Natural Resources Defense Council
Appliance Standards Awareness Project
Alliance to Save Energy
Northwest Energy Efficiency Alliance
Northwest Power and Conservation Council

May 5, 2014

Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program
1000 Independence Avenue, SW
Mailstop EE-2J
Washington, DC 20585

RE: Docket Number EERE–2012–STD–0020 / RIN 1904–AC77: Notice of Proposed Rulemaking for Commercial Clothes Washers

Dear Ms. Edwards:

This letter constitutes the comments of the Natural Resources Defense Council (NRDC), Appliance Standards Awareness Project (ASAP), Alliance to Save Energy (ASE), Northwest Energy Efficiency Alliance (NEEA), and Northwest Power and Conservation Council (NPCC) on the notice of proposed rulemaking (NOPR) for energy conservation standards for commercial clothes washers. 79 Fed. Reg. 12302 (March 4, 2014). We appreciate the opportunity to provide input to the Department.

1. DOE must reconsider the division of commercial clothes washers into separate product classes for top-loading and front-loading machines.

The rationale for initially establishing separate product classes in the 2010 final rule[1] rested upon two premises regarding the performance of commercial clothes washers (cycle time and cleaning performance) that have subsequently been demonstrated to be unfounded in the present proceeding. This is all the more noteworthy because the 2010 final rule explicitly rejected the method of loading (top-loading vs. front-loading) as a feature providing consumer utility warranting a separate product class. In the present rulemaking, DOE has assembled documentation of machine performance that is at major variance with the premises relied upon in 2010, yet clings to the same product class determination now lacking in foundation.

The Department's explanation of the product class determination in the 2010 final rule bears noting here:

> As stated above, DOE concluded preliminarily in the October 2008 NOPR and the November 2009 SNOPR that separate equipment classes for top-loading and front-loading CCWs were warranted because the method of loading had been previously

[1] 75 Fed. Reg. 1122.

determined to be a ''feature'' under rulemakings for RCWs and a single standard would eliminate top-loading CCWs from the market. DOE analysis for this final rule, including evaluation of comments submitted by interested parties, has identified at least one consumer utility related to the method of loading clothes, specifically for CCWs, which represents a ''feature'' for purposes of 42 U.S.C. 6295(o)(4). Consequently, DOE has retained two equipment classes for CCWs for this standard.

Specifically, DOE believes that the longer cycle times of front-loading CCWs versus cycle times for top-loaders are likely to significantly impact consumer utility. In commercial and multi-housing settings, it is beneficial to consumers with multiple, sequential laundry loads to approximately match CCW cycle times to those of the dryers to maximize throughput and minimize wait times, and wash times of 70–115 minutes would be longer than most drying cycles. Because the longer wash cycle times for front-loaders arise from the reduced mechanical action of agitation as compared to top-loaders, DOE believes such longer cycles may be required to achieve the necessary cleaning, and thereby constitute a performance-related utility of frontloading CCWs versus top-loading CCWs under the meaning of 42 U.S.C. 6295(q).

DOE notes that access without stooping is not a consumer utility that would warrant the definition of separate equipment classes. DOE agrees that top-loaders eliminate the need for stooping, while front-loaders, in the absence of a pedestal, require such action. DOE further notes, however, that commercial clothes dryers are front-loading as well, so it believes that those consumers that dry their clothing loads are already accustomed to stooping. In addition, DOE observes that many Laundromat and multi-housing applications have installed the CCWs on a platform to effect the same elevation as a manufacturer-supplied pedestal would, and that the cost of installing such a platform in the event that the owner/ operator decides that preventing stooping is important is likely to be minimal.

DOE is aware that a top-loading, horizontal-axis CCW had been available previously. Due to the inherently higher efficiency of a horizontal-axis platform, it is likely that such a design could achieve a higher MEF and lower WF than the max-tech top-loading CCW efficiency level assumed for this analysis. DOE research determined, however, that this particular washer platform was withdrawn from the market based on a lack of suitability for commercial settings. However, even if a top-loading, horizontal-axis CCW was again marketed, it is likely that such washers would have cycle times similar to those of other horizontal-axis machines and, therefore, would not likely provide substantially the same consumer utility as top-loading, vertical-axis machines.

