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For Commercial Tumble Dryers

Additional submitted attachment is included below.

TCATA
Textile Care Allied Trades Association

AHAM
ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

Coin Laundry® ASSOCIATION

September 1, 2017

Via E-mail

California Energy Commission
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

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Re: Docket No. 17-AAER-01 for Commercial Tumble Dryers

Dear Commissioner McAllister:

The Association of Home Appliance Manufacturers (AHAM), the Coin Laundry Association (CLA), and the Textile Care Allied Trades Association (TCATA) would like to comment on the *Pre-Rulemaking for Commercial Tumble Dryers* (Docket 17-AAER-01). We have concerns with the California Energy Commission (CEC) effort to test, certify and require markings for commercial clothes dryers.

AHAM represents manufacturers of major, portable and floor care home appliances, and suppliers to the industry. AHAM's membership includes over 150 companies throughout the world. In the U.S., AHAM members employ tens of thousands of people and produce more than 95% of the household appliances shipped for sale. The factory shipment value of these products is more than $30 billion annually. The home appliance industry, through its products and innovation, is essential to U.S. consumer lifestyle, health, safety and convenience. Through its technology, employees and productivity, the industry contributes significantly to U.S. jobs and economic security. Home appliances also are a success story in terms of energy efficiency and environmental protection. New appliances often represent the most effective choice a consumer can make to reduce home energy use and costs. Specific to this pre-rulemaking proposal, AHAM represents commercial clothes dryers that are manufactured on a similar platform as residential clothes dryers and are used in generally by the occupants of more than one household, such as multi-family housing common areas and coin laundries.

CLA represents the owner-operators of self-service laundries across the United States as well as wholesale distributors and manufacturers of commercial laundry equipment. CLA's mission is to advance the self-service laundry industry by providing store operators with the industry research, connectivity, education and other resources required to be more successful business owners. These efforts enable the industry to professionally and efficiently provide the essential

service of clean laundry to the millions of families relying upon neighborhood laundromats each week.

The Textile Care Allied Trades Association (TCATA) is an international trade association representing manufacturers and distributors of dry-cleaning and laundry equipment and supplies. It is the only trade association dedicated exclusively to the interests of the allied trades. TCATA represents virtually every major manufacturer of commercial laundry equipment.

We have the following concerns with the latest proposal from CEC and the California Investor Owned Utilities (IOUs), as well as the Test Procedure developed by IOU's consultant.

I. Scope, Premise and Claims of Proposed Test Procedure

The CEC staff presentation from the August 3, 2017, workshop states the scope of this test procedure is to provide consumers (in this case, operators) with information to aid decisions when purchasing new equipment. Further, survey data reference in the T20 Commercial Dryer Test Protocol (IOU CASE analysis) states that operators cited high utility cost as their primary cost. This is, however, understandable because the product the operator is selling is essentially heat, and as such, energy cost obviously will be one of the larger expenses. Moreover, the IOU CASE analysis does not provide any information that shows operators do not have access to the energy use of a product or that they do not currently consider the energy costs of a potentially new product as part of their decision-making process.

If high utility costs were their primary costs, it would seem logical that the operators are considering this factor in their current purchasing decisions. In fact, laundromat owners do consider energy costs when making decisions to equip or re-equip their laundromats. CLA's annual survey indicates that rising utility rates constitute the biggest problem facing laundromat owners. As such, any decision to reinvest the capital required to purchase new equipment versus repair the current equipment is a complicated one with energy savings serving as one of many factors to be considered by the operators.

In addition, there has been no cost-benefit analysis done to justify the additional costs that the operators would likely incur, or what they would be willing to pay, if anything, for products that would need to comply with new regulations, especially for a California specific test procedure and marking. AHAM represents the single-load dryer manufacturers and these dryers are similar to residential dryers, which are currently regulated for energy efficiency by the US Department of Energy. However, the IOU study has ignored performing any cost analysis or including the cost of the testing for dryers in the multi-load machines. AHAM anticipates that just the cost of heavy loads alone would make the test cost prohibitive. According to the IOU CASE analyses, the Codes and Standards Enforcement (CASE) team tested two dryers with up to 120lb capacity and none over that. Since no testing was done on dryers with capacities between 120 – 210 lbs., it is unclear how the conclusion that this test procedure will work on the larger units is being made because linear extrapolation of test burden simply does not work due to the custom nature of multi-load machines. Regulations and analysis for commercial dryers of all types and sizes cannot be done effectively with two models under 120lb capacity.

