

for Residential and Commercial Water-Using Fixtures and Appliances

(Compiled from information provided by the Alliance for Water Efficiency, U.S. EPA Office of Water,

U.S. Dept. of Energy, Energy Star, CEE, NRDC, and other sources)

Fixtures and Appliances		m EPAct 1992, EPAct dence and Security Act dates, other sources	WaterSense [®] o	or Energy Star [®]		Energy Efficiency CEE)
	Current Standard	Proposed/Future Standard	Current Requirements	Proposed/Future Requirements	Current Specification	Proposed/Future Specification
Residential Toilets (Water Closets)	≤ 1.6 gpf ¹	≤ 1.28 gpf/ 4.8 Lpf informally proposed by efficiency advocates (tank-type only)	Tank-type toilets: WaterSense v.1.2 = ≤ 1.28 gpf (4.8L) with at least 350 gram bulk waste removal Flushometer valve/bowl combinations: WaterSense v.1.0 = ≤ 1.28 gpf (4.8L) with at least 350 gram bulk waste removal	No changes to existing specifications are planned	No specification ·	
Residential Lavatory (Bathroom) Faucets	≤ 2.2 gpm at 60 psi ²	≤ 1.5 gpm/ 5.7 Lpm informally proposed by efficiency advocates	WaterSense v.1.0: ≤ 1.5 gpm & 0.8 gpm minimum at 20 psi	No change to existing specification is planned	No specification	
Residential Kitchen Faucets			WaterSense: No specification	No specification proposed at this time	No specification	
Residential Showerheads	≤ 2.5 gpm at 80 psi		WaterSense v.1.0: ≤ 2.0 gpm with special spray force & coverage requirements	No change to existing specification is planned	No specification	

¹ EPAct 1992 standard for toilets applies to both commercial and residential models.

² EPAct 1992 standard for faucets applies to both commercial and residential models.



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Fixtures and Appliances	Federal Standard: from EPAct 1992, EPAct 2005, "Energy Independence and Security Act of 2007", NAECA updates, other sources		WaterSense [®] o	or Energy Star [®]	Consortium for Energy Efficiency (CEE)		
	Current Standard	Proposed/Future Standard	Current Requirements	Proposed/Future Requirements	Current Specification	Proposed/Future Specification	
Residential Clothes Washers	Top-loading standard models: MEF ≥ 1.29ft ³ /kWh/cycle (after Jan 1, 2018, the MEF increases to 1.57)Integrated WF ≤ 8.4 gal/cycle/ft ³ (NOTE: after Jan 1, 2018, the IWF decreases to 6.5)Front-loading standard models: MEF ≥ 1.84ft ³ /kWh/cycle Integrated WF ≤ 4.7 gal/cycle/Top-loading compact models: MEF ≥ 0.86ft ³ /kWh/cycle (after Jan 1, 2018, the MEF) increases to 1.15)Integrated WF ≤ 1.44 gal/cycle/ft ³ ft ³ (NOTE: after Jan 1, 2018, the MEF) increases to 1.20)Front-loading compact models: MEF ≥ 1.43 gal/cycle/ft ³ ft ³ (NOTE: after Jan 1, 2018, the IWF decreases to 12.0)Front-loading compact models: MEF ≥ 1.13 ft ³ /kWh/cycle Integrated WF ≤ 8.3 gal/cycle/Note: MEF measures energy consumption of the total laundry cycle (wash + dry). The higher the number, the greater the energy efficiency		Energy Star (DOE): Effective March 7, 2015 for 1.6 to 6.0 cubic feet Top-loading models (> 2.5 cu. ft.): IMEF \geq 2.06 ft ³ /kWh/cycle. Integrated WF \leq 4.3 gal/cycle/ Front-loading models (> 2.5 cu. ft.): IMEF \geq 2.38 ft ³ /kWh/cycle Integrated WF \leq 3.7 gal/cycle/ Compact models (\leq 2.5 cu. ft.): IMEF \geq 2.07 ft ³ /kWh/cycle Integrated WF \leq 4.2 gal/cycle/		Effective March 7, 2015 <i>Tier 1:</i> MEF \geq 2.38 ft ³ /kWh/cycle; WF \leq 3.7 gal/cycle/ft ³ <i>Tier 2:</i> MEF \geq 2.74 ft ³ /kWh/cycle; WF \leq 3.2 gal/cycle/ft ³ <i>Tier 3:</i> MEF \geq 2.92 ft ³ /kWh/cycle; WF \leq 3.2 gal/cycle/ft ³		