DOE also does not consider first cost a ''feature'' that provides consumer utility for purposes of EPCA. DOE acknowledges that price is an important consideration to consumers, but DOE accounts for such consumer impacts in the LCC and PBP analyses conducted in support of this rulemaking.[2]

In the 2010 final rule, DOE was drawing comparisons of cycle times from a 2009 *Consumer Reports* article on residential clothes washers, contrasting front-loader cycle times of 70 to 115 minutes with top-loader cycle times of 30 to 85 minutes.[3] As noted above, it was surmised by DOE that longer cycle times were apparently necessary for front-loaders to achieve sufficient cleaning performance and that in a commercial setting, cycle times of the length described in the article would extend beyond the typical dryer cycle time, and thus warranting a separate class for top-loaders to maintain access in the marketplace for this consumer utility. Of further note, DOE

[2] 75 Fed. Reg. 1133.
[3] 75 Fed. Reg. 1131.

specifically acknowledged that method of access is a "feature" within the meaning of 42 USC 6295(q), but rejected the contention that top loading afforded any substantial consumer utility in a commercial setting.

During the Framework stage of the current rulemaking, our organizations provided numerous references to front-loading commercial washers with cycle times at the low end of the range presented for top-loaders.[4] Following the Framework stage, DOE investigated this issue more closely, evaluating what it characterized as a "representative sample" of 10 commercial washers – five top-loading and five front-loading.[5] It found cycle times for the five front-loaders ranging from 30 to 37 minutes, averaging 34 minutes. It found cycle times for four top-loaders ranging from 29 to 31 minutes, for an average of 30 minutes. One top-loader with a cycle time of 50 minutes was excluded from this average representation of top-loader cycle times. Inclusion of this machine with the other four top-loaders would yield an average cycle time for top-loaders of 34 minutes – the same average calculated for front-loaders. It should be noted that this machine characterized as an "outlier" was not excluded from any other evaluations or data summations in this rulemaking, such as the cleaning performance testing and the teardown analysis.

Thus, based on the test data contained in the Technical Support Document, there is no difference between the average cycle times of commercial top-loaders and commercial front-loaders tested by DOE. Even accepting *arguendo* DOE's exclusion of one of the tested top-loaders, the great disparity perceived in 2010 has shrunk to just 4 minutes. What's more, the range of cycle times for the two categories overlap – showing that some front-loaders perform at the low end of the average for top-loaders and demonstrating that purchasers who may value a short cycle time can find commercial washers in a front-loading format to meet this desire. A separate product class is not needed to maintain access in the marketplace to this performance attribute.

Additional testing has also disproven the inference DOE had drawn in 2010 that longer cycle times were needed by front-loaders to achieve acceptable cleaning performance. In tests of both total cleaning and rinse performance conducted for this rulemaking, DOE found "a lack of any discernible trend of cleaning performance as a function of cycle time."[6] DOE further satisfied itself through conversations with manufacturers that cycle times of 36 minutes were within the range of acceptable cycle times for both the coin laundry and multi-family housing markets.[7]

Finally, with one conclusory sentence and no substantiation,[8] DOE has sought to apply the consumer utility determination made to justify separate product classes for residential clothes washers to the current proposed rule for commercial washers. However, the Department has not presented any new data, surveys, or analysis to provide a foundation for the rejection of the Department's own position in 2010 cited above that method of access does not provide distinct consumer utility in the commercial setting that would warrant a separate product class. In the absence of such evidence, the new conclusion announced in the NOPR appears arbitrary.

---

[4] Information was provided on top-loaders offered under the Speed Queen, Unimac, GE, and Electrolux brands, letter of Natural Resources Defense Council and Appliance Standards Awareness Project, Oct. 12, 2012.
[5] 79 Fed. Reg. 12310. Washer features described at Technical Support Document, pp. 5-13.
[6] Technical Support Document, pp. 5-25, 5-29.
[7] *Ibid*.
[8] 79 Fed. Reg. 12309.

This much is clear. Today's commercial front-loaders operate within the same time range as commercial top- loaders, which obviates DOE's principal rationale for establishing separate product classes in the first place. The strained assertions to the contrary suggest that the Department is unwilling to consider either the potential benefits of a standard set for a single product class or the full range of tools available to mitigate its stated concerns for the low-volume manufacturer of commercial clothes washers.

Maintenance of separate product classes allows energy and water efficiency standards for top-loading commercial washers to be far less stringent than for front-loaders. The new standards proposed by DOE would maintain this disparity. They would allow top-loaders meeting the new standard to use 65% more electricity, 62% more natural gas, and 130% more water than front-loading commercial washers. Thus the resource cost for accommodating the continued sale of inefficient top-loaders is stark, while the benefit for doing so is unclear. With serious to extreme drought extending across much of the country and the challenges of a changing climate becoming more evident, the Department ought not bend over backwards to accommodate a comparatively wasteful subclass of commercial clothes washers.

