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Additional submitted attachment is included below.

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December 27, 2018

Re: Docket Number 18-AAER-05.

Compressed Air Systems LLC is a USA family owned air compressor manufacture employing 58 Americans manufacturing air compressor for the North American market place.

There are many well founded industry organizations, yet there are none that represent the majority of US based air compressor manufactures. Specifically CAGI does not represent Compressed Air Systems LLC, nor do they represent a majority of small and medium air compressor manufactures in the USA. CAGI has done a good job of representing large multi-national companies including Ingersoll Rand (Dublin Ireland) Atlas Copco (Stockholm Sweden) Kaeser Kompressoren (Coburg Germany) Elgi Compressor (Coimbatore India) and many more foreign and domestic compressor manufactures.

Compressed Air Systems LLC has many distributors in the State of California who will be affected by the purposed CEC air compressor regulation. CAS distributors in California employ many residents of the state of California.

The CEC purposed regulation is born from DOE EERE-2013-BT-STD-0040 recorded November 16th 2018.

1. DOE EERE-2013-BT-STD-0040 is based on known flawed data. The run time for compressors used to form and justify the EERE-2013-BT-STD-0040 regulation was based on refrigeration equipment run cycles rather than air compressor run data. This was noted during the public hearings June 2016 and noted in the public comments.

2. There are many flaws in EERE-2013-BT-STD-0040 noted in comment and the supporting documents. These flaws were not corrected. Most of the undue burdens of EERE-2013-BT-STD-0040 will cause damage to small air compressor manufactures and their distributors. These flaws will also cause the cost of air compressor to rise unreasonably.

3. Title II SBA(2) the DOE acknowledged that small business will bear a disproportionate share of regulatory costs and burdens

a. DOE Page 44 TP DOE acknowledges on low quantity air compressors it will be a significant burden, testing will out weight the benefits

b. DOE Page 169 TP participants, regardless of size, must be held to the same testing

3. The DOE recognized that this regulation will place a undue financial burden on American small business.

a. DOE Page 238 FR **DOE understands that small manufacturers may be significantly affected by an energy conservation standard**

b. DOE Page 240 FR **DOE recognizes that small manufacturers may be substantially impacted by energy conservation standards**

4. There is no requirement by law to enact this regulation.

a. DOE Page 178-179 TP notes that certification of compressor models is not currently required because energy conservation standards do not currently exist for compressors.

5. DOE recognizes that this regulation may be giving foreign owed air compressor manufactures a market advantage. Many foreign Govt's will bear the cost of test labs such as China, Japan, and Germany. This is not available to America owned small businesses.

1. DOE page 103 TP equitable to all industry participants, regardless of the location that equipment is manufactured.

6. The DOE regulation testing math is not currently used by any American air compressor manufacture.

Equipment Class	Minimum Package Isentropic Efficiency	η_{Regr} (package isentropic efficiency reference curve)	d (Percentage Loss Reduction)
Rotary, Lubricant-free, Air-cooled, Fixed-speed Compressor	$\eta_{Regr} + (1- \eta_{Regr}) * (d/100)$	$A_1 * \ln(.472 * V_1)^2 + B_1 * \ln(.472 * V_1) + C_1$	-11
Rotary, Lubricant-free, Air-cooled, Variable-speed Compressor	$\eta_{Regr} + (1- \eta_{Regr}) * (d/100)$	$A_2 * \ln(.472 * V_1)^2 + B_2 * \ln(.472 * V_1) + C_2$	-13
Rotary, Lubricant-free, Water-cooled, Fixed-speed Compressor	$A_3 * \ln(.472 * V_1)^2 + B_3 * \ln(.472 * V_1) + C_3 + \eta_{Regr} + (1- \eta_{Regr}) * (d/100)$	$A_1 * \ln(.472 * V_1)^2 + B_1 * \ln(.472 * V_1) + C_1$	-11
Rotary; Lubricant-free; Water-cooled; Variable-speed Compressor	$A_4 * \ln(.472 * V_1)^2 + B_4 * \ln(.472 * V_1) + C_4 + \eta_{Regr} + (1- \eta_{Regr}) * (d/100)$	$A_2 * \ln(.472 * V_1)^2 + B_2 * \ln(.472 * V_1) + C_2$	-13

