressor  
9 supports the rule as long as the data problems are able to  
10 be fixed.

11 I have a couple of comments on the test-and-list  
12 process. For reciprocating compressors the DOE method  
13 doesn't fit and the DOE rules don't fit for reciprocating  
14 compressors even though ISO 1217 does. And the main reason  
15 for that is there is no definition of ancillary equipment  
16 and no defined protocols for reciprocating compressors.  
17 Reciprocating compressors were eliminated early on in the  
18 DOE rulemaking process and there is no industry standard  
19 for testing recip compressors.

20 This would allow, if there such protocols we  
21 would be able to have comparable apples-to-apples data, but  
22 it doesn't exist. The next point with reciprocating  
23 compressors, the savings really isn't scalable like rotary  
24 compressors, because they're more intermittent duty.

25 And those are my final comments. Thank you.

1 MR. GALDAMEZ: Thank you.

2 We're going to continue here on the floor,  
3 Russell Randle with Atlas Copco.

4 MR. RANDLE: For the record Russ Randle  
5 representing Atlas Copco, a couple of comments. Again,  
6 Atlas Copco supports the Efficiency Level 2 and if the data  
7 problems can be fixed, if the data problems can be fixed.

8 A couple of points to raise here. One of the  
9 proposals that's been put forward suggests that the data  
10 would be usable if they comply with a procedure that did  
11 not exist until 2017. But nobody has suggested that the  
12 data are at all inaccurate. We submit that it's unwise to  
13 discard millions of dollars of accurate data particularly  
14 when the Commission has chosen an expedited timeline. And  
15 so we would suggest that that's to elevate form over  
16 substance and to retard, not improve, energy efficiency  
17 going forward.

18 We reiterate the request for a 15-day language  
19 and that the matter be taken off the agenda from the  
20 January 9th meeting lest it be viewed as prejudging any  
21 correction of these problems, both in terms of putting in  
22 the correct Code of Federal Regulations citation for ISO  
23 1217, and to deal with the certification issues, the  
24 language that we have submitted going forward.

25 Finally, in terms of the oil-free compressors or

1 lubricant-free, we had submitted additional language given  
2 the test-and-list that was put forward. It seems to be a  
3 fundamental misunderstanding. These compressors, the oil-  
4 free, are quite a lot more complex and quite different  
5 machines than is the case for lubricant injected. They are  
6 used in places where very high purity, high-pressure air is  
7 needed, including hospitals, pharmaceutical manufacturers,  
8 semiconductor manufacturing and aerospace.

9           Unlike the situation where the lubricant cools  
10 the machines when you're with a lubricant-injected one, a  
11 much more complicated cooling mechanism and sometimes a  
12 two-stage mechanism is needed. These are quite different  
13 machines going forward.

14           These special applications can be served by an  
15 unregulated kind of compressor, turbo compressors. We've  
16 talked about the difficulties with testing and the  
17 withdrawal of models in those circumstances. The effect,  
18 unintended, of test-and-list could be to put a bunch of  
19 unregulated compressors in this field as opposed to the use  
20 of the oil-free. We don't think that's a good public  
21 policy result. DOE specifically rejected that result when  
22 it considered this issue at that point.

23           Finally, with regard to the accelerated timeline  
24 that's been suggested, that's all the more reason to  
25 resolve these data problems very quickly. And it should be

1 noted the DOE went for a five-year timeline precisely  
2 because there was insufficient engineering personnel to  
3 meet a three-year timeline that had been proposed. That  
4 has not changed. And in particular smaller manufacturers  
5 will be placed at a serious disadvantage. Well, that's not  
6 my client. It does not serve the industry well to knock  
7 out participants.

8 We appreciate the time for the Commission and the  
9 opportunity to comment.

10 MR. GALDAMEZ: Thank you.

11 Continuing on the floor we have Dave Prator for  
12 VP Corp I believe -- oh, no? Okay. That was part of the  
13 comments, okay.

14 So then let's go to Mark Lessans here on the  
15 floor.

16 MR. LESSANS: Thank you, Alex, just briefly if I  
17 could expand on our comments that we submitted? Oh, I'm  
18 sorry, Mark Lessans with Ingersoll Rand.

19 I just want to expand briefly on our comments  
20 that we submitted on the 28th of December. Our comments  
21 were not all that substantive in large part, because with  
22 say for a few clarifications we actually support pretty  
23 much exactly what the CEC has proposed in the 45-day  
24 language.

