



APPLIANCE STANDARDS
AWARENESS PROJECT



September 25, 2023

The Honorable Jennifer M. Granholm
Secretary
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Secretary Granholm:

The Association of Home Appliance Manufacturers (AHAM)—on behalf of its affected major appliance division members¹—and efficiency and consumer organizations and utilities, which are being coordinated by the Appliance Standards Awareness Project (ASAP),² have agreed to recommendations on new appliance efficiency standards and related actions for home appliances. Please find attached a copy of the term sheet for this major agreement. We are pleased to submit to the Department of Energy (DOE or Department) this joint statement of recommended standards.

The scope of the Energy Efficiency Agreement of 2023 (Agreement) includes residential clothes washers, clothes dryers, conventional cooking products, dishwashers, refrigerator/freezers, and miscellaneous refrigeration products. The Agreement's recommendations, if the Department adopts them, would provide significant benefits for energy conservation, consumers, and the Department, including:

- Reducing refrigerator and freezer energy use by approximately 10-15 percent, depending on the product class.
- Reducing miscellaneous refrigeration product energy use by percent.
- For clothes washers, approximately 11 percent energy savings and 28 percent water savings for top-load models and 9 percent energy savings and 17 percent water savings for front-load models.
- Clothes dryers meeting the recommended standards would use up to 40 percent less energy.
- The recommended standards for dishwashers would reduce energy use by 15 percent and water use by 34 percent relative to the current standards.

¹ Members of AHAM's Major Appliance Division that make the affected products include: Alliance Laundry Systems, LLC; Asko Appliances AB; Beko US Inc.; Brown Stove Works, Inc.; BSH Home Appliances Corporation; Danby Products, Ltd.; Electrolux Home Products, Inc.; Elicamex S.A. de C.V.; Faber; Fotile America; GE Appliances, a Haier Company; L'Atelier Paris Haute Design LLG; LG Electronics; Liebherr USA, Co.; Midea America Corp.; Miele, Inc.; Panasonic Appliances Refrigeration Systems (PAPRSA) Corporation of America; Perlick Corporation; Samsung Electronics America Inc.; Sharp Electronics Corporation; Smeg S.p.A; Sub-Zero Group, Inc.; The Middleby Corporation; U-Line Corporation; Viking Range, LLC; and Whirlpool.

² American Council for an Energy-Efficient Economy, Alliance for Water Efficiency, Appliance Standards Awareness Project, Consumer Federation of America, Consumer Reports, Earthjustice, National Consumer Law Center, Natural Resources Defense Council, Northwest Energy Efficiency Alliance, and Pacific Gas and Electric Company.

- New efficiency standards for electric and gas cooking products, which would preserve the features and functionality that consumers expect from their cooking products and have access to today.
- If adopted, the Agreement streamlines the rulemaking process, allowing DOE to free up federal resources for other priorities.

The Agreement recommends new and amended federal minimum efficiency standards that will save considerable amounts of energy and water if DOE adopts them. And the jointly recommended compliance dates will achieve the overall energy and economic benefits of this agreement while allowing necessary lead-times for manufacturers to redesign products and retool manufacturing plants to meet the recommended standards across product categories.

Appliance	Compliance Date	Energy Saved (quads)	Water Saved (trillion gallons)
Clothes Dryers	March 1, 2028	3.11	N/A
Clothes Washers	March 1, 2028	0.73	2.08
Cooking Products (excluding portable cooking products)	January 31, 2028	0.18	N/A
Dishwashers	3 years after publication of a final rule in the Federal Register	0.31	0.24
Refrigerator/Freezers	January 31, 2029 or January 31, 2030 depending on the product class	4.73	N/A
Miscellaneous Refrigeration Products	January 31, 2029	0.31	N/A
Total		9.4	2.32

Through the give and take of the multi-stakeholder negotiation process, we believe that we have developed strong standards which meet the Energy Policy and Conservation Act of 1975, as amended (EPCA) statutory criteria. The jointly recommended standards would result in large energy savings and are technologically feasible and economically justified taking into account impacts on consumers and manufacturers. We strove for levels that would achieve the largest possible energy savings that would yield savings for consumers and protect important consumer features on timelines that would mitigate the significant impact on manufacturers resulting from meeting new, significantly more stringent efficiency standards simultaneously across several product categories. We also attempted to balance the national interests in large energy savings and protection of manufacturing sector employment. For each rulemaking docket, we will soon submit detailed comments explaining our rationale for the recommended levels.

