

State-Level Benefits from Potential Federal Appliance Standards

Florida															
Summary of Benefits by Product	Effective Date	Annual Savings in 2020				Annual Savings in 2030				Economics			Cumulative Energy Savings through 2030		
		Annual Savings per Unit	Incremental Cost per Unit ¹	Electricity	Primary Energy	Summer Peak Capacity	Value of Bill Savings ²	Electricity	Primary Energy	Summer Peak Capacity	Value of Bill Savings ²	Pay Back Period ³		Benefit / Cost Ratio ⁴	Net Present Value ⁵
Products	Year	kWh, (gal), or (therms)	\$	GWh	BBtu	MW	\$Million	GWh	BBtu	MW	\$Million	Years		\$Million (2009\$)	TBtu
Residential															
Battery chargers	2014	4	\$ 1	620.4	6,466.9	85.6	\$ 72.4	620.4	6,238.6	85.6	\$ 72.4	1.2	4.1	\$ 411	90.5
Central AC & HP	2016	545	\$ 255	830.4	8,655.6	1,153.4	\$ 96.9	2,675.6	26,905.7	3,716.5	\$ 312.2	3.1	6.6	\$ 1,550	216.4
Clothes dryers (total)	2014	-	\$ 50	246.1	2,804.3	36.6	\$ 33.8	624.8	6,888.7	92.9	\$ 85.8	-	2.4	\$ 324	62.3
(electricity)	2014	93	\$ 50	246.1	2,565.8	36.6	\$ 28.7	624.8	6,283.3	92.9	\$ 72.9	4.6	2.6	\$ 288	57.0
(gas)	2014	[3.5]	\$ 50	-	238.5	-	\$ 5.1	-	605.4	-	\$ 12.9	6.7	1.8	\$ 36	5.3
Clothes washers (total) ⁶	2015	244	\$ 96	257.9	4,048.2	38.3	\$ 59.0	515.8	7,906.7	76.7	\$ 118.1	-	4.7	\$ 1,202	85.0
(electricity - machine)	2015	22	\$ 9	50.6	527.1	7.5	\$ 5.9	101.1	1,017.0	15.0	\$ 11.8	2.1	7.8	\$ 43	11.1
(electricity - water heating)	2015	222	\$ 87	207.3	2,161.2	30.8	\$ 24.2	414.7	4,169.8	61.7	\$ 48.4	-	-	\$ 177	45.4
(gas)	2015	[10.1]	\$ 87	-	1,359.9	-	\$ 29.0	-	2,719.9	-	\$ 57.9	2.3	6.1	\$ 182	28.6
(water)	2015	{5233.5}	\$ -	Bil. Gal.-->	18.6	-	\$ -	Bil. Gal.-->	37.3	-	\$ -	-	-	\$ 800	-
Direct heaters	2013	48	\$ 326	-	78.7	-	\$ 1.8	-	158.6	-	\$ 3.7	22.7	0.5	\$ (29)	1.7
(gas)	2013	[7.4]	\$ 326	-	94.1	-	\$ 2.0	-	188.1	-	\$ 4.0	20.8	0.5	\$ (27)	2.0
External power supplies	2013	2	\$ 1	141.0	1,469.9	19.5	\$ 16.5	141.0	1,418.0	19.5	\$ 16.5	4.0	1.3	\$ 24	21.3
Furnaces (gas)	2013	[8.9]	\$ 520	-	95.1	-	\$ 2.0	-	222.0	-	\$ 4.7	27.4	0.4	\$ (41)	2.1
Furnaces (oil)	2013	[3.7]	\$ 17	-	24.0	-	\$ 0.8	-	55.9	-	\$ 1.2	2.2	15.9	\$ 11	0.5
Furnace fans	2016	692	\$ 100	536.2	5,589.1	696.7	\$ 62.6	1,727.7	17,373.6	2,244.9	\$ 201.6	1.2	7.7	\$ 1,027	139.7
Microwave ovens	2012	16	\$ 2	120.3	1,253.9	17.9	\$ 14.0	127.4	1,280.8	18.9	\$ 14.9	1.2	5.8	\$ 102	19.3
Pool heaters	2013	[20]	\$ 44	-	200.3	-	\$ 4.3	-	200.3	-	\$ 4.3	1.0	4.9	\$ 28	3.0
Refrigerators	2014	130	\$ 52	451.4	4,705.8	67.9	\$ 52.7	1,146.0	11,523.8	172.4	\$ 133.7	3.4	3.5	\$ 612	104.6
Room AC	2014	86	\$ 35	115.5	1,204.0	162.6	\$ 13.5	222.1	2,233.7	312.7	\$ 25.9	3.5	2.6	\$ 105	24.9
Water heaters	2013	-	\$ -	525.2	8,712.4	72.5	\$ 130.2	980.4	15,038.9	135.3	\$ 224.7	-	5.5	\$ 1,285	174.6
(electricity)	2013	220	\$ 65	525.2	5,474.6	72.5	\$ 61.3	980.4	9,858.4	135.3	\$ 114.4	2.5	3.9	\$ 585	112.4
(gas)	2013	[14]	\$ 30	-	3,237.8	-	\$ 68.9	-	5,180.4	-	\$ 110.3	1.0	8.9	\$ 700	62.2
Commercial															
Beverage vending machines	2012	682	\$ 157	20.6	214.4	4.8	\$ 2.1	33.9	340.7	7.9	\$ 3.5	2.3	4.4	\$ 20	4.2
Commercial boilers	2013	[513.6]	\$ 2,968	-	334.3	-	\$ 4.9	-	780.0	-	\$ 11.4	3.9	3.9	\$ 72	7.2
Clothes washers (total) ⁶	2012	-	\$ 503	24.6	333.7	8.1	\$ 4.2	30.9	407.5	10.1	\$ 4.6	6.2	0.9	\$ (4)	5.7
(electricity)	2012	208	\$ 446	24.6	256.7	8.1	\$ 2.5	30.9	310.9	10.1	\$ 3.2	-	-	\$ (40)	4.4
(gas)	2012	[26.8]	\$ 57	-	77.0	-	\$ 1.6	-	96.6	-	\$ 1.4	-	-	\$ 9	1.3
(water)	2012	{5827}	\$ -	Bil. Gal.-->	0.7	-	\$ -	Bil. Gal.-->	0.9	-	\$ -	-	-	\$ 26	-
Fluorescent ballasts	2014	18	\$ 2	144.8	1,509.5	47.4	\$ 14.8	357.3	3,593.1	116.9	\$ 41.7	1.1	9.6	\$ 196	33.4
Fluorescent lamps	2012	11	\$ 2	1,727.5	18,007.3	565.3	\$ 176.2	1,727.5	17,371.6	565.3	\$ 176.2	2.1	2.2	\$ 865	294.6
Incandescent reflector lamps	2012	62	\$ 3	510.5	5,321.9	126.0	\$ 52.1	510.5	5,134.0	126.0	\$ 52.1	0.4	3.3	\$ 416	97.8
BR \ exempted reflector lamps	2013	38	\$ 1	231.6	2,414.5	57.1	\$ 23.6	231.6	2,329.3	57.1	\$ 23.6	0.4	3.0	\$ 145	44.4
Liquid-immersed transformers	2016	2	\$ 2	57.5	599.8	7.9	\$ 5.9	185.4	1,864.3	25.6	\$ 18.9	9.3	1.6	\$ 58	15.0
Low-voltage dry type transformers	2016	25	\$ 5	173.1	1,804.7	23.9	\$ 20.2	557.9	5,609.8	77.0	\$ 56.9	2.1	7.2	\$ 382	45.1
Metal halide lamp fixtures	2015	360	\$ 35	310.3	3,234.5	101.5	\$ 36.2	874.5	8,793.5	286.2	\$ 89.2	0.9	13.1	\$ 530	75.3
Reach-in refrigerators and freezers	2016	1,658	\$ 199	53.5	557.9	12.5	\$ 6.2	142.7	1,435.3	33.2	\$ 14.6	1.2	7.5	\$ 69	13.4
Small electric motors	2015	132	\$ 20	252.9	2,636.6	40.1	\$ 29.5	321.9	3,237.2	51.0	\$ 32.8	1.5	3.9	\$ 164	41.9
Walk-in refrigerators and freezers	2015	2,128	\$ 273	39.9	415.7	9.3	\$ 4.7	87.0	875.0	20.2	\$ 8.9	1.3	7.1	\$ 46	9.1
Total				7,391	82,693	3,355	\$ 941	13,842	149,216	8,252	\$ 1,754			\$ 9,570	1,633