25 Ingersoll Rand strongly supports the DOE

1 standards that were finalized, and presumably headed to the  
2 *Federal Register* for publication as a national appliance  
3 standard. And it's been admittedly a little bit difficult  
4 to take care of some of the product planning as lawsuits  
5 have ensued. And we have been preparing for the standards  
6 and then they appear to have been delayed.

7           And ultimately what we think would be best is to  
8 -- and what we recommended to the CEC -- is to essentially  
9 take exactly what would have been required by DOE and  
10 implement that as law in California. We think that would  
11 do a bit for manufacturers, certainly for our company, we  
12 think for the industry as a whole, and serve as a model for  
13 other states that rely on the California database and  
14 certification program to implement their standards as well.

15           On some of the other recommendations that have  
16 been made from some of the other commenters, I think that  
17 there are issues, some of which have been raised with test-  
18 and-list requirements as they relate to some of the  
19 products outside of the scope of this regulation. I think  
20 a lot of those issues were covered and addressed during the  
21 DOE rulemaking process and led to why they decided to go  
22 the way that they did.

23           Ultimately, Ingersoll Rand is not opposed to  
24 continuing dialogue with CEC and the various stakeholders  
25 on a potential framework for test-and-list in the future.

1 But there are a number of issues with some of the existing  
2 products, or some of the existing classes of products that  
3 have been recommended for test-and-list, and what would  
4 come with requiring a verification program for various  
5 product groups.

6 And so ultimately, like I said, we're not opposed  
7 to further exploring that, but from our perspective the  
8 most straightforward way to go would be to, as a start,  
9 adopt exactly what DOE would have required for their  
10 regulation.

11 I'll note this is the first time in this country  
12 that these compressors will be regulated. And so our  
13 company, and I assume the industry as a whole, has been  
14 going through the preparations of potentially having a  
15 national standard. And we still have work to do in order  
16 to make sure that we are fully compliant with those  
17 requirements.

18 It also sounds like we will need to have a  
19 California-certified verification of our own labs as well,  
20 so there's still a bit of work to do. We still need to  
21 better understand exactly what this is going to mean once  
22 the regulations take effect. It's our recommendation that  
23 we continue down that pathway and address additional  
24 product classes at a later date once we have a better  
25 understanding of how the product certification and



1 verification process works.

2 We're happy to go through in more detail, some of  
3 the reasoning behind or what it would entail to have test-  
4 and-list requirements for other product groups or why we  
5 would recommend not necessarily a test-and-list requirement  
6 at this time for those products. As well as some of the  
7 technical differences between the ISO 1217 test and what is  
8 in the proposed test procedures.

9 We do have Steve Eaton from our company on the  
10 line as well. And if appropriate today, we can certainly  
11 talk to that in more detail or we can also do that at a  
12 later time as we move forward as well. But certainly I  
13 just wanted to get that on to the record and just to try to  
14 provide some additional context for our comments and what  
15 our position is. Thank you.

16 MR. GALDAMEZ: Thank you.

17 Give me a second here. So I want to put here  
18 this information. There we go. Do we have anybody on the  
19 WebEx that would like to --

20 UNIDENTIFIED SPEAKER: Yeah, (indiscernible)

21 MR. GALDAMEZ: So anybody on the WebEx that would  
22 like to submit a comment, I'm giving the floor to the phone  
23 and WebEx, so just pick up.

24 MR. EATON: Hi, Alex. This is Steve Eaton, if  
25 you can hear me? I'm using my phone.

1           MR. GALDAMEZ: Yeah, that's fine. Go ahead,  
2 Steve. State your name and association.

3           MR. EATON: Right, so I'm Steve Eaton. I'm with  
4 Ingersoll Rand company. You just heard from Mark. I just  
5 wanted to I guess make, further on from what Mark said, and  
6 reiterating the comments from Atlas Copco and from Quincy  
7 regarding the existing data. The DOE study, which CEC has  
8 leveraged was based on published data in what we call the  
9 (indecipherable) datasheet (indiscernible) the reason the  
10 ISO 1217 (indiscernible) national standard.

11           (Audio continually breaks up.)

12           But when you think about what (indiscernible) the  
13 fact that the responsible manufacturers who used this test  
14 method for many, many years -- it goes back to the 1970s,  
15 originally -- but the language in the CEC Rules and  
16 Regulations reflecting the appropriate use of data that was  
17 collected prior to these new rules coming into force would  
18 be welcomes. And would significantly reduce the concern  
19 and potential burden that could be inadvertently created.

20           It doesn't lead to anything, anymore maturity  
21 (phonetic) in the outcome. The outcome being to ensure  
22 that in California the more efficient machines are the ones  
23 that are placed on the market itself.