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

7. Section 1. Statement of Regulatory Philosophy and Principles Dept of Energy. (a) The Regulatory Philosophy. Federal agencies should promulgate only such regulations as are required by law, are necessary to interpret the law, or are made necessary by **compelling public need**, such as material failures of private markets to protect or improve the health and safety of the public, the environment, or the well-being of the American people. **This measure is not met.**

8. Agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating: **Was not regulating considered?**

9. (1) Each agency shall identify the problem that it intends to address (including, where applicable, **the failures of private markets** or public institutions that warrant new agency action) as well as assess the significance of that problem. The public market IE (compressor manufactures) have a history of implementing energy efficient

measures, IE VSD and High E motors, constant product improvements in form and design to reach higher efficiency. This is a key area air compressor manufactures compete in.
10. (3) Each agency **shall identify and assess available alternatives** to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public. **Were alternatives identified or assessed in the regulation?**
11. Each agency shall tailor its regulations to impose the least burden on society, including individuals, businesses of differing sizes, and other entities (including small communities and governmental entities), consistent with obtaining the regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations. **The purposed testing method is not the least burdensome alterative.**
(12) Each agency shall draft its regulations to **be simple and easy to understand**, with the goal of minimizing the potential for uncertainty and litigation arising from such uncertainty. **This is a complicated erroneous regulation see the formula on page 2 for one example.**

(13) Have an annual effect on the economy of **$100 million** or more or adversely affect in a material way the economy, a sector of the economy, **productivity**, **competition**, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; **The cost to the air compressor industry to meet the testing requirement will exceed the $100 mil thresh hold. My small company builds aprox 450 models at this time. Based on the industry estimated cost of $26,000 per model to test to this regulation, my small business alone will face a $11,700,000.00 cost if we never introduce a new model.**

Final rule Page 34
DOE suggest that there method has no potential benefits for reciprocating compressors yet by a miracle it is a benefit for screws? How can it benefit one compressor but not another?

2016). As discussed previously, and in agreement with Sullair's comments, DOE concludes that in the absence of existing or proposed energy conservation standards for reciprocating equipment, establishing a test procedure to measure performance of such equipment is not warranted at this time. Further, DOE concludes that the burdens associated with such a test procedure, as discussed by Sullair, outweigh any potential benefits at this time. Consequently, in this final rule, DOE is adopting test methods applicable only to certain rotary compressors and is not adopting any testing requirements for reciprocating compressors at this time. In response to the concurrent energy conservation
DOE acknowledges these suggestions and concludes that separately reassessing certain segments of the reciprocating marketing may lead DOE to a better informed assessment of the burdens and benefits of test procedures and energy conservation

DOE Final Rule Page 44
DOE finds that infrequently built compressors will face a significant burden.
Small companies only build small qtys thus all our models now face this significant burden.
Based on the comments received and the discussion in this section, DOE concludes that the burden of testing requirements on compressors certain smaller and larger compressors outweigh the benefits.

DOE Final Rule Page 72
DOE conclusion is that the consumption of electricity (energy) is not the best method to
Determine energy savings? Truth is it is the only way to determine efficiency, but since they
already regulated electric motor efficiency there would be no cause for this additional regulation.
For this reason, DOE concludes that the efficiency of the motor alone, even when coupled with the output airflow of the compressor, is not an appropriate metric to represent to energy efficiency or consumption of an air compressor.

DOE Final Rule Page 94
DOE recognizes they do not know if their regulation is technologically feasible
In other words, test methods are still a work in progress for this variety of fixed-speed compressors. Additionally, with no historical part-load performance data available for variable-flow fixed-speed compressors, DOE would be

unable to establish baseline and maximum technologically feasible efficiency levels, and would be unable to complete any of the analyses required to assess and establish energy conservation standards.

DOE page 108 small American air compressors companies do not test to ISO 1217. In fact they did not ask. I believe DOE cannot site one small American small business that test to ISO1217

DOE acknowledges the comment made by Jenny Products; however, DOE reiterates that the goal of the proposed test procedure was to align with ISO 1217:2009(E), as amended,23 to reduce the burden and cost to manufacturers. Most manufacturers currently use ISO 1217:2009(E), and many of the testing- and calculation-related comments that DOE received suggested that DOE align its test procedure as closely as possible with ISO 1217:2009(E).