DOE: Department of Energy EPA: Environmental Protection Agency EPAct 1992: Energy Policy Act of 1992 EPAct 2005: Energy Policy Act of 2005 WF: water factor IWF: integrated water factor gal: gallons ft³: cubic feet gpm: gallons per minute

gpf: gallons per flush kWh: kilowatt hour MEF: modified energy factor MaP: maximum performance

 NAECA: National Appliance Energy Conservation Act

 psi: pounds per square inch
 Lpf: Litres per flush

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Fixtures and Appliances	Federal Standard: fror 2005, "Energy Independ of 2007", NAECA upd	ence and Security Act	WaterSense [®] c	or Energy Star [®]		Energy Efficiency CEE)
	Current Standard	Proposed/Future Standard	Current Requirements	Proposed/Future Requirements	Current Specification	Proposed/Future Specification
Standard Size and Compact Residential Dishwashers ³	Final Rule of DOE, effective 5/30/2013: STANDARD Size Models: Energy: ≤ 307 KWh/year WF ≤ 5.0 gallons/cycle COMPACT Models: Energy: ≤ 222 kWh/yr WF ≤ 3.5 gallons/cycle		Energy Star Effective Jan 29, 2016 STANDARD Size Models: Energy: ≤ 270 kWh/year WF ≤ 3.5 gallons/cycle COMPACT Models: Energy: ≤ 203 kWh/year WF ≤ 3.1 gallons/cycle		Effective Jan. 29, 2016 Standard size models (8 place settings or more): 270 max kWh/year; WF ≤ 3.5 gallons/cycle Compact size models (hold fewer than 8 place settings): 203 max kWh/year; WF ≤ 3.1 gallons/cycle	

³ Standard models: capacity is greater than or equal to eight place settings and six serving pieces; Compact models: capacity is less than eight place settings and six serving pieces



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Fixtures and	Federal Standard: from EPAct 1992, EPAct 2005, "Energy Independence and Security Act of 2007", NAECA updates, ANSI stds, other sources		WaterSense [®] or	Consortium for Energy Efficiency		
Appliances	Current Standard	Proposed/ Future Standard	Current Requirements	Proposed/Future Requirements	Current Specification	Proposed /Future Specification
Commercial Toilets (Water Closets)	≤ 1.6 gpf ⁴ /6.0 Lpf Except blow-out fixtures: ≤ 3.5-gpf/13 Lpf (Note: Some states prohibit blow-out at 3.5 gpf)	≤ 1.28 gpf - 4.8 Lpf informally proposed by some efficiency advocates (tank- type only)	Tank-type toilets: WaterSense v.1.2 = \leq 1.28 gpf (4.8L) with at least 350 gram bulk waste removal. Flushometer valve/bowl combi- nations: WaterSense v.1.0 = \leq 1.28 gpf (4.8L) with at least 350 gram bulk waste removal	No changes to existing specifications are planned	No specification	
Commercial Urinals	≤ 1.0 gpf	≤ 0.5 gpf - 1.9 Lpf informally proposed by effic. advocates	WaterSense v.1.0 – Flushing urinals only = ≤ 0.5 gpf/1.9Lpf (Note: non-water urinals not covered by WaterSense)	No change to existing specification is planned	No specification	
Commercial Faucets	ANSI Standard: <u>Private</u> (single-user) faucets, including residential within commercial bldg = $\leq 2.2 \text{ gpm @ 60 psi^5}$ <u>All other commercial</u> (except metering) per ANSI product stan- dard and model plumbing codes = $\leq 0.5 \text{ gpm at 60 psi^5}$ <u>Metering</u> (auto shut		WaterSense: No specification	Creating a WaterSense specification is currently under consideration.	No specification	
	off) faucets ≤0.25 gallons per cycle ⁶ (<u>no maximum</u> <u>flow rate</u>)					

⁴ EPAct 1992 standard for toilets applies to both commercial and residential models.