24           And that's it.

25           MR. GALDAMEZ: Thank you.

1           Anybody on the phone, if you guys would mute your  
2 phone until you're given the floor, I'd appreciate it. It  
3 seems like there's a lot of background noise.

4           Does anybody else have a comment?

5           MR. STARR: Yeah, Louis Starr with NEEA.

6           MR. GALDAMEZ: Okay go ahead, Luis. Just state  
7 your name and yeah, do it again, sorry.

8           MR. STARR: Okay, great. This is Louis Starr  
9 with Northwest Energy Efficiency Alliance. I just wanted  
10 to -- a couple of things. I was going to have a few  
11 comments, but then perhaps later if it's okay, I wouldn't  
12 mind the Atlas Representative, if he can bring back up the  
13 slides and I thought there were a few on there that I think  
14 would be valuable to discuss. But I'll start with my  
15 comments now and then if we are able to follow up on that,  
16 at a later time, I think that would be good.

17           I just wanted to say Northwest Energy Efficiency  
18 Alliance is supportive of California establishing standards  
19 and using the DOE test procedure. I think one of the  
20 things I see is that this is a test procedure that's been  
21 out. It seems like it's something that's likely to be  
22 adopted in the future. And I think this is an excellent  
23 opportunity for California to take advantage of some work  
24 that has been developed by DOE and actually get some energy  
25 savings inside of the State of California.

1 But I think this also has --

2 (Audio cuts out following WebEx announcement.)

3 MR. GALDAMEZ: Well, I guess we'll take a two or  
4 three-minute break and hopefully everybody will be back by  
5 then.

6 (Off the record at 10:55 a.m.)

7 (On the record at 10:56 a.m.)

8 MR. GALDAMEZ: We had a technical difficulty  
9 here, so Louis you were -- if you could just introduce  
10 yourself again, you have the floor. Let's start and just  
11 repeat your comment. I apologize for the inconvenience on  
12 this.

13 (Off mic colloquy as audio difficulties  
14 continue.)

15 MR. GALDAMEZ: All right, Louis Starr, just one  
16 more time, I apologize. Go ahead. You have the floor.  
17 Hello, can you hear me? Louis?

18 (No audible response.)

19 MR. GALDAMEZ: I guess, is anybody online? Can  
20 they hear me to speak up?

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

22 MR. GALDAMEZ: Yeah, who is this?

23 MR. GRANDA: Hi, this is Chris Granda from the  
24 Appliance Standards Awareness Project.

25 MR. GALDAMEZ: Okay, Chris. I'm going to give

1 the floor for now. We had a technical difficulty there and  
2 I'll give the floor back to Louis later when he can hear  
3 me. Why don't you go ahead and introduce yourself and  
4 submit. You have the floor.

5 MR. GRANDA: Thank you very much. Chris Granda,  
6 Senior Researcher Advocate at the Appliance Standards  
7 Awareness Project. We support the CEC's proposal for  
8 California state compressor standards, and also the  
9 comments of the California investor owned utilities.

10 I'm getting quite a bit of feedback here, so I'm  
11 not sure whether people can hear what I'm saying.

12 MR. GALDAMEZ: Yeah, we can hear you. I'm going  
13 to mute myself. Maybe that will help.

14 MR. GRANDA: Thank you.

15 With regards to the issue of test and list for  
16 reciprocating equipment we are sympathetic to the concerns  
17 brought up by Quincy Compressor with the DOE test method  
18 not being appropriate for reciprocating equipment. But if  
19 as Mr. Knuffman said ISO 1217 is appropriate, and if there  
20 is pathway towards using ISO 1217 test data for  
21 certification, perhaps that opens the door to test-and-list  
22 for larger reciprocating equipment as well.

23 And those conclude my remarks. Thank you.

24 MR. GALDAMEZ: Thank you.

25 Do we have anybody else on the phone that can

1 hear me? Louis Starr, can you hear me?

2 MR. STARR: Yeah, I made it back.

3 MR. GALDAMEZ: Okay, sorry about that. We had  
4 technical difficulties. So if you can reintroduce yourself  
5 and restart your comments, you have the floor.

6 MR. STARR: Yeah. Okay, thanks. So my name is  
7 Louis Starr. I'm with Northwest Energy Efficiency  
8 Alliance. I just wanted to say I'm supportive of the  
9 California Energy Commission establishing rules for air  
10 compressors and picking up where DOE left off with setting  
11 standards.

12 So I think not only does setting standards have  
13 value in saving energy in California, but I think it also  
14 progresses energy efficiency across the rest of the nation,  
15 which I think has a lot of value. And it also has,  
16 generally with the market, increasing efficiency and  
17 they're allowing additional programs and other things to  
18 work.