Also, in addition to the recommended levels for cooktops, we jointly recommend the following additional rule changes:

- The parties jointly recommend that DOE adopt the calculation method AHAM proposed in its petition filed earlier this year to DOE for the simmer portion of the cooktop test procedure as an alternative to the full simmer test.³
- For enforcement purposes, the parties jointly recommend that DOE rely on the full simmer test in Appendix I1 to Subpart B of Part 430. Our intent is that DOE would adopt in 10 C.F.R. 429.134 a new section that outlines the same process it uses for enforcement related to refrigerator/freezer models with two compartments, each having its own user-operable temperature control.⁴

Importantly, we recommend the standards in this Agreement to DOE as a complete package even if DOE chooses to implement it via separate rulemakings. That is, each part of this agreement is contingent upon the other parts being implemented. As a total package, this agreement represents a strong set of new national minimum standards. These recommendations represent the carefully-considered judgment of the most active stakeholders in the rulemaking processes for these products who come from various points of view. We urge you to adopt standards based on these recommendations as expeditiously as possible.

As required by EPCA, the parties to this agreement are fairly representative of various points of view. AHAM represents manufacturers of products covered by this agreement. Several energy and water efficiency advocates join in the agreement, including the American Council for an Energy-Efficient Economy, Alliance for Water Efficiency, Appliance Standards Awareness Project, Earthjustice, Natural Resources Defense Council, and Northwest Energy Efficiency Alliance. Organizations representing consumers also join in the agreement including Consumer Federation of America, Consumer Reports, and National Consumer Law Center. Finally, one utility, Pacific Gas and Electric Company, joins in the agreement. Moreover, state agencies participated and are expected to file letters of support for this Agreement.

We look forward to working with your office to advance the recommendations contained in this Agreement. Please contact either of us if you have any questions or need any further information.

Sincerely,



Kelly Mariotti
President
AHAM



Andrew deLaski
Executive Director
ASAP

cc: Ashley Armstrong, Senior Advisor
Samuel Walsh, General Counsel

³ See AHAM Petition To Amend The Test Procedure For Conventional Cooking Products, at Section III. (We recognize that, given new data placed on the record, the proposed equation itself may be updated.).

⁴ As outlined in 10 C.F.R. 429.134(b)(2), for refrigerator/freezers, DOE conducts the three-point interpolation method, which is a more precise test, before making a determination of noncompliance with respect to the basic model. In this case, the parties jointly recommend that DOE use the simmer portion of the test in current Appendix I1 before making a determination of noncompliance with respect to a basic cooktop model.

Energy Efficiency Agreement of 2023—Term Sheet
Refrigerator/Freezers

	Product Class	Efficiency Level	Equations for Maximum Energy Use (kWh/yr) Based on AV (ft ³)	Compliance Date
1	Refrigerator-freezers and refrigerators other than all-refrigerators with manual defrost.	EL 3 (DOE Proposed Level)	$6.79AV + 191.3$	January 31, 2030
1A	All-refrigerators—manual defrost.		$5.77AV + 164.6$	
2	Refrigerator-freezers—partial automatic defrost.		$(6.79AV + 191.3)*K2$	
3	Refrigerator-freezers—automatic defrost with top-mounted freezer.		$6.86AV + 198.6 + 28I$	
3A	All-refrigerators—automatic defrost.		$(6.01AV + 171.4)*K3A$	
4	Refrigerator-freezers—automatic defrost with side-mounted freezer.	EL 3	$(7.28AV + 254.9)*K4 + 28I$	January 31, 2030
5	Refrigerator-freezers—automatic defrost with bottom-mounted freezer.	EL 2 (DOE Proposed Level)	$(7.61AV + 272.6)*K5 + 28I$	January 31, 2030
5A	Refrigerator-freezer—automatic defrost with bottom-mounted freezer with through-the-door ice service.	EL 2	$(7.76AV + 351.9)*K5A$	January 31, 2029
6	Refrigerator-freezers—automatic defrost with top-mounted freezer with through-the-door ice service.	EL 3 (DOE Proposed Level)	$7.14AV + 280.0$	January 31, 2030
7	Refrigerator-freezers—automatic defrost with side-mounted freezer with through-the-door ice service.	EL 3	$(7.31AV + 322.5)*K7$	January 31, 2030
8	Upright freezers with manual defrost.	No Change (DOE Proposed Level)	$5.57AV + 193.7$	January 31, 2029
9	Upright freezers with automatic defrost.	EL 2	$(7.33AV + 194.1)*K9 + 28I$	January 31, 2030
10	Chest freezers and all other freezers except compact freezers.	No Change (DOE Proposed Level)	$7.29AV + 107.8$	January 31, 2029
10A	Chest freezers with automatic defrost.	No Change (DOE Proposed Level)	$10.24AV + 148.1$	January 31, 2029
11	Compact refrigerator-freezers and refrigerators other than all-refrigerators with manual defrost.	EL 2 (DOE Proposed Level)	$7.68AV + 214.5$	January 31, 2029
11A	Compact all-refrigerators—manual defrost.		$6.66AV + 186.2$	