⁵ In addition to EPAct requirements, the American Society of Mechanical Engineers/Canadian Standards Association standard for public lavatory faucets is 0.5 gpm at 60 psi (ASME A112.18.1/CSA B125.1). This maximum has been incorporated into the national model plumbing codes for all except private applications, private being defined as residential, hotel guest rooms, and health care patient rooms. All other applications subject to the 0.5 gpm/1.9 Lpm flow rate maximum.



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Fixtures and	Federal Standard: from EPAct 1992, EPAct 2005, "Energy Independence and Security Act of 2007", NAECA updates, ANSI stds, other sources		WaterSense [®] or E	Consortium for Energy Efficiency		
Appliances	Current Standard	Proposed/ Future Standard	Current Requirements	Proposed/Future Requirements	Current Specification	Proposed /Future Specification
Commercial Clothes Washers	The following requirements are effective through December 31, 2017: <u>Top loading machine:</u> ≥ 1.6 MEF and WF ≤ 8.5 gal/cycle/ft ³ <u>Front-loading</u> <u>machine:</u> ≥ 2.0 MEF and WF ≤ 5.5 gal/cycle/ft ³ The following more rigorous require- ments apply beginning January 28, 2018. <u>Top loading machine:</u> ≥ 1.35 MEF and Integrated WF ≤ 8.8 gal/cycle/ft ³ <u>Front-loading</u> <u>machine:</u> ≥ 2.0 MEF and Integrated WF ≤ 4.1 gal/cycle/ft ³		Energy Star : Effective March 7, 2015 ≥ 2.2 MEF and ≤ 4.5 Integrated WF gal/cycle/ft ³ For both front and top loaders (NOTE: defined as a soft- mounted front or top loading machine for use in common area and coin-op laundries with capacity greater than 1.6 cubic feet and not a combo washer- dryer; does NOT include multi- load, high-volume machines used in on-premise or commercial laundries)		Effective January 1, 2011 CEE Tiers: Tier 1: MEF ≥ 2.0 ft ³ /kWh/cycle; WF ≤ 6.0 gal/cycle/ft ³ Tier 2: MEF ≥ 2.2 ft ³ /kWh/cycle; WF ≤ 4.5 gal/cycle/ft ³ Tier 3: MEF ≥ 2.4 ft ³ /kWh/cycle; WF ≤ 4.0 gal/cycle/ft ³	



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Fixtures and	Federal Standard: from EPAct 1992, EPAct 2005, "Energy Independence and Security Act of 2007", NAECA updates, ANSI stds, other sources		WaterSense [®] or E	Consortium for Energy Efficiency		
Appliances	Current Standard	Proposed/ Future Standard	Current Requirements	Proposed/Future Requirements	Current Specification	Proposed /Future Specification
Commercial Dishwashers	No standard		Energy Star v.2.0 - Effective February 1, 2013: Under Counter: Hi Temp: ≤ 0.86 gal/rack; ≤ 0.5 kW; Lo Temp: ≤ 1.19 gal/rack; ≤ 0.5 kW Stationary Single Tank Door: Hi Temp: ≤ 0.89 gal/rack; ≤ 0.7 kW; Lo Temp: ≤ 1.18 gal/rack; ≤ 0.6 kW Pot, Pan, and Utensil Hi Temp: ≤ 0.58 gal/rack; ≤ 1.2 kW; Lo Temp: ≤ 0.58 gal/rack; ≤ 1.2 kW; Lo Temp: ≤ 0.58 gal/rack; ≤ 1.0 kW Single Tank Conveyor: Hi Temp: 0.70 gal/rack; ≤ 1.5 kW; Lo Temp: 0.79 gal/rack; ≤ 1.5 kW; Lo Temp: 0.54 gal/rack; ≤ 2.25 kW; Lo Temp: 0.54 gal/rack; ≤ 2.0 kW Single Tank Flight Type: Requires formula for both hi and low temp machines: Gallons per hour (gph) ≤ 2.97 times sf of belt + 55 Multiple Tank Flight Type: Requires formula for both hi and low temp machines: Gph ≤ 4.96 times sf of belt +17 NOTE: See full Energy Star requirements for definitions and details.		Specification is 8+ years old and is no longer applicable	CEE waiting for final test methods before reviewing possible changes to their specifications

