

APPENDIX A: SUMMARIES OF CURRENT STANDARDS AND LABELLING REQUIREMENTS AND TEST PROCEDURES

Table A-4: Household refrigerators

Household Refrigerators (including refrigerator-freezers and freezers unless explicitly stated)							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	Household and similar use	MEPS and mandatory and voluntary energy labelling	GB/T8059.1-4 (GB/T 8059.1-1995) GB/T8059.1-4 (GB/T 8059.2-1995; GB/T 8059.4-1993)	GB 12021.2-2008	ISO 7371:1995/ Adm.1: 1997 ISO 8187-1995; ISO 8561:1993/ Amd.1: 1967	Adjusted volume, energy consumption for labelling, must pass performance tests. Energy test at 25°C ambient. Nine categories of products.	

Household Refrigerators (including refrigerator-freezers and freezers unless explicitly stated)							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
EU	Household and similar use, does not cover beer/wine storage cabinets (these may be labelled voluntarily) nor absorption refrigerators.	MEPS (2009) Mandatory labelling (1995, revised 2003) - labelling revision under consideration Eco-labelling	EN 153-2006 EN ISO 15502-2005	EU Directives: (MEPS) Commission Regulation (EC) No. 643/2009 (Mandatory energy labelling) 2003/66/EC (Eco-labelling) Regulation (EC) No. 1980/2000	Based on ISO 15502 and its predecessors (ISO 7371:1995/ Adm.1: 1997 ISO 8187-1995; ISO 8561:1993/ Amd.1: 1967) Energy tested at 25°C ambient.	Adjusted volume, energy consumption for labelling, must pass performance tests. Energy test at 25°C ambient. 10 categories of products plus adjustment factors for frost-free units, ST&T climate classes and built-in units	Revision to labelling requirements. Working on IEC global test method.

Household Refrigerators (including refrigerator-freezers and freezers unless explicitly stated)							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
India (Direct cool)	Electric mains powered Direct Cool refrigerating appliance of the vapour compression type intended for household and similar use being manufactures, imported, or sold in India	Voluntary labelling. Thresholds become more stringent from Jan 1 2012.	AS/NZS4474.1: 1997 with the exception the target temperature for the freezer compartment is - 6°C till further notification	Schedule 4 – Direct Cool Refrigerator	Originally based on US DOE in early 1980's, some ISO/IEC elements, 32°C ambient, no door openings, unloaded. Significantly developed and updated	Adjusted volume, energy consumption, multiple categories of products, must pass performance tests (operation and pull down). Energy test at 32°C ambient.	Efficiency thresholds became more stringent in 2009 and become more stringent again from 2012 onwards
India (Frost-free)	Electric mains powered Frost Free (No-Frost) refrigerating appliance of the vapour compression type intended for household and similar use being manufactures, imported, or sold in India	Previously voluntary labelling, became mandatory labelling in 2009. Thresholds become more stringent from Jan 1 2012.	IS 15750:2000 (based on AS/NZS4474.1)	Schedule – 1 Frost Free (No-Frost) Refrigerator: 2006	Based on AS/NZS4474.1 which is originally based on US DOE in early 1980's, some ISO/IEC elements, 32°C ambient, no door openings, unloaded. Significantly developed and updated	Adjusted volume, energy consumption, multiple categories of products, must pass performance tests (operation and pull down). Energy test at 32°C ambient.	Efficiency thresholds became more stringent in 2009 and become more stringent again from 2012 onwards

Household Refrigerators (including refrigerator-freezers and freezers unless explicitly stated)							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
Japan (Refrigerators)	Electric refrigerators including ones combined with a freezer, except the following: 1) ones using thermo-elements, 2) ones produced for industrial use, and 3) absorption type refrigerators.	Top Runner requirements and mandatory (binary type) energy label	JIS C9801 (2006)	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2004 and each subsequent FY to 2009; then from 2010 and each subsequent FY.		kWh/year expressed as a ratio of a liner function of temperature adjusted storage volume. Energy test at a weighted average of 25°C and 30°C ambient. 5 categories of products.	
Japan (Freezers)	Electric freezers excluding the following: 1) ones using thermo-elements, 2) ones produced for industrial use, and 3) absorption type refrigerators.	Top Runner requirements and mandatory (binary type) energy label	JISC9801 (2006); JIS C9801 (1999)	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2004 and each subsequent FY to 2009; then from 2010 and each subsequent FY.		kWh/year expressed as a ratio of a liner function of temperature adjusted storage volume. Energy test at a weighted average of 25°C and 30°C ambient. 3 categories of products from 2010, 2 prior to 2010.	

Household Refrigerators (including refrigerator-freezers and freezers unless explicitly stated)							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
USA	A cabinet designed for the refrigerated storage of food at temperatures above 32°F and below 39°F, configured for general refrigerated food storage, and having a source of refrigeration requiring single phase, alternating current electric energy input only.	Mandatory labelling and MEPS	Appendix A1 to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Electric Refrigerators and Electric Refrigerator-Freezers	10 CFR 430.32(b)	TP development work started on August 10, 1982	Adjusted volume (both ft ³ and liters), used in equation to calculate maximum energy use (kWh/yr). 18 categories of products.	A final rule determining whether to amend standards for residential refrigerators is due December 31, 2010.