Furthermore, the scope of the test procedure developed by the IOU's consultant is very broad and incorrectly assumes that a single test procedure can be created and applied to all types of commercial dryers such as single-load, multi-load and on premise laundry (OPL). Each one of these products have differing uses and designs. The sparse survey, docketed by TRC Energy Services regarding On-Premise Laundromat Dryers Market (TRC survey) in 2017, that was used for OPL dryers is based on a fragmented and statistically insignificant sampling. For example, according to the survey report, hotels/motels and nursing homes count for about 58 percent of daily laundry load yet the survey conducted on these facilities represent 0.5 percent of the hotels/motels and 1.3 percent of nursing homes. The latter was conducted mostly on one network of nursing homes, which further skews the data due to overly weighted representation of a specific dryer type.

II. Energy Savings Overstated & Increased Cycle Times

Although the stated intent of this pre-rulemaking is that it is not intended to create a minimum energy standard, an energy savings estimate is indicated based on the adoption of the proposed test procedure. The energy savings stated in the presentations are overstated and includes no data on cost-benefit analyses from operators, which would impact market adoption. AHAM estimates the energy savings possibility for commercial dryers to be far from the 180 million kWh/year that was estimated by the CA IOU consultants, but we are assuming this is an annual savings estimate, which is unclear from the presentation. Theoretical annual energy savings for the single-load commercial clothes washers are more in the range of 20-40 million kWh/year, which if even possible, is not even a rounding error in the "achievable energy efficiency savings range from 13,500 gigawatt-hours to 21,500 gigawatt-hours in 2026" for the investor-owned utilities.[1]

In Table 4.2 (Comparison of two commercial tumble dryers of similar size) of the IOU CASE analysis, the testing showed two dryers, one being more efficient, and having a shorter cycle time (using CASE team's test method). This very limited and fragmented data is being used to conclude that there is wide opportunity for improvement. Because we have limited information on these units, it is difficult to comment on these results. We would request more details on these models to provide comments in this area.

Based on an AHAM analysis, we also found that cycle times increase as energy efficiency increases because it is energy over time. However, the energy used per pound of water removed is consistent across all sizes and types, which would be logical because it takes a certain amount of energy based on the laws of thermodynamics to change water from a liquid to a gas. Therefore, if cycle times were to increase and the commercial dryers need to reach the same throughput per day in terms of pounds of textiles dried, there could be no net energy savings. In fact, there could be an increase in energy use if overcapacity were to occur. AHAM does not see how this proposal would save any energy and could only serve to increase repairs of current, older, less efficient units.

The trade-off between efficiency and longer cycle times is particularly important to the laundromat industry and its low-income customers. The average total dryer cycle times in a

[1] California Energy Commission Staff Report, *California Energy Demand 2016-2026, Revised Electricity Forecast*, January 2016

laundromat are less than 30 minutes. Among those laundromats running high-efficiency washers that have high extract spin cycles, cycle time can drop to 20-24 minutes. In other words, the huge efficiency gains in drying are achieved in large measure on the washer side. DOE's analysis in 2012 during the clothes washer standards development found that the max-tech units on the market already use extremely high spin speeds. This connection between the washer energy and dryer energy is also captured in the clothes washer energy rating (MEF), which includes the sum of machine electrical energy consumption, the hot water energy consumption, and the energy required for removal of the remaining moisture in the wash load. The ENERGY STAR program characterizes this rather succinctly:

> *"Efficient motors used in ENERGY STAR certified washers spin clothes two to three times faster during the spin cycle to extract more water. Less moisture in the clothes means less energy used by the dryer."*[2]

The bottom line is that it will be difficult for laundromat businesses to attract and serve customers effectively with hour-long cycles and puts their businesses in jeopardy.

Further, the TRC survey indicates that large load OPL's are already managed and operated in full capacity as well as in conditioned space, which addresses two of CEC's own stated large drivers of "inefficiency." Since the two largest drivers of "inefficiency" are already being inherently addressed in the marketplace, the CEC should provide evidence as to the benefits that this test procedure and possible markings would provide.