DOE: Department of Energy WF: water factor EPA: Environmental Protection Agency IWF: integrated water factor EPAct 1992: Energy Policy Act of 1992 gal: gallons EPAct 2005: Energy Policy Act of 2005 gpm: gallons per minute

ft³: cubic feet

gpf: gallons per flush kWh: kilowatt hour MEF: modified energy factor MaP: maximum performance

NAECA: National Appliance Energy Conservation Act psi: pounds per square inch Lpf: Litres per flush Rev. Nov. 7, 2016 – by John Koeller www.map-testing.com ©2016 Alliance for Water Efficiency/Koeller & Co. Page 6



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Fixtures and	Federal Standard: from EPAct 1992, EPAct 2005, "Energy Independence and Security Act of 2007", NAECA updates, ANSI stds, other sources		WaterSense [®] or	Consortium for Energy Efficiency		
Appliances	Current Standard	Proposed/ Future Standard	Current Requirements	Proposed/Future Requirements	Current Specification	Proposed /Future Specification
Automatic Commercial Ice Makers ⁷	Current requirements effective January 1, 2010 to January 27, 2018. More rigorous requirements apply beginning January 28, 2018. Energy and condenser water efficiency standards vary by equipment type on a sliding scale depending upon harvest rate and type of cooling (see link to additional information at end of this table)		Energy Star v.2.0: Energy efficiency standards vary by equipment type on a sliding scale depending upon harvest rate and type of cooling. Water use thresholds are as follows: <u>Air-cooled batch type machines:</u> Maximum water use of 20 gallons per 100 lbs. of ice. <u>Air-cooled continuous-type</u> <u>machines:</u> Maximum water use of 15 gallons per 100 lbs. of ice. <u>NOTE: Water cooled machines</u> <u>excluded from Energy Star</u> See link to additional information at end of this table.		Effective July 1, 2011 Energy and water (potable and condenser) standards are tiered and vary by equipment type on a sliding scale depending upon harvest rate and type of cooling. Current provisions are <u>less</u> rigorous than Energy Star. (see link to additional informa- tion at end of this table)	
Commercial Pre-rinse Spray Valves (for food service applications – <u>does not apply</u> to other valve applications, e.g., cooling, wetting, facility cleaning, etc.)	Prior to January 28, 2019: Flow rate \leq 1.6 gpm (no pressure specified; no perfor- mance requirement) January 28, 2019 and following: Class 1 (\leq 0.5 ozf) – \leq 1.0 gpf Class 2 (>0.5 & \leq 8.0 ozf) – \leq 1.2 gpf Class 3 (>8.0 ozf) – \leq 1.28 gpf		WaterSense v.1.0: Flow rate ≤ 1.28 gpm (incorporates other key performance requirements)	No change to existing specification is planned	Effective June 1, 2014 <u>Tier 1:</u> Flow rate = ≤1.28 gal per min <u>Tier 2:</u> Flow rate = ≤0.75 gal per min PLUS WaterSense performance requirements	

⁷ Optional standards for other types of automatic ice makers are also authorized under EPAct 2005.



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Fixtures and	Federal Standard: from EPAct 1992, EPAct 2005, "Energy Independence and Security Act of 2007", NAECA updates, ANSI stds, other sources		WaterSense [®] or I	Consortium for Energy Efficiency		
Appliances	Current Standard	Proposed/ Future Standard	Current Requirements	Proposed/Future Requirements	Current Specification	Proposed /Future Specification
Commercial Steam Cookers ⁸	No standard		Energy Star (EPA) Electric: 50% cooking energy efficiency; idle rate 400–800 Watts Gas: 38% cooking energy efficiency; idle rate 6,250–12,500 British Thermal Units/hour NOTE: Energy Star has <u>no</u> <u>specified water use factor</u>		Effective Sept. 1, 2010 Electric: Same as Energy Star <u>Water Use Factor:</u> (for <u>both</u> electric and gas models): Tier 1A: ≤ 15 gal/hr per compartment Tier 1B: ≤ 4 gal/hr per compartment	

⁸ Idle rate standards vary for 3-, 4-, 5-, and 6-pan commercial steam cooker models.



