

Appliance Standards Awareness Project
Consumer Federation of America
Natural Resources Defense Council
Northeast Energy Efficiency Partnerships

June 25, 2018

Elizabeth Kohl
Appliance and Equipment Standards Program
U.S. Department of Energy
Building Technologies Office, EE-5B
1000 Independence Avenue, SW
Washington, DC 20585

RE: Docket Number EERE-2018-BT-STD-0005: Dishwasher Petition

Dear Ms. Kohl:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), Consumer Federation of America (CFA), Natural Resources Defense Council (NRDC), and Northeast Energy Efficiency Partnerships (NEEP) on the notification of petition for rulemaking for dishwashers. 83 Fed. Reg. 17768 (April 24, 2018). We appreciate the opportunity to provide input to the Department.

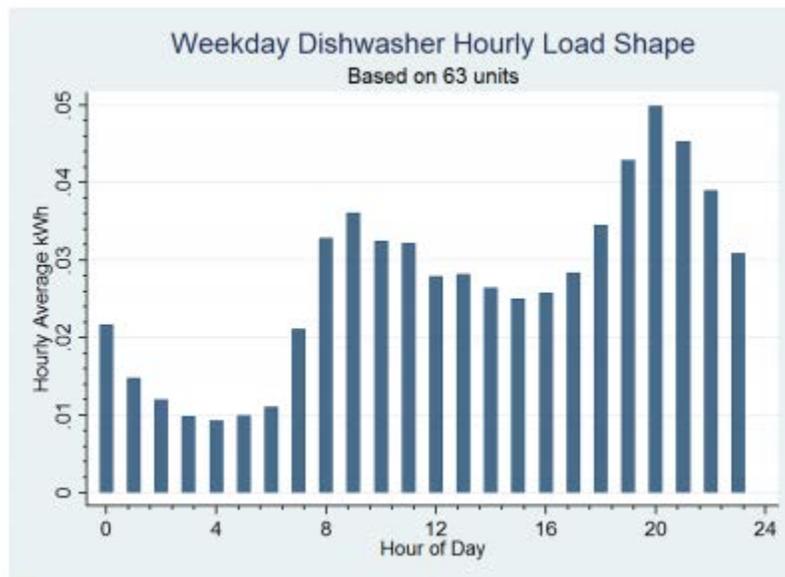
CEI submitted a petition to DOE requesting that the Department begin a rulemaking to define a new product class for dishwashers with a cycle time of less than one hour. DOE should deny the petition. As we describe below, establishing a new product class for dishwashers as requested by CEI would clearly violate the anti-backsliding provision. Even ignoring backsliding concerns, CEI's request is unwarranted since dishwashers with short cycles are already widely available to consumers. Further, CEI's argument that standards have been the main driver of increased cycle times is flawed. Finally, dishwashers with a "normal cycle" of less than one hour would not benefit consumers since shortening cycle times to under an hour would likely compromise excellent washing performance and increase noise levels.

Establishing a new product class for dishwashers with a cycle time of less than one hour would violate the anti-backsliding provision. As Earthjustice explains in their comments on the petition, all dishwashers, regardless of cycle length, are covered by the current standards, and the plain language of the anti-backsliding provision prevents DOE from establishing a standard that would increase allowable energy and water use relative to the current standards.

There is wide availability of dishwashers with cycles with a cycle time of less than one hour. Aside from being a clear violation of the anti-backsliding provision, CEI's request for a new product class is unwarranted since dishwashers with one-hour (and shorter) cycles are already widely available to consumers. Further, manufacturers advertise these short cycles for a variety of dishwasher loads. For example, GE has a dishwasher that they advertise as having a "Short

Wash” that “quickly washes loads of everyday dishes.”¹ A user guide for Whirlpool dishwashers describes the “1-Hr” wash cycle as a cycle that “will clean dishes using more water and energy” and “may be used for all soil levels.”² And an LG operation manual describes two different short cycles: a “Turbo” cycle that “will clean heavily soiled dishes in an hour using slightly more energy and water” and an “Express” cycle that “will quickly clean lightly soiled dishes” in 33 minutes.³

Most consumers likely do not have much need for short cycles. DOE’s test procedure for dishwashers uses a “representative average dishwasher use” of 215 cycles/year,⁴ which suggests that households on average are doing significantly less than one load of dishes per day (0.59 cycles/day). Further, the data below from the Residential Building Stock Assessment (RBSA)⁵ show that there are two peaks in daily dishwasher use: one around breakfast time, and a larger one around dinner time.