19 I'd also like to speak in support of doing a  
20 test-and-list requirement on reciprocating air compressors.  
21 I realize that there's some issues right now perhaps with  
22 reciprocating air compressors, but perhaps in a follow-on  
23 rulemaking that could be something that's done in the  
24 future as we work out some of the kinks with some of the  
25 testing requirements. And then also reporting procedures

1 and then creating a database associated with that.

2           So I think that's all I wanted to say. Also if  
3 we have time to look at some of the Atlas comments I had --  
4 or there was a presentation I thought it would be helpful.  
5 I had a few questions on that and I thought some  
6 clarifications there might further the conversation. Thank  
7 you.

8           MR. GALDAMEZ: Thank you, Louis.

9           And do we have more people online or on the phone  
10 that would like to submit a verbal comment?

11           (No audible response.)

12           MR. GALDAMEZ: No. Okay. So we're going to be  
13 here until noon in case somebody walks in and wants to make  
14 more comments or calls in, but for now I mean if you guys  
15 want to stay you're more than welcome. I'm not forcing you  
16 out. There are pretty good (indiscernible) you can go eat  
17 and enjoy the morning.

18           Oh, there's one more? So we have one more  
19 commenter that just came in on the line. Steve Eaton, go  
20 ahead. You have the floor. If you could introduce  
21 yourself first on the phone?

22           MR. EATON: Yeah, can you hear me on the phone?

23           MR. GALDAMEZ: Yeah, go ahead. Hello?

24           MR. EATON: Again, about the question about  
25 reciprocating compressors being added as a test-and-list --

1           MR. GALDAMEZ:  Sir?  Steve, hello?  Could you  
2 introduce yourself and your affiliation for the court  
3 reporter and then start your comments?  I appreciate it.  
4 Thank you.

5           MR. EATON:  So Steve Eaton, again Ingersoll Rand,  
6 wants to add a comment regarding the test-and-list for  
7 reciprocating compressors.  I think the CEC should  
8 understand that during the DOE test rule writing, because  
9 they early on eliminated reciprocating compressors along  
10 with other technologies from their rulemaking, there was no  
11 further consideration to some of the complexities that  
12 would come into definition.

13           I think one of the earlier commenters made the  
14 comment about there was a pretty consistent list for what  
15 part of a rotary oil-fitted or lubricated compressor to be  
16 tested and what's out of scope as part of the test.  It's  
17 those types of details that need to be fully documented in  
18 order to provide the framework to any kind of test-and-  
19 list.

20           Because otherwise you're not comparing apples-to-  
21 apples.  One manufacturer who is testing to 1217 may be  
22 including something that another manufacturer is not.  And  
23 therefore the data that you gather number one, is not  
24 necessarily useful to end consumers.  And also, potentially  
25 could put one manufacturer at an advantage or disadvantage,



1 because of how they presented their data, perhaps not  
2 knowing that they've even done that, because it's not well  
3 enough defined.

4           So I think if there's any consideration for that,  
5 it needs to be something that is given a lot more detail in  
6 working groups. As the DOE did, as they developed their  
7 test rule, which was really ISO 1217 with some boundaries  
8 and putting some training wheels on perhaps is how I would  
9 describe it. It really constrains a test person or person  
10 conducting a test that how to conduct an ISO 1217 test and  
11 what is in and out of scope. And it was that ambiguity  
12 that the DOE didn't like in the first place.

13           MR. GALDAMEZ: Is that your end of the comment?

14           MR. EATON: Yeah. That's the end of my comment,  
15 yes.

16           MR. GALDAMEZ: Okay. Cool.

17           Do we have anybody else on the phone? No.  
18 Okay. Well, like I said we'll be here until noon and you  
19 guys are free to go if you would like, or?

20           (Off mic colloquy.)

21           MR. GALDAMEZ: Okay. Louis, do you want to  
22 discuss the Atlas slide?

23           MR. STARR: Yeah, you know, if you could pull  
24 those up it would be dandy.

25           MR. GALDAMEZ: Do you know what slide you're

1 referring to?

2 MR. STARR: You know. I didn't see all of them,  
3 so the main thing I was going -- the two or three questions  
4 that I really had was I think they had some suggestions for  
5 possible ways of the differences between the DOE and what  
6 they're proposing. And I'm trying to figure out if there  
7 is some kind of solution there.