Product	Emissions Reductions in 2020			Emissions Reductions in 2030 ⁷			
	CO2 1000 MT	NOx Tons	SO2 Tons	CO2 1000 MT	NOx Tons	SO2 Tons	
Residential							
Battery chargers	363.7	362.1	1669.3	363.7	362.1	1669.3	
Central AC & HP	0.5	212.1	977.6	1568.7	1561.7	7199.2	
Clothes dryers	157.2	153.6	662.4	399.1	390.0	1681.4	
	(electricity)	144.3	143.7	662.3	366.3	364.7	1681.2
	(gas)	12.9	10.0	0.1	32.8	25.3	0.2
Clothes washers	224.9	207.4	694.3	449.8	414.8	1388.6	
Direct heaters ⁸	4.2	3.1	-3.9	0.01	6.1	-7.9	
External power supplies	82.7	82.3	379.4	82.7	82.3	379.4	
Furnaces (gas)	5.2	4.0	0.03	12.0	9.3	0.1	
Furnaces (oil)	1.3	1.0	0.01	3.0	2.3	0.01	
Furnace fans	314.4	313.0	1442.7	1176.3	1008.4	4648.6	
Microwave ovens	70.5	70.2	323.7	378.8	74.3	342.7	
Pool heaters	10.9	8.4	0.05	10.9	8.4	0.05	
Refrigerators	264.7	263.5	1214.7	671.9	668.9	3083.4	
Room AC	67.7	67.4	310.8	130.2	129.7	597.7	
Water heaters	483.4	443.2	1414.0	855.5	788.8	2639.2	
	(electricity)	307.9	306.6	1413.1	574.8	572.2	2637.8
	(gas)	175.4	135.3	0.9	280.7	216.6	1.4
Commercial							
Beverage vending machines	12.1	12.0	55.3	19.9	19.8	91.1	
Commercial boilers	18.1	14.0	0.1	42.3	32.6	0.21	
Clothes washers	18.6	17.6	66.3	23.4	22.1	83.2	
Fluorescent ballasts	84.9	84.5	389.6	209.5	208.6	961.4	
Fluorescent lamps	1012.9	1008.3	4648.1	1012.9	1008.3	4648.1	
Incandescent reflector lamps	299.3	298.0	1373.7	299.3	298.0	1373.7	
BR \ exempted reflector lamps	135.8	135.2	623.2	135.8	135.2	623.2	
Liquid-immersed transformers	33.7	33.6	154.8	108.7	108.2	498.8	
Low-voltage dry type transformers	101.5	101.1	465.8	327.1	325.6	1501.0	
Metal halide lamp fixtures	181.9	181.1	834.9	512.7	510.4	2352.9	
Reach-in refrigerators and freezers	31.4	31.2	144.0	83.7	83.3	384.0	
Small electric motors	148.3	147.6	680.6	188.7	187.9	866.2	
Walk-in refrigerators and freezers	23.4	23.3	107.3	51.0	50.8	234.1	
Total	4,153	4,279	18,629	9,118	8,498	37,240	