Energy Efficiency Agreement of 2023—Term Sheet

	Product Class	Efficiency Level	Equations for Maximum Energy Use (kWh/yr) Based on AV (ft ³)	Compliance Date
12	Compact refrigerator-freezers—partial automatic defrost.	10% Savings	$(5.32AV + 302.2)*K12$	January 31, 2029
13	Compact refrigerator-freezers—automatic defrost with top-mounted freezer.	EL 1 (DOE Proposed Level)	$10.62AV + 305.3 + 28I$	January 31, 2029
13A	Compact all-refrigerators—automatic defrost		$(8.25AV + 233.4)*K13A$	
14	Compact refrigerator-freezers—automatic defrost with side-mounted freezer.		$6.14AV + 411.2 + 28I$	
15	Compact refrigerator-freezers—automatic defrost with bottom-mounted freezer.		$10.62AV + 305.3 + 28I$	
16	Compact upright freezers with manual defrost.	EL 2 (DOE Proposed Level)	$7.35AV + 191.8$	January 31, 2029
17	Compact upright freezers with automatic defrost.	EL 1 (DOE Proposed Level)	$9.15AV + 316.7$	January 31, 2029
18	Compact chest freezers.	EL 2 (DOE Proposed Level)	$7.86AV + 107.8$	January 31, 2029
3-BI	Built-in refrigerator-freezer—automatic defrost with top-mounted freezer.	EL 3 (DOE Proposed Level)	$8.24AV + 238.4 + 28I$	January 31, 2029
3A-BI	Built-in All-refrigerators—automatic defrost.		$(7.22AV + 205.7)*K3ABI$	
4-BI	Built-In Refrigerator-freezers—automatic defrost with side-mounted freezer.	EL 4 (DOE Proposed Level)	$(8.79AV + 307.4)*K4BI + 28I$	January 31, 2029
5-BI	Built-In Refrigerator-freezers—automatic defrost with bottom-mounted freezer.	EL 1 (DOE Proposed Level)	$(8.65AV + 309.9)*K5BI + 28I$	January 31, 2029
5A-BI	Built-in refrigerator-freezer—automatic defrost with bottom-mounted freezer with through-the-door ice service.	EL 3 (DOE Proposed Level)	$(8.21AV + 370.7)*K5ABI$	January 31, 2029
7-BI	Built-In Refrigerator-freezers—automatic defrost with side-mounted freezer.	EL 4 (DOE Proposed Level)	$(8.82AV + 384.1)*K7BI$	January 31, 2029
9-BI	Built-In Upright freezers with automatic defrost.	EL 1 (DOE Proposed Level)	$(9.37AV + 247.9)*K9BI + 28I$	January 31, 2029
9A-BI	NEW PRODUCT CLASS: Upright built-in freezer w/automatic defrost and through-door-ice service.	N/A	$9.86AV + 288.9$	January 31, 2029

AV = Total adjusted volume, expressed in ft³, as determined in appendices A and B of subpart B of 10 CFR part 430.