The RBSA data are consistent with what we would expect—that consumers typically run their dishwasher after breakfast before they go to work or, more often, after dinner. With these usage patterns, cycle time may often be of little importance to consumers. (This is likely especially true with newer machines that “are quiet enough to run in a library”⁶ and thus do not disrupt sleep.)

¹ <https://www.homedepot.com/p/GE-Front-Control-Dishwasher-in-White-GSD2100VWW/202868433>.

² <https://images.homedepot-static.com/catalog/pdfImages/ce/cec6bc5f-3d3b-42ad-ad19-beb507f58320.pdf>.

Available, for example, with Model WDT730PAHZ.

³ <https://images.homedepot-static.com/catalog/pdfImages/b7/b750c344-4023-4357-b848-7ba204f442a0.pdf>.

Available, for example, with Model LDF5545ST.

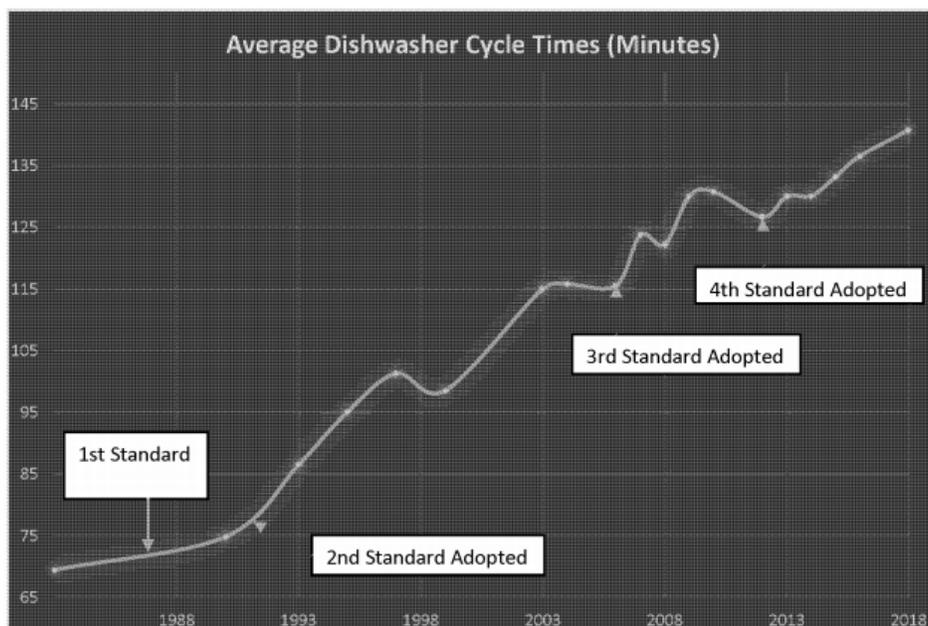
⁴ https://www.ecfr.gov/cgi-bin/text-idx?SID=9ed3c37e1589ce0b91f8336fcea434dc&mc=true&node=ap10.3.430_127.c1&rgn=div9.

⁵ <https://neea.org/img/documents/residential-building-stock-assessment-metering-study.pdf>, p. 153.

⁶ <http://dishwashers.reviewed.com/features/is-your-dishwasher-quiet-enough>.

Nevertheless, we understand that at least on occasion (e.g. when hosting large gatherings), consumers may want to do consecutive cycles of dishes and therefore value the option of a short cycle. But, as described above, this option of a short cycle is already widely available to consumers.

CEI's argument that standards have been the main driver of increased cycle times is flawed. In their petition, CEI provided the graph below of average cycle time⁷ from 1983-2018,⁸ which they claim shows that efficiency standards have resulted in a significant increase in cycle time. We first note that CEI's graph shows that even before standards, average cycle time was longer than one hour. Further, CEI's graph shows that the greatest increase in cycle time came during a long period when no new standard was adopted. Between 1991 and 2007, no new standard was adopted, and yet average cycle time increased from about 75 minutes to more than 115 minutes. Even between the year after the second standard took effect (1995) and the year the third standard was adopted (2007), average cycle time increased by almost 30 minutes.⁹



The increase in cycle length over time was instead likely driven by a variety of factors including manufacturer design choices intended to improve washing performance, detergent changes, and consumer demand for quiet and efficient machines. Dishwasher washing performance has improved significantly over time. An ASAP and ACEEE report found that in 1985, 80% of all dishwashers rated by *Consumers Reports*, but just 57% of low-price-

⁷ *Consumer Reports* measures cycle time using the “sensor, normal, or equivalent cycle to clean a full load of dishes with baked-on food”: <https://www.consumerreports.org/products/dishwasher/ratings-overview/>.