National Efficiency Standards and Specifications for Residential and Commercial Water-Using Fixtures and Appliances (Compiled from information provided by the Alliance for Water Efficiency, U.S. EPA Office of Water, U.S. Dept. of Energy, Energy Star, CEE, NRDC, and other sources)

DISCLAIMER: The information presented in these tables has been gathered from sources deemed to be reliable. However, neither the authors nor the organizations posting this listing on their websites make any guarantee as to its correctness, accuracy, completeness, or current status. Readers are strongly encouraged to perform their own research at the websites of the organizations cited herein, as well as with any other reliable sources of current information.

Readers are encouraged to report any incorrect or updated information to the author, John Koeller: koeller@earthlink.net

Information/materials on EPAct 2005/NAECA & other standards:

Plumbing products:

Toilets (water closets): https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=43 Faucets: https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=42 Faucets: https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=40 Showerheads: https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=40 Showerheads: https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=40

Clothes Washers and Residential Dishwashers:

Residential clothes washers: <u>https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=68</u> Residential dishwashers: <u>https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=38</u> Commercial clothes washers: <u>https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=9</u>

Automatic Commercial Ice Maker Standards:

https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=53

Pre-rinse Spray Valves

https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=69

Information/materials on Energy Star specifications:

Clothes Washers https://www.energystar.gov/products/appliances/clothes_washers

Residential Dishwashers https://www.energystar.gov/products/appliances/dishwashers

Commercial Dishwashers https://www.energystar.gov/products/commercial_food_service_equipment/commercial_dishwashers

Automatic Commercial Ice Makers https://www.energystar.gov/products/commercial food service equipment/commercial ice makers

Commercial Steam Cookers

https://www.energystar.gov/products/commercial food service equipment/commercial steam cookers

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Information/materials on WaterSense specifications:

Water Closets (Toilets) - Tank-type

https://www3.epa.gov/watersense/products/toilets.html https://www3.epa.gov/watersense/docs/Revised%20HET%20specification V1%202 060214 final508d.pdf

Water Closets (Toilets) - Flushometer valve-bowl combination type https://www3.epa.gov/watersense/products/flushometer-valve-toilets.html https://www3.epa.gov/watersense/products/docs/FinalFVHET Specification V1-0 508.pdf

Flushing Urinals

https://www3.epa.gov/watersense/products/urinals.html https://www3.epa.gov/watersense/docs/urinal_finalspec508.pdf

Residential Bathroom Lavatory Faucets

https://www3.epa.gov/watersense/products/bathroom sink faucets.html https://www3.epa.gov/watersense/docs/faucet_spec508.pdf

Residential Showerheads

https://www3.epa.gov/watersense/products/showerheads.html https://www3.epa.gov/watersense/docs/showerheads_finalspec508.pdf

Commercial Pre-Rinse Spray Valves

https://www3.epa.gov/watersense/products/prsv.html https://www3.epa.gov/watersense/docs/prsv-finalspec-091913-final-508.pdf

Information/materials on CEE specifications:

Residential Clothes Washers

https://library.cee1.org/sites/default/files/library/12282/CEE ResidentialClothesWasherSpec 07Mar2015.pdf

Residential Dishwashers https://library.cee1.org/sites/default/files/library/9562/2016 Residential Dishwasher Specification.pdf

Commercial, Family-Sized Clothes Washers https://library.cee1.org/sites/default/files/library/9564/comwash specs 3.pdf

Commercial Ice-Makers https://library.cee1.org/content/cee-high-efficiency-specifications-commercial-ice-machines/

Pre-rinse Spray Valves https://library.cee1.org/sites/default/files/library/11493/CEE ComKit PRSV Specification June2014 updated July 7 2015.pdf

Commercial Steam Cookers

https://library.cee1.org/sites/default/files/library/4245/CEE Steamer Specification 20100901 updated July 7 2015.pdf

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gpf: gallons per flush kWh: kilowatt hour ft³: cubic feet MEF: modified energy factor MaP: maximum performance