I = 1 for a product with an automatic icemaker and = 0 for a product without an automatic icemaker. Door Coefficients (e.g., K3A) are as defined in the table below.

Energy Efficiency Agreement of 2023—Term Sheet

DESCRIPTION OF DOOR COEFFICIENTS FOR PROPOSED MAXIMUM ENERGY USE EQUATIONS FOR REFRIGERATORS, REFRIGERATOR-FREEZERS, AND FREEZERS			
Door Coefficient	Products With a Transparent Door	Products Without a Transparent Door with a Door-in-Door	Products Without a Transparent Door or Door-in-Door with Added External Doors
K2	N/A	N/A	$1 + 0.02 * (N_d - 1)$
K3A	1.10	N/A	N/A
K3ABI	1.10	N/A	N/A
K13A	1.10	N/A	N/A
K4	1.10	1.06	$1 + 0.02 * (N_d - 2)$
K4BI	1.10	1.06	$1 + 0.02 * (N_d - 2)$
K5	1.10	1.06	$1 + 0.02 * (N_d - 2)$
K5BI	1.10	1.06	$1 + 0.02 * (N_d - 2)$
K5A	1.10	1.06	$1 + 0.02 * (N_d - 3)$
K5ABI	1.10	1.06	$1 + 0.02 * (N_d - 3)$
K7	1.10	1.06	$1 + 0.02 * (N_d - 2)$
K7BI	1.10	1.06	$1 + 0.02 * (N_d - 2)$
K9	N/A	N/A	$1 + 0.02 * (N_d - 1)$
K9BI	N/A	N/A	$1 + 0.02 * (N_d - 1)$
K12	N/A	N/A	$1 + 0.02 * (N_d - 1)$

Note: N_d is the number of external doors.

The parties propose the following with regard to “transparent doors:”

- *Transparent door* means a door for which 40 percent or more of the surface area—as determined based on the area of the transparent portion of the door divided by the product of the maximum width and height dimension of the door—is transparent to allow viewing into the refrigerated compartment.
- *Conceptually*, the parties recommend that DOE clarify that products with only very small door or drawers that are transparent should not be included in this definition—i.e., the door must be large enough to justify the allowance.

Energy Efficiency Agreement of 2023—Term Sheet

Miscellaneous Refrigeration Products

	Product Class	Efficiency Level	Equations for Maximum Energy Use (kWh/yr)	Compliance Date
1	Freestanding Compact Coolers (FCC)	EL 3 (DOE Proposed Level)	$5.52AV + 109.1$	January 31, 2029
2	Freestanding Coolers (FC)	EL 3 (DOE Proposed Level)	$5.52AV + 109.1$	January 31, 2029
3	Built-in Compact Coolers (BICC)	EL 3 (DOE Proposed Level)	$5.52AV + 109.1$	January 31, 2029
4	Built-in Coolers (BIC)	EL 2 (DOE Proposed Level)	$6.30AV + 124.6$	January 31, 2029
C-3A	Cooler with all-refrigerator—automatic defrost	EL 1 (DOE Proposed Level)	$4.11AV + 117.4$	January 31, 2029
C-3A-BI	Built-in cooler with all-refrigerator—automatic defrost	EL 1 (DOE Proposed Level)	$4.67AV + 133.0$	January 31, 2029
C-5-BI	Built-in cooler with refrigerator-freezer—automatic defrost with bottom-mounted freezer	New Product Class (DOE Proposed Level)	$5.47AV + 196.2 + 28I$	January 31, 2029
C-9	Cooler with upright freezer with automatic defrost without an automatic icemaker	No change (DOE Proposed Level)	$5.58AV + 147.7 + 28I$	January 31, 2029
C-9-BI	Built-in cooler with upright freezer with automatic defrost without an automatic icemaker	No change (DOE Proposed Level)	$6.38AV + 168.8 + 28I$	January 31, 2029
C-13A	Compact cooler with all-refrigerator—automatic defrost	EL 3 (DOE Proposed Level)	$4.74AV + 155.0$	January 31, 2029
C-13A-BI	Built-in compact cooler with all-refrigerator—automatic defrost	EL 3 (DOE Proposed Level)	$5.22AV + 170.5$	January 31, 2029

AV = Total adjusted volume, expressed in ft³, as determined in appendix A to subpart B of 10 CFR part 430. I = 1 for a product with an automatic icemaker and = 0 for a product without an automatic icemaker.