⁸ 83 Fed. Reg. 17773.

⁹ We note that the graph appears to be mislabeled regarding when the third standard was adopted. The third standard was established by EISA, which was signed into law on December 19, 2007. The graph instead mistakenly shows that the third standard was adopted in 2006.

point models, were rated as having “Very Good” or “Excellent” washing performance. In 2012, 92% of all models rated as well as 92% of low-price-point models achieved those high washing performance ratings.¹⁰ In June 2018, 99% of all models rated by *Consumers Reports* were rated as “Very Good” or “Excellent” on washing performance.¹¹ Further, the ASAP/ACEEE report noted that in recent years, *Consumer Reports* has had to increase the difficulty of their tests in order to continue to differentiate products.¹² Of course, even though the vast majority of dishwashers perform very well, there are some models that do not. Consumers who own such models are naturally frustrated with their products. But the data from *Consumer Reports* show that the portion of machines that provide very good washing performance has increased over time. The problem of poorly-performing individual models exists for most if not all consumer products, whether they are subject to an efficiency standard or not.

Four main factors influence washing performance: mechanical action, chemicals, temperature, and time.¹³ Dishwasher manufacturers have control over mechanical action, temperature, and time. Increasing mechanical action is undesirable because it increases noise levels, and there are limits to increasing temperature because water that is too hot can damage glassware.¹⁴ Therefore, manufacturers may have chosen to increase cycle time as a way of improving washing performance.

Changes in detergents have also likely contributed to increased cycle times in recent years. Specifically, in 2010, many states banned the sale of dishwasher detergents with phosphates, which resulted in detergent manufacturers introducing new detergent formulas. Newer detergents use enzymes, which, according to *Reviewed*, “take time to work—potentially *a lot* of time, depending on the type of food and the material it’s bonded to.”¹⁵ Therefore, it seems likely that many manufacturers increased cycle times in order to maintain good washing performance with the new detergents.

Finally, there appears to be clear consumer demand for both quiet and efficient dishwashers, which are both features that can be achieved in part by increasing cycle time. According to *Reviewed*, in the early 2000s Bosch began introducing very quiet dishwashers to the U.S. market. Combined with the growing popularity of open floorplans, “a demand for quieter dishwashers was born.”¹⁶ The President and CEO of a large appliance store says that “the number one thing people are looking for in a dishwasher is a quiet machine,”¹⁷ and Bosch says that noise is “the second biggest driver for purchase—only after price.”¹⁸ *Reviewed* notes that “there are lots of ways to reduce noise, but most of them involve reducing the machine's cleaning power, and that in turn means lengthening the cycle times to compensate.”¹⁹

¹⁰ http://appliance-standards.org/sites/default/files/Better_Appliances_Report.pdf. p. 34.

¹¹ <https://www.consumerreports.org/products/dishwasher/ratings-overview/>. Accessed June 12, 2018.

¹² http://appliance-standards.org/sites/default/files/Better_Appliances_Report.pdf. p. 34.

¹³ http://ebooks.miele.com.au/miele-docs/miele_dishwasher_guide/files/assets/common/downloads/publication.pdf. p. 39.

¹⁴ <http://www.purewaterproducts.com/articles/glassware-wear-and-tear>.

¹⁵ <http://dishwashers.reviewed.com/features/why-is-my-dishwasher-so-slow>.