In Table 5.1 of the IOU CASE analyses, it is stated that the intended purpose of the test procedure is efficiency. As such, this intended purpose needs to be balanced with other factors, such as cycle time and its related costs to the consumer (operators and low-income households), benefits to the consumer, and an understanding of how people use these products. An analysis should not disregard the market segment's primary objective for these products, which is to dry clothes fast. People, generally low income, do not want to be forced by government standards to have to stay in a laundromat for hours.

III. Test Procedure is not Repeatable or Reproducible

There is no substantiation that the proposed test procedure is repeatable and reproducible. In the IOU CASE analyses, it is stated that: "Results from a test procedure are reproducible if different labs can perform the test procedure on the same dryer and get the same result. Making the test procedure representative of real-world use helps ensure that when a dryer is used by a business, the energy use predicted by the test procedure is not significantly different than the energy use measured in that business." However, there is no evidence that this proposed test procedure meets this statement.

ISO 5725 defines how repeatability and reproducibility can be established and this study does not meet that threshold. This ISO standard states that, for repeatability, the same test method is used on identical test items in the same laboratory by the same operator using the same equipment within short intervals of time. For reproducibility conditions, test results should be

[2] "ENERGY STAR Certified Products, Clothes Washers, Buying Guidance," EPA, https://www.energystar.gov/products/appliances/clothes_washers, Viewed August 28, 2017.

obtained with the same test method on identical test items in different laboratories with different operators using different equipment. The IOU study states that lab tests were conducted in detail on two dryers and in one lab. This is not evidence of repeatability or reproducibility. Also, IOU consultant's claim during the public presentation on August 3, 2017, that their lab is within 1-2 percent confidence interval of a UL lab is misleading because it apparently tested lab capability with calibrated equipment on an established test procedure and not the proposed test procedure. In this case, the repeatability and reproducibility of the proposed test procedure is under scrutiny, not the consultant's lab. The IOU consultant's study has not met the burden of proof of showing this test is repeatable and reproducible and will not add unnecessary cost.

IV. Auto-termination Is Not Relatable to Timed Dryers

Auto-termination for coin-operated dryers that are selling drying "time" is illogical. This is counter to what the consumers in this segment pay for: a specific amount of drying time in the machine with the expectation that the dryer will dry their clothes in the shortest and lowest cost timeframe. There are states with laws (*e.g.*, New York *CLS Gen Bus § 399-f* and Massachusetts *ALM GL ch. 93, § 18B*) that require laundromats to post signs stating how much drying time the consumer receives when they put in their coins to start the dryer. California Weights & Measures officials verify time that is purchased for products throughout the state. In California's Division of Measurement Standards Training Manual for Weights and Measures officials, it specifically states the example of buying time for clothes dryers –

> *Time is a commodity because we can buy things by units of time. Examples could be hiring a person to work for us by the hour, or* ***buying a certain amount of time in a clothes dryer*** *(emphasis added).*

Thus, auto-termination technology, though effective to increase efficiency for residential clothes dryer, is not a viable solution for commercial clothes dryers and the test procedure need not account for it.

V. Estimated Useful Life

In the TRC survey for OPL dryers, it is stated that the useful life of OPL dryers are 15-30 years. This is an extremely wide range. It would be helpful to provide the data that supports this estimate, which should be based on waste audits from a variety of regions and/or consumer surveys from a wide variety of consumers that are statistically significant. The study provides no insights into what models were studied, how much they cost, or how old the units are. These data are important to understand and compare the technology used for these dryers and what is commercially available in the market.

The IOU CASE analyses claims that "Given the low production volume of these products, we assume that they are redesigned infrequently, and rarely in totality. Most of the new features being marketed and sold appear related to the control interface, but not necessarily to the full design of the product." However, this is an overly simplistic and inaccurate assumption. No data or evidence is provided to support this assumption. It is important to understand that frequency and breadth of redesigns are impacted by several factors, not the least of which are the economy and the price of energy. It appears that the assumption is based on a review of products that may have been sold when the economy was not doing very well or when natural

gas prices were already high. Regardless, an assumption of the frequency of redesign based on historic models is not a viable indicator of future trends.