8 MR. GALDAMEZ: Let me know when I've reached the  
9 slide I guess.

10 MR. STARR: Yeah. Okay. Keep on going.

11 MR. GALDAMEZ: Okay.

12 MR. STARR: Okay, maybe this one here. Oh, this  
13 is on --

14 MR. GALDAMEZ: This is on the ISO.

15 MR. STARR: Actually, I think it was that last  
16 one, the previous one.

17 MR. GALDAMEZ: The one with the suggested  
18 language?

19 MR. STARR: Yeah, with these things I kind of  
20 wonder if these are these the four items that were  
21 questions asked to DOE; is that what these are?

22 MR. GALDAMEZ: No, I think this is suggested  
23 language to our Section 1606 on how we can --

24 MR. STARR: Okay. Is the Atlas guy there able to  
25 talk a little bit?

1 MR. GALDAMEZ: Sure, it's just a hearing so it's  
2 kind of not a discussion meeting.

3 MR. STAR: Oh, okay. Well, maybe I can ask this.  
4 I would say my thoughts are if all these things happen --  
5 well there's two questions. One, if all these things  
6 happen it seems like we would find it acceptable. But my  
7 other question is to implement all of these (indiscernible  
8 - audio cuts out) impossible inside the framework the DOE  
9 sets (indiscernible) or you. So that's a question for him  
10 and then a question for you.

11 MR. GALDAMEZ: Okay.

12 MR. SAXTON: Hi, Louis. It's Pat Saxton. I'm  
13 the Acting Manager of the Appliances Office. So the  
14 purpose of the hearing is to not engage in stakeholder-to-  
15 stakeholder questioning. But certainly any kind of  
16 clarifying questions like your previous one, perfect. But  
17 if it is specific stakeholder-to-stakeholder discussion  
18 let's take that offline and out of the hearing.

19 MR. STARR: All right. Okay, good enough. Well,  
20 actually that would be a (indiscernible) and so if all  
21 these things are happening then the manufacturer would be  
22 okay if everything is implemented here; is that correct?

23 MR. GALDAMEZ: Yes. That's correct.

24 MR STARR: Okay. All right, I think that's  
25 probably kind of in the how the meeting is laid out, I

1 think probably (indiscernible) at that point then.

2 MR. GALDAMEZ: Okay.

3 So you guys can adjourn, again we'll wait here  
4 until noon in case somebody calls and there's more comments  
5 coming in.

6 Thank you everybody for coming and taking your  
7 time out of your busy days. Thank you.

8 (Off the record at 11:09 a.m.)

9 (On the record at 11:28 am.)

10 MR. GALDAMEZ: Okay, so we received a written  
11 comment on the chat box. It greets as follows: "Hello, I'm  
12 Chris Johnson with the Compressed Air and Gas Institute.  
13 We provided written comments. We support the CEC proposal,  
14 but we believe it is very important to allow the use of  
15 historical data obtained through testing to ISO 1217."

16 And that's the end of the comment. I'm just  
17 reading it out loud so that it is part of the recording  
18 here.

19 (Off the record at 11:29 a.m.)\_

20 (On the record at 11:37 a.m.)

21 MR. GALDAMEZ: Okay, I've got a comment from is  
22 that Curtis?

23 UNIDENTIFIED SPEAKER: Matt Smith.

24 MR. GALDAMEZ: Oh, Matt Smith.

25 "Curtis would like to that we support the

1 position as espoused by CAGI, Atlas Copco, Quincy and  
2 Ingersoll Rand. Historical test data performed in  
3 accordance with ISO 1217 should be allowed to show  
4 compliance with the new standard. If not, the burden on  
5 manufacturers will be substantial especially for smaller  
6 market shareholders. We have not reviewed the impact at  
7 this time, but given our volume in California, and the  
8 known costs of testing, we would likely be forced to  
9 severely restrict our product offering in the state."

10 And that's the end of the comment.

11 (Off the record at

12 (On the record at

13 MR. GALDAMEZ: So we have reached noon. All the  
14 comments have been received and I will officially conclude  
15 the hearing. Thank you for the participation. And just if  
16 you have any questions in the future on the process you  
17 guys have my contact information and I'll be happy to  
18 answer that.

19 Thank you so much and have a good day.

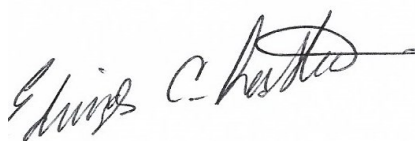
20 (The public hearing was adjourned at 12:00 p.m.)

21  
22  
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24  
25  
**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.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 8th day of January, 2019.



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Eduwiges Lastra  
CER-915

**TRANSCRIBER'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 transcribed by me, a certified transcriber and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 8th day of January, 2019.



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Myra Severtson  
Certified Transcriber  
AAERT No. CET\*\*D-852