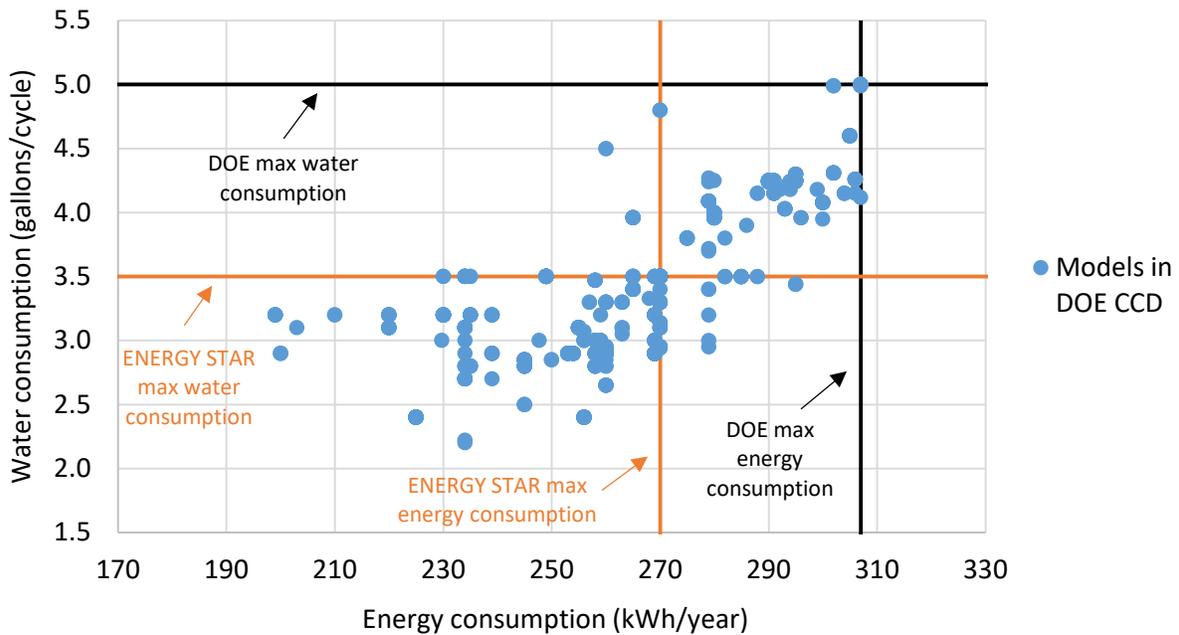
¹⁶ <http://dishwashers.reviewed.com/features/is-your-dishwasher-quiet-enough>.

¹⁷ <https://www.reviews.com/dishwasher/>.

¹⁸ <http://dishwashers.reviewed.com/features/is-your-dishwasher-quiet-enough>.

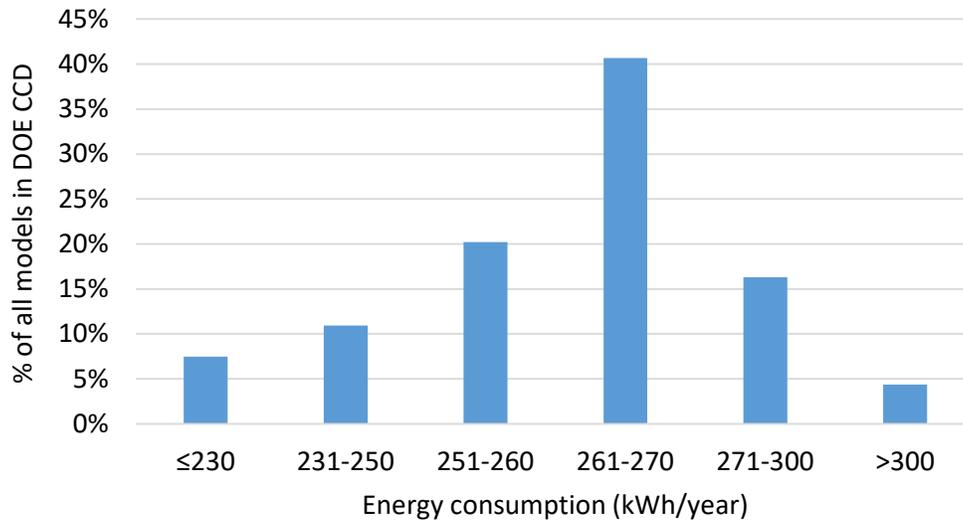
¹⁹ <http://dishwashers.reviewed.com/features/why-is-my-dishwasher-so-slow>.

Data on current dishwasher models and ENERGY STAR market penetration suggest that consumers also value dishwasher efficiency. The graph below shows all the models in the DOE Compliance Certification Database,²⁰ along with the current DOE and ENERGY STAR maximum limits for energy and water consumption. As shown in the graph, many models not only meet ENERGY STAR, but consume significantly less energy and water than is required to meet the ENERGY STAR specification. The model that consumes the least amount of energy (199 kWh/year) uses 35% less energy than the DOE limit (26% less than the ENERGY STAR limit), and the model that consumes the least amount of water (2.2 gallons/cycle) uses more than 50% less water than the DOE limit (37% less than the ENERGY STAR limit).