VI. Cost of Technology Analysis is Overly Simplistic

The cost and CASE defined cost-benefit factors stated in the IOU CASE analyses for "efficient dryer technology" is overly simplistic and optimistic. It is based on a single aspect when there can be many reasons (including feature differences) for cost difference. Section 6 describes "available" technologies for dryer efficiency. Distinction should be made between "available technology" versus "commercially viable" and "desirable" technologies. Just because a technology is available, does not necessarily mean it is commercially viable or even desirable for consumers.

For example, a heat exchanger is a niche technology and may not be commercially viable or feasible. According to the NEAA study that was docketed by CEC, this technology is in prototype stage and considerable development work is needed.[3] It is unknown whether intellectual property protections could make it broadly available or whether licensing costs would be limited or cost prohibitive. Also, energy savings for this technology are wide ranging and, thus, it is difficult to quantify the energy savings that could be attributable to this technology. (8%-40%, per Table 6.1). In addition, heat exchangers have a high cost of installation and increase the equipment size footprint. Ultimately, this drives increased laundry space and higher capital costs, which runs counter to a laundromat operator's business objectives. If CASE so desires, a utility subsidized retrofit can be offered if the installation is suitable for such retrofits. In addition, it should be noted that exhaust recirculation has considerable issues with uncontrolled lint deposits. As deposits grow, efficiency drops below a "standard" machine.

Another example are heat pumps. This technology has existed for a long time and it has not generally been commercially adopted in the commercial sector for many reasons (some of which is minimally referred to in the IOU CASE analyses). It is expensive to add this technology, it makes the system more complex, and is costly to maintain/repair. Heat pump drying with or without heater assisted drying takes longer and the energy savings and drying time is dependent on the installation method. This is contrary to what both laundromat operators and users of these dryers want and expect. Table 6.1 shows the wide variation in energy savings: 15-60 percent. With such wide variation, it is difficult to quantify the savings opportunity or to reliably demonstrate that the customers who purchase these dryers are going to want to invest in the higher cost associated with these products. Also, IOU's consultant fails to take into account that California's lower ambient temperature (which is being pushed into the test procedure) will actually increase the drying time even further with this technology as heat pump efficiency decreases with temperature decrease.

Another technology referred to in the IOU CASE analyses is burner/fan modulation. Burner/fan modulation tends to be complicated and expensive, and has little benefit to energy efficiency, as drying technology is fairly straightforward. The load is heated to a given temperature and maintained at that level. Regardless of modulation, the required load temperature remains the

[3] TN217197 NEEA comments partial load to large

same. Any decrease in temperature simply increases overall cycle time, which again runs counter to what these dryers are meant to do.

VII. Cost of Test Procedure is High

In the IOU CASE analyses, IOU's consultant claims that the proposed test procedure is expected to reduce the cost. This claim is inaccurate. This claim of test burden for both cost and resources is based on a small sample size and without representation from the broad spectrum of products in this category. Often the cost was extrapolated from a handful of runs and without actual data from NRTLs on cost of similar testing.

For a manufacturer or third party laboratory to run this test a new lab would have to be built or significant modification will need to be done (as they have to count for multiple models and SKU's that will need to be run). In addition, because the test procedure would be required only in California, it is unlikely that manufacturers or third party laboratories would view that as a worthwhile investment, which could result in unavailability of labs to run the test. In addition to the laboratory set-up, running the test procedure itself will also have significant costs. Some examples of these cost increases, which were not considered by CASE team study, are as follows:

- Since the ambient temperature that CASE team has chosen for testing is based off average California climate, which is temperate, this test procedure would not likely be adopted for general testing by the other 49 states. Therefore, a test lab would either have to do only California related testing and stop doing testing for the other requirements around the country or create a new lab /environmental chamber for CEC testing only. This is neither cost-effective nor efficient. It will also decrease lab availability because fewer tests for both California, and potentially other states, could be run. This could, in turn, increase time to market for products.
- Water conductivity is not currently measured for any clothes dryer testing. Having to do this for CEC testing only will be an incremental cost without any savings opportunity.
- Cost of additional test cloths for larger loads appears to be excluded. This alone is cost prohibitive.
- Cost associated with increased size of HVAC system to support tighter ambient regulation appears to be excluded. This is unreasonable as the cost of testing dryer loads of up to 210 lbs. is a significant cost increase for labs/manufacturers compared to what is done today for residential applications, which is around 35lbs.