2. If DOE decides to maintain separate product classes, we urge DOE to strongly consider adopting EL 2 for top-loaders.

In the NOPR, DOE proposed to adopt TSL 2, which corresponds to EL 1 for top-loaders. DOE also evaluated a higher efficiency level for top-loaders, EL 2, which corresponds to TSL 3. Table 1 below shows a comparison of average LCC savings, national energy and water savings, and NPV from the proposed standard for top-loaders (EL 1) and the higher level evaluated in the NOPR (EL 2). Savings for customers and the nation are significantly higher at EL 2 compared to EL 1. National energy savings at EL 2 are almost double the savings at EL 1, while national water savings increase from 0.01 trillion gallons at EL 1 to 0.22 trillion gallons at EL 2. Average LCC savings increase by more than a factor of three going from EL 1 to EL 2 for both multi-family and laundromat applications, and NPV also increases by more than a factor of three at both discount rates.

Table 1. Comparison of savings at EL 1 and EL 2 for top-loaders.[9]

		Average LCC Savings	National FFC Energy Savings (quads)	National Water Savings (trillion gallons)	NPV @ 7% ($billion)	NPV @ 3% ($billion)
EL 1	Multi-Family	$259	0.09	0.01	$0.26	$0.59
	Laundromat	$145				
EL 2	Multi-Family	$813	0.17	0.22	$0.91	$2.13
	Laundromat	$654				

[9] 79 Fed. Reg. 12337-38, 12342-43; Technical Support Document p. 10-17. Note: EL 1 corresponds to TSL 2, and EL 2 corresponds to TSL 3.

3. We urge DOE to evaluate whether there would be any overlap between investments manufacturers will have to make to meet the 2018 residential top-loader standards and investments to improve the efficiency of commercial top-loaders.

In the analysis for the NOPR, DOE found that manufacturers would incur significant conversion costs to reach EL 2 levels for top-loaders.[10] The two major manufacturers of commercial clothes washers—Alliance Laundry and Whirlpool—also manufacture residential clothes washers. The 2018 standards for residential top-loaders (1.57 IMEF/6.5 IWF) are slightly more stringent than the EL 2 levels for commercial top-loaders (1.55 MEF_{J2}/6.9 IWF).[11] We understand that manufacturers may need to make significant investments to meet the 2018 standards for residential top-loaders. We urge DOE to evaluate whether these investments that manufacturers will already be making to meet the 2018 standards for residential top-loaders would have the effect of reducing the conversion costs to meet EL 2 for commercial top-loaders.

4. If DOE determines that adopting EL 2 for top-loaders is not justified, we encourage DOE to consider an intermediate level between EL 1 and EL 2 based on current products available on the market.

Based on a review of DOE's Certification Compliance Database, Alliance Laundry is not currently producing any top-loaders that meet EL 2.[12] However, Alliance does have models that exceed EL 1 on either energy efficiency or water efficiency. In terms of Appendix J1 metrics, EL 1 represents an MEF of 1.7 and a WF of 8.4.[13] As shown in Table 2 below, Alliance Laundry is currently producing top-loaders with a higher MEF_{J1} (1.75) than that at EL 1 with the same WF of 8.4. Alliance also has models with the same MEF_{J1} as that at EL 1 (1.7) but with a significantly lower WF of 6.18.

Table 2. Energy and water efficiency of Alliance Laundry top-loaders.[14]

MEF_{J1}	**WF**
1.65	8.4
1.7	**6.18**
1.7	8.4
1.75	**8.4**

5. We encourage DOE to re-examine the analysis for the max-tech levels for front-loaders.

As shown in Table 3 below, DOE's analysis for the NOPR shows that water heater annual energy use and annual water use are significantly higher at the max-tech levels for front-loaders (EL 3) than at EL 2. For front-loaders, DOE's analysis assumes that to reach EL 3,

[10] Technical Support Document. p. 12-17.
[11] Note: Unlike the 2015 and 2018 standards for residential clothes washers which are based on IMEF, the energy efficiency levels evaluated for commercial clothes washers do not incorporate standby and off mode. If standby and off mode were included in the commercial clothes washer efficiency levels, the IMEF level would be somewhat lower than MEF_{J2} to reflect the additional per-cycle energy consumption.
[12] DOE Certification Compliance Database accessed May 1, 2014.
[13] 79 Fed. Reg. 12315.
[14] DOE Certification Compliance Database accessed May 1, 2014. Alliance Laundry brands include Speed Queen, Huebsch, IPSO, and UniMac.

manufacturers would increase capacity by about 0.6 cubic feet.[15] We understand that a clothes washer with a larger capacity may consume more energy and water per cycle than a comparable smaller-capacity machine because the larger machine can hold more laundry. However, if the analysis is assuming that customers wash more laundry per cycle with larger-capacity machines than with smaller-capacity machines, the analysis must also assume that the number of cycles per year for larger-capacity machines is lower than that for smaller-capacity machines such that the total weight of laundry washed in a year is the same. If DOE instead is assuming that more laundry is washed per cycle with higher-capacity machines but the number of cycles per year stays the same, this means that the analysis is implicitly assuming that more total laundry is being washed in a year with larger-capacity machines.