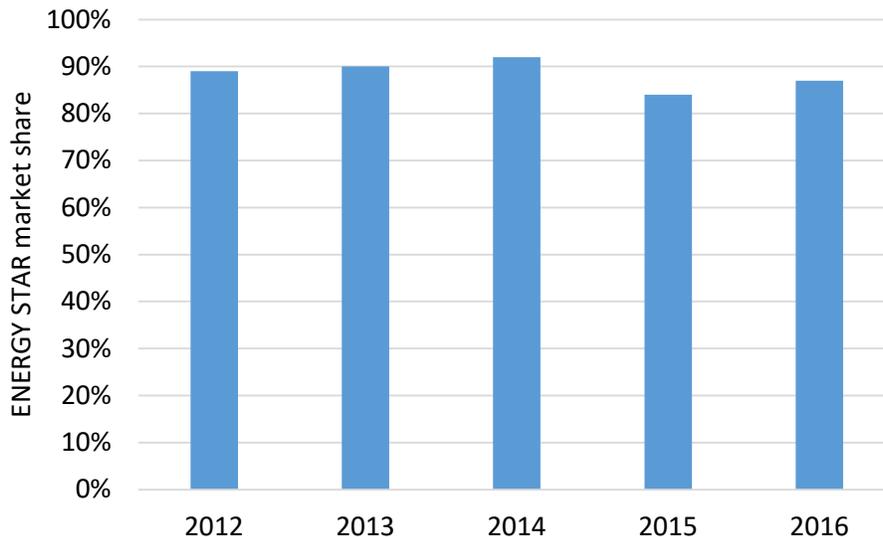


To further illustrate this, the graph below shows the percentage of models by energy use bin. Almost 80% of models meet the ENERGY STAR specification for energy use (270 kWh/year), and almost 40% of models consume at least 10 kWh/year less than the ENERGY STAR energy use limit.

²⁰ https://www.regulations.doe.gov/certification-data/#q=Product_Group_s%3A*. Accessed June 12, 2018.



In addition, the graph below showing data on ENERGY STAR market penetration demonstrates that consumers are buying highly-efficient machines. During the last five years for which ENERGY STAR market share data are available, more than 80% of sales of dishwashers met ENERGY STAR each year.²¹



If cycle time was highly valued by consumers, we would expect that most dishwashers would consume as much energy and water as is allowed by the minimum standards in order to reduce cycle time as much as possible. But instead we see that almost all dishwasher sales meet ENERGY STAR requirements, and a large portion of models perform better in terms of energy and water use than even ENERGY STAR requires. These findings suggest that consumers are demanding quiet and efficient machines more than shorter cycle times.

²¹ https://www.energystar.gov/index.cfm?c=partners.unit_shipment_data.

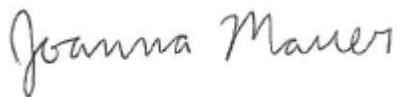
Dishwashers with a “normal cycle” of less than one hour would likely not be beneficial for consumers. As described above, there are various factors that influence dishwasher washing performance including mechanical action and time. Cycle time can be reduced by increasing mechanical action. However, increased mechanical action directly increases noise levels, and, as noted above, consumers place significant value on quiet machines. Further, as described above, newer detergents need time for the enzymes to work to remove food particles. Therefore, short cycles will necessarily sacrifice something in the way of washing performance, regardless of how much energy and water are used.

Today, manufacturers can design the “normal cycle” to balance the features that are important to consumers, including noise level, washing and drying performance, efficiency, and cycle time. Currently-available models show that manufacturers are producing dishwashers that provide good performance, features, and value to consumers across the board. For example, there are two models that are rated by *Consumer Reports* as “Excellent” on washing performance and energy use and “Very Good” on drying performance and noise, while at the same time having a cycle time of just 95 minutes and a low price point of \$540.²² These models also offer an “Express” cycle.²³ On the other hand, if a manufacturer introduced a dishwasher with a “normal cycle” of less than one hour, consumers would not appear to gain anything since they already have access to short cycles, while they would likely lose out on the excellent washing performance and very low noise levels commonly provided by the “normal cycle” on dishwashers today.

In sum, DOE should deny the CEI petition both because CEI’s request would clearly violate the anti-backsliding provision and because the request is unwarranted since dishwashers with short cycles are already widely available to consumers. Manufacturers today are providing consumers with wide-ranging choices of quiet, efficient machines that provide excellent washing performance while also providing the option of a short cycle.

Thank you for considering these comments.

Sincerely,



Joanna Mauer
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Appliance Standards Awareness Project



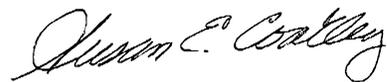
Mel Hall-Crawford
Energy Projects Director
Consumer Federation of America

²² <https://www.consumerreports.org/products/dishwasher/ratings-overview/>. Accessed June 12, 2018. Bosch Ascenta SHX3AR7[5]UC and Bosch Ascenta SHE3AR7[]UC.

²³ https://media3.bosch-home.com/Documents/9001363078_A.pdf.



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