Notes:

- ¹ For purposes of the analyses, incremental costs for residential and commercial clothes washers are apportioned based on the individual components' contribution to overall energy consumption.
- ² Value of bill savings is based on energy savings in 2020 or 2030 and current average state energy prices. This value does not take account of the incremental cost of more efficient products.
- ³ Payback period is the length of time required to recoup any increase in product cost from advances in efficiency.
- ⁴ The benefit / cost ratio is a measure of the annual energy bill savings of an efficient product versus its incremental cost.
- ⁵ Net present value is the total monetary value of bill savings achieved by products sold under the standards between now and 2030 minus the total incremental product cost incurred by purchasers as a result of the standards over the same period expressed in current dollars. Both costs and savings are discounted using a 5% real discount rate.
- ⁶ The payback period and benefit / cost ratios for residential and commercial clothes washers take into account savings from the machine, water heating, and water consumption. For residential clothes washers, the two payback periods were calculated for a clothes washer utilizing electricity vs. natural gas for water heating. Benefit / cost ratios were calculated for total savings and costs (electric, natural gas, and water) as well as for clothes washers utilizing electricity vs. natural gas for water heating. For commercial clothes washers, we assume that only natural gas is used for water heating. Therefore only one payback period and benefit / cost ratio were calculated.
- ⁷ 2030 emissions reductions for NOx and SO2 are calculated using 2020 emission factors.
- ⁸ Negative savings for direct heaters represent the emissions generated from the incorporation of electronic ignition, a technology that is not included in the current federal standard.