Further, the costs to certify and submit data to CEC is not considered. AHAM surveyed its members regarding the time to comply with existing Department of Energy reporting requirements across products under AHAM's scope. The average time for a company to comply with annual reporting requirements is 230 hours. Work hours for annual reporting by manufacturer ranges depending on the number of models, and is as high as 553 hours. This is above the 129 hours, on average, each manufacturer spends reporting new models, changed models, or deleted models throughout the year. That means that the total certification reporting burden, including ad hoc certifications and the annual report, is, on average, 359 hours and up to 732 total hours for a manufacturer with more models. Notably, the brunt of the burden falls on product/compliance/design engineers who play a significant role in

research and development activities that could lead to improvements in efficiencies, thus demonstrating how much time is diverted from those activities to comply with reporting obligations.

VIII. RMC Levels Below 5 percent are not Feasible for Larger Loads

The IOU consultant proposed a remaining moisture content (RMC) of two to four percent after the test cycle, which is not feasible, especially for the larger loads. The large loads will make it virtually impossible to weigh the final RMC with any real precision. As loads are unloaded, they absorb moisture from the surrounding air driving RMC up. Large loads can take considerable time to unload and move from the machine to the scale. RMC levels will creep up during this delay. The IOU's consultant suggested an "insulated vessel" to transport the clothing yet glosses over the fact that this method investigated using much smaller loads than the test procedure attempts to cover. DOE load materials and article sizes are tightly controlled and RMC levels vary widely even using a uniform test cloth instead of a mixed load. Mixed loads, as proposed, may tangle. This in turn shelters parts of the load from drying, and increases RMC levels even when the majority of the load is dry. This will ultimately create over-drying situations, and will adversely affect repeatability. Although "real world" loads are mixed and loads may tangle in the field, the test procedure must be repeatable to be accurate. Without a repeatable test, the results are essentially meaningless and the energy efficiency of products cannot be meaningfully compared.

IX. Standby Power/Low-power measurement

The IOU CASE analyses suggests that there is wide variation and opportunities for improvement in the market for standby power or low power (i.e., factor of two, with ranges from 3.3Watts to 17.7 Watts). However, this statement is not accompanied by information about the units that can attribute to the difference such as features, type of fuel, and type of dryer. This claim also discounts some basic attributes of commercial dryers such as:

1. These dryers are used continuously throughout the day with very little downtime meaning any energy saving from standby power improvement will be much lower than their residential counterparts.
2. These dryers need to be in constant "ready-to-operate" mode for consumers, thus, disallowing manufacturers to make design changes that takes advantage of low standby power consumption such as turning off display or control functions.
3. Even if it were to be feasible to make these changes, given the high usage cycle of these units (and subsequent lack of standby time), the cost to make these changes would likely not provide sufficient payback to operators.

X. Test Procedure Development

Developing a reliable, repeatable and reproducible test method is difficult, but when done right, provides a foundation for consumers to more accurately compare the results and provides the accuracy needed for enforcement to be done judiciously and properly. Some of the glaring omissions in the development of this test procedure are as follows:

1. Exclusion of differing models and stakeholders such as the actual manufacturers or NRTLs that would, under this proposal, be required to run this test. This alone should be

enough to stop any test procedure development because the test procedure development lacks an understanding by the various testing stakeholders as well as the complexity of model SKUs that they would be required to test. As a result, the process adopted by IOU's consultant did not create a test procedure that can be used by the different groups that exist within this category.

2. Due to the fact that the CA IOU consultants did not obtain industry participation, the test procedure contains impractical methods and steps, which means that manufacturers cannot attempt to run the test without incurring significant cost.
3. The analysis underestimates the effort required to develop a test procedure that will provide consistently repeatable and reproducible results regardless of the laboratory conducting the test. The DOE Test procedure development process takes years and engages a wide range of stakeholders at every stage. DOE often uses several labs and/or technicians to conduct the test in order to assess repeatability and reproducibility and puts those results on the record so that stakeholders can comment. Moreover, DOE's process considers not only accuracy in terms of real-world consumer use, but also balances that out with a requirement that the test not be unduly burdensome to conduct.

We appreciate the opportunity to comment on this proposal and look forward to discussing this further.

Sincerely,

Kevin Messner	David Cotter	Brian Wallace
Sr. VP, Policy & Govt. Relations	CEO	President & CEO
AHAM	TCATA	CLA