The DOE pg 166 claims they have acquired the knowledge of air compressors and how to apply the manufacturing to produce better efficiency. Yet they refer to one of their major varieties as reciprocating variable speed. (This is a class of compressor that does not exist)
This further verifies my opinion that the DOE is regulating products without truly understanding the product they wish to regulate. If California is following the DOE regulation has there been any effort to study this industry and the types and uses for compressor air in California, or is the proposal to adopt a flawed DOE regulation. Would it be wise to gain understanding of the product that is purposed to be regulated?
Specifically, the test procedure NOPR contained four AEDM validation classes, applicable to four varieties of compressor: (1) rotary, fixed-speed; (2) rotary, variable-speed; (3) reciprocating, fixed-speed; and (4) reciprocating, variable-speed. DOE also proposed that two basic models be tested to validate the AEDM for each validation class for which it is intended to be applied.

Doe page 168 the DOE suggest that developing a AEDM will not add a additional burden. They have omitted the cost to develop a AEDM required to meet this regulation is minimum Cost of $26,000 per model. This estimate does not include redesign and engineering that may Far exceed the cost of testing.
With respect to Compressed Air Systems and CASTAIR's comments, DOE also notes that AEDMs were proposed as an optional strategy to evaluate equipment at a lower cost than physical testing. Under the test procedure NOPR proposal, manufacturers may continue to conduct physical testing according to the proposed test procedure and sampling plan instead of choosing to rate equipment using an AEDM, or both. Thus, given the optional nature of the AEDM, DOE does not expect the inclusion of AEDMs to result in additional burden to manufacturers. In fact, in many cases, use of an AEDM dramatically reduces the cost of rating compressor models, as once the AEDM is developed and validated, it can be used on any basic model for which it is validated

Doe page 169 the DOE suggest they recognize this regulation places a higher financial burden on Small businesses but they must bear it.
Additionally, in response to Compressed Air Systems and CASTAIR's specific comments on the burden of test procedures or an AEDM, any test procedures or energy conservation standards DOE promulgates must be equitable to all industry participants, meaning that all participants, regardless of size, must be held to the same testing and energy conservation standard criteria. As discussed

DOE page 178-179 How did the DOE make this certification. They claim that since there is currently no regulation required, small businesses will not suffer the undue burden of expense due to this new regulation. DOE acknowledged this regulation is a unbearable burden producing no potential benefit on page 34. The testimony in response from all small businesses is that this regulation will cause large financial burdens that will damage their small business or cause them to close.
DOE certifies that the adopted rule does not have a significant impact on a substantial number of small entities. DOE notes that certification of compressor models is not currently required because energy conservation standards do not currently exist for compressors. That is, any burden associated with testing compressors in accordance with

the requirements for this test procedure will not be required until the promulgation of any energy conservation standards for compressors. On this basis, DOE maintains that the test 179 procedure final rule has no incremental burden associated with it and a FRFA is not required.

DOE pg 204 states the basis for testing requirements are ISO 1217
This is a European standard that the foreign owned compressor manufacture hope the pass on
USA manufactures in order to help them be more competitive in the American compressor market.
6 of the largest 7 air compressor manufactures in the world are foreign corporations.
Members of the compressors industry developed ISO 1217:2009(E), which contains methods for determining inlet and discharge pressures, actual volume flow rate, packaged compressor power input, and package isentropic efficiency for electrically driven packaged displacement compressors.

DOE Page 124 DOE states that they lack sufficient data that this regulation will
have the desired effect. No proof that this regulation will result in any electrical savings
Compressed Air Systems commented that DOE did not provide proof that (1) the proposed standards would improve efficiency over current designs, (2) the proposed standards were technically feasible, and (3) the proposed standards provide an economic benefit for consumers. Finally, Compressed Air Systems alleged that DOE did not collect sufficient data to support DOE's conclusions for the standards proposed in the NOPR. (Compressed Air Systems, No. 0061 at p. 1)
As discussed in section III.B.6, ***DOE acknowledges that it lacks sufficient data*** *for certain varieties of compressors and is reducing the scope of this final rule appropriately. For the compressors that remain in scope, DOE maintains that sufficient data exists to support adoption of a standard under the provisions of EPCA, as amended. Specifically, DOE discusses efficiency improvement in section IV.C.4, technological feasibility in section III.F, and the economic benefits to consumers in section V.B.1.*

DOE Page 203 DOE input methods do not take into account that back up compressors are
Normally used in application with 25 hp and above. Omitting this from the DOE electrical savings
Is a large oversite that will again lower there estimated carbon emissions savings by over 30%