Table 3. Water heater energy use and water use for front-loaders in multi-family applications at EL 2 and EL 3.[16]

Efficiency Level	MEF_{J2}	IWF	Water Heater Annual Energy Use (kWh)		Annual Water Use (1000 gal/year)
			Electric (kWh/year)	Gas (MMBtu/year)	
EL 2	2.00	4.10	51.4	0.70	12.85
EL 3	2.20	3.90	119.3	1.63	14.12

Table 4 below shows the average installed price, operating cost, and LCC for front-loaders in multi-family applications. The average operating cost decreases going from the baseline levels to EL 1 and then EL 2, as we would expect. However, the average operating cost increases going from EL 2 ($2,555) to EL 3 ($2,700) such that that average operating cost at EL 3 is similar to that at EL 1 even though both energy and water efficiency are significantly better at EL 3 than at EL 1. We encourage DOE to re-examine the analysis for the max-tech levels for front-loaders and to ensure that the analysis is not implicitly assuming that more total laundry is being washed with larger-capacity machines.

Table 4. Average installed price, operating cost, and LCC for front-loaders in multi-family applications.[17]

Efficiency Level	MEF_{J2}/IWF	Life-Cycle Cost		
		Average Installed Price	Average Operating Cost	Average LCC
Baseline	1.65/5.20	$1,853	$2,987	$4,840
EL 1	1.80/4.50	$1,853	$2,749	$4,602
EL 2	2.00/4.10	$1,854	**$2,555**	$4,409
EL 3	2.20/3.90	$1,885	**$2,700**	$4,585

[15] Technical Support Document. p. 5-40.
[16] *Ibid*. p. 8-18.
[17] *Ibid*. p. 8-41.

6. We urge DOE to reconsider setting standards for standby/off mode operation.

The IMEF performance metric specifically allows for the inclusion of standby and off mode power consumption as well as active mode energy use.[18] DOE collected standby power consumption from what it deemed to be a "representative sample" of commercial washers.[19] Yet without explanation, the Department asserts that an energy metric based on IMEF would not be technically feasible,[20] and has not proposed setting a standard using the IMEF metric that would account for standby power.

Based on data collected by the Department, standby power consumption is indeed responsible for a significant share of the consumption of electricity by commercial clothes washers. As shown in Table 5 below, standby energy consumption represents 7 to 44% of total annual machine energy consumption depending on washer format and application.

Table 5. Standby energy use as a share of total baseline machine energy use.

Machine Format and Application	Baseline Unit Machine Energy Use in Active Mode (kWh/year)[21]	Active Mode Operating Hours per year[22]	Standby Mode Energy Use (kWh/year) (range)[23]	Standby Mode Energy Use as a Percentage of Total Machine energy use (range)
Multi-Family Top-Load	240.9	547.5	23.3 – 96.7	9 – 29%
Multi-Family Front-Load	120.5	620.5	47.2 – 94.4	28 – 44%
Laundromat Top-Load	329.3	748.25	22.8 – 94.3	7 – 22%
Laundromat Front-Load	164.7	847.9	45.9 – 91.8	22 – 36%

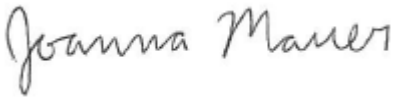
While machine energy comprises a fraction of the total energy consumed in the wash cycle, these data indicate that standby usage makes up a significant share of the electricity usage of commercial clothes washers. We believe DOE acted without foundation in turning away from the IMEF metric and removing low-standby-power controls from the list of design options for consideration.[24]

Thank you for considering these comments.

[18] 79 Fed. Reg. 12310.
[19] *Ibid*.
[20] Technical Support Document, p. 7-4.
[21] Annualized machine energy use per cycle from Technical Support Document, p. 7-8.
[22] Cycles per year from Technical Support Document p. 7-8; average cycle time from NOPR, 79 Fed. Reg. 12309.
[23] 8,760 hours less active mode hours times low and high standby power consumption from Table 5.6.3, Technical Support Document, p. 5-19.
[24] Technical Support Document, p. 3-22.

Sincerely,

Edward R. Osann
Senior Policy Analyst
Natural Resources Defense Council



Joanna Mauer
Technical Advocacy Manager
Appliance Standards Awareness Project

Rodney Sobin
Director of Research and Regulatory Affairs
Alliance to Save Energy

Louis Starr, P.E.
Energy Codes and Standards Engineer
Northwest Energy Efficiency Alliance

Tom Eckman
Manager, Conservation Resources
Northwest Power and Conservation Council