Energy Efficiency Agreement of 2023—Term Sheet

Dishwashers

	Product Class	Efficiency Level	Standard Levels Using Test Procedure Appendix C2		Compliance Date
			Estimated Annual Energy Use (kWh/yr)	Per-cycle Water Consumption (gal/cycle)	
1	Standard-size Dishwashers (≥8 place settings plus 6 serving pieces)	EL 2 (DOE Proposed Level)	223	3.3	3 years after Fed. Reg.
2	Compact-size Dishwashers (<8 place settings plus 6 serving pieces)	EL 1 (DOE Proposed Level)	174	3.1	3 years after Fed. Reg.

Where the place settings are as specified in AHAM DW-1-2020 (incorporated by reference, see § 430.3) and the test load is as specified in section 2.4 of appendix C2 in subpart B of Part 430.

Energy Efficiency Agreement of 2023—Term Sheet

Clothes Washers

Product Class	Efficiency Level	Standard Levels		Compliance Date
		Minimum Energy Efficiency Ratio (lb/kWh/cycle)	Minimum Water Efficiency Ratio (lb/gal/cycle)	
Semi-Automatic Clothes Washers	EL 1 (DOE Proposed Level)	2.12	0.27	March 1, 2028
Top-Loading, Ultra-Compact (less than 1.6 ft ³ capacity)	No amended standard (EL 0)	3.79	0.29	
Top-Loading, Standard-Size (1.6 ft ³ or greater capacity)	EL 2	4.27	0.57	
Front-Loading, Compact (less than 3.0 ft ³ capacity)	EL 2 (DOE Proposed Level)	5.02	0.71	
Front-Loading, Standard-Size (3.0 ft ³ or greater capacity)	EL 2	5.52	0.77	

Clothes Dryers

Product Class	Efficiency Level	CEFD ₂ (lb/kWh)	Compliance Date
Electric, Standard (4.4 ft ³ or greater capacity)	EL 4 (DOE Proposed Level)	3.93	March 1, 2028
Electric, Compact (120V) (less than 4.4 ft ³ capacity)	EL 4 (DOE Proposed Level)	4.33	
Vented Electric, Compact (240V) (less than 4.4 ft ³ capacity)	EL 4 (DOE Proposed Level)	3.57	
Vented Gas, Standard (4.4 ft ³ or greater capacity)	EL 3 (DOE Proposed Level)	3.48	
Vented Gas, Compact (less than 4.4 ft ³ capacity)	EL 1 (DOE Proposed Level)	2.02	
Ventless Electric, Compact (240V) (less than 4.4 ft ³ capacity)	EL 1 (DOE Proposed Level)	2.68	
Ventless Electric, Combination Washer-Dryer	EL 1 (DOE Proposed Level)	2.33	

Energy Efficiency Agreement of 2023—Term Sheet

Cooking Product Standards

Product Class	Efficiency Level	Standard Level	Compliance Date
Electric Coil	--	No standard	January 31, 2028
Propose new class: Electric smooth Cooktop*	EL 1 (DOE Proposed Level)	207 kWh/year	
Propose new Class: Electric smooth range*	EL 1 (DOE Proposed Level)	207 kWh/year	
Propose new class: Gas cooktop*	--	1770 kBtu/year	
Propose new class: Gas range*	--	1770 kBtu/year	
Ovens (Electric and Gas)*	EL 1 (DOE Proposed Level)	Electric: Baseline + SMPS Gas: Baseline + SMPS	

***EXCLUDES PORTABLE COOKING PRODUCTS**

*** Parties are currently discussing DOE's proposals regarding single-zone cooktops and will follow-up on the docket in the cooktop rulemaking.**

Cooktop Test Procedure

- Agree to propose to DOE inclusion of an alternative simmer calculation conceptually for certification. Actual equation may be updated by additional data on the record.
- For enforcement purposes, propose that DOE rely on the full simmer test, not the equation. (Same process as triangulation method for refrigerator/freezers)