Table IV.18 Summary of Inputs and Methods for the LCC and PBP Analysis*

Inputs	Source/Method
Equipment Cost	Derived by multiplying MPCs by manufacturer and retailer markups and sales tax, as appropriate. Used historical data to derive a price-scaling index to project equipment costs.
Installation Costs	Baseline installation cost determined with data from stakeholders. Assumed no change with efficiency level.
Annual Energy Use	The total annual energy use multiplied by the hours per year. Average number of hours based on field data calibrated to data submitted by stakeholders.
Energy Prices	Electricity: Marginal prices derived from EEI.[75]
Energy Price Trends	Based on AEO 2016 price projections.
Repair and Maintenance Costs	Assumed no change with efficiency level.
Equipment Lifetime	Assumed average lifetime of 12.5 years for rotary.
Discount Rates	Approach involves identifying all possible debt or asset classes that might be used to purchase air compressors. Primary data source was the Damodaran Online.
Compliance Date	Late 2021 (2022 for analysis purposes)

* References for the data sources mentioned in this table are provided in the sections following the table or in chapter 8 of the final rule TSD.

DOE Page 208 more frequent service. In order to make a more efficient compressor
And maintain the efficiency many parts will require service in shorter intervals.
IE separators. DOE failed to request rational for their comment.

Compressed Air Systems stated that maintenance costs would be higher for more efficient equipment due to the need for more frequent service. (Compressed Air Systems, No. 0061 at p. 3) Compressed Air Systems did not provide any rationale for this increase in service. In the absence of information to indicate what would drive the need for additional service, or at which efficiency level DOE may need to consider an increase in repair or maintenance costs, or other drivers that would trigger higher repair or maintenance costs for more efficient equipment, DOE has maintained the same approach as the NOPR and not estimated repair or maintenance costs for this analysis.

Page 237 ODE estimates a cost of 121.3 million with min cost to small American manufactures $15.1 mil
Although DOE is not exempting packagers from the analysis, DOE has revised its analysis to calculate and include costs associated with packagers in its final rule analysis. DOE estimates that packagers will incur between $10.5 and $15.2 million in total engineering redesign costs to comply with the energy conservation standards of this final rule. As such, DOE has included this cost to packagers in total conversion costs estimated at TSL 2, which are between $98.1 million and $121.3 million for the industry. Details of the conversion cost methodology are described in chapter 12 of the final rule TSD.

DOE page 238 DOE recognizes this regulation will likely cause small American air compressor manufacture to fail.
DOE understands that small manufacturers may be significantly affected by an energy conservation standard

DOE page 240 DOE recognizes this regulation will likely cause small American air compressor Manufacture to fail.
DOE recognizes that small manufacturers may be substantially impacted by energy conservation standards

DOE page 253 DOE recognizes the purpose of this regulation to save the carbon emissions Can not be calculated and they would have to rely on elements of uncertainty.
This verbiage should be a red flag as they recognize they don't have a good understanding of the Impact this regulation may have. It is certain that small American companies will fail due to this purposed regulation.
In contrast, the Joint Advocates stated that only a partial accounting of the costs of climate change (those most easily monetized) can be provided, which inevitably involves incorporating elements of uncertainty

The DOE regulation now being considered for adoption by California Energy Commision is a large undue finical burden to small American air compressor manufactures. Complying with the purposed regulation will damage or cause small American companies to fail. The DOE did not interview small business or consider the negative effects caused by this regulation. The damage is not only on the small manufactures but also the distributors of the small manufactures. My customers in California will also face an equal burden as they will no longer have a product to sell and service. This regulation will affect many distributors in California with an undue burden and unfair market place as they try to compete with large multinational manufactures that use these types of regulations to remove small businesses from the market place. The DOE failed to seek sound advice from small American air compressor manufactures or the SBA. They never sought any input from the air compressor distributors and how the lack of access to products produced by small business will affect their business.

The DOE acknowledged that they could not determine the benefit of this regulation on the environment or for the business community. They recognized the air compressor industry completes on energy efficiency. They recognized that their own regulation was flawed and the benefit could not be defined. I pray that the California Energy Commission will also see that this is one industry that should be allowed to have a competitive market place free of over burdensome regulation. This will allow Californians a more competitive air compressor so the things grown and made in California will have a more competitive edge in the worlds market place.
I look forward to hearing how we can work together in curtailing unneeded regulation.

Best Regards

Troy Ratterree
CEO
Compressed Air Systems LLC