Table A-2: Clothes washers

Clothes washers							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions

Clothes washers							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	Household electric washing machines	MEPS and mandatory labelling	GB/T4288-2003; GB/T 4288-1992; GB/T 4288-2008	GB 12021.4-2004	IEC 60456 Reference to US standards non-specified	kWh/kg/cycle	
EU	Household and similar use	Mandatory energy labelling (1995), MEPS and revised labelling under consideration Eco-labelling	EN 60456-2005	EU Directives: EUP study completed in 2008 – no MEPS imminent (Mandatory Energy labelling) 2003/66/EC 95/12/EC 96/89/EC (Eco-labelling) Regulation (EC) No. 1980/2000	IEC 60456-2003, as amended in 2005	Energy consumption for 60°C washes (kWh/kg/cycle). Declaration and grading of wash and spin drying performance on label	Revision to labelling requirements and introduction of MEPS expected in 2010

Clothes washers							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
India	None	None	None	None	None	None	
Japan	None	None	None	None	None	None	
USA	A consumer product designed to clean clothes, utilizing a water solution of soap and/or detergent and mechanical agitation or other movement, and must be one of the following classes: automatic clothes washers, semi-automatic clothes washers, and other clothes washers.	MEPS	Appendix J1 to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Automatic and Semi-Automatic Clothes Washers	10 CFR 430.32(g)(3)	[research required, TP development work started on Aug. 27, 1997]	Modified energy factor (cu.ft./kWh/cycle)	New MEPS effective January 1, 2011. CW (Commercial) MEPS final rule due Jan 2010 CW (Residential) MEPS final rule due Dec 2011 CW Test Procedure (standby and off) due June 2010 CW Test Procedure review due March 2011

Table A-3: Clothes dryers

Clothes dryers							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	None	None	None	None	None	None	
EU	Dryers for household and similar use	Mandatory energy labelling (1995) MEPS under consideration	EN 61121	(Energy labelling) EU Directive: 95/13/EC	Based on IEC 61121	Energy consumption per kg moisture removed. Must dry in a single setting.	EU likely to look to adoption of revised IEC 61121
EU (Washer-dryers)	Washer-dryers for household and similar use	Mandatory energy labelling (1996)	EN 50229	EU Directive: (Energy labelling) 96/60/EC	Based on IEC60456, IEC61121	Energy metrics for washing and drying	None at present
India	None	None	None	None	None	None	
Japan	None	None	None	None	None	None	
USA	a cabinet-like appliance designed to dry fabrics in a tumble-type drum with forced air circulation.	MEPS	Appendix D to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Clothes Dryers	10 CFR 430.32(h)(2)	[research required, TP was issued on May 19, 1981; revisions currently underway]	Energy factor (lbs/KWh)	MEPS final rule update due Jun 2011 Test Procedure (standby and off) due June 2010 Test Procedure review due Jun 2011

Table A-4. Dishwashers

Dishwashers							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	None	None	None	None	None	None	
EU	Household and similar use	Mandatory energy labelling (1997) MEPS under consideration	EN50242 A2 EN60436-2005	EU Directives: 97/17/EC, 99/9/EC EUP study completed in 2008 – no MEPS imminent	IEC60436 Ed.3-2003	Energy consumption per place setting. Energy, washing and drying performance declared and graded on energy label	EUP study completed which could lead to the Commission proposing MEPS
India	None	None	None	None	None	None	
Japan	None	None	None	None	None	None	

Dishwashers							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
USA	A cabinet-like appliance which with the aid of water and detergent, washes, rinses, and dries (when a drying process is included) dishware, glassware, eating utensils, and most cooking utensils by chemical, mechanical and/or electrical means and discharges to the plumbing drainage system.	MEPS	Appendix C to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Dishwashers	10 CFR 430.32(f)	[research required, TP was issued on Aug 29, 2003; revisions currently underway]	Energy factor (cycles/kWh)	On or after Jan 2010, DW have a new regulation, based on kWh/yr and gallons of water per cycle. TP for standby and off-mode due March 2011 MEPS revision due Jan 2015

Table A-5. Cooking appliances

Cooking appliances							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Rice cookers)	Electric rice cookers up to 2000W input power	MEPS and efficiency grades	GB/T 12021.6-2008 QB/T 3899	GB 12021.6-2008	NA	Wh and an efficiency metric in %	
China (Cook-tops and ranges/ovens)		MEPS and mandatory and voluntary energy labelling	QB/T 1236-91; CCEC/T22-2003	GB 16410-2007; GB 4706.22-2002; GB 4706.29-92	NA		
China (Microwave ovens)	Microwave ovens up to 2500W and 2450 MHz.	Proposal for MEPS and voluntary energy labelling submitted for approval	GB/T 2828.1-2003; GB/T 2829-2002; GB/T 18800-2008	CCEC/T09-2006	NA	Wh and an efficiency metric in %	Awaiting approval
China (Induction cookers)	Electric induction cookers with input power between 700 and 2800W	MEPS and efficiency grades	QB/T 1236-2008	GB 21456-2008	NA	An efficiency measure expressed in %	

Cooking appliances							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
EU (Electric ovens)	Electric mains operated household electric ovens including ovens being part of larger appliances. Does not apply to portable ovens <18kg.	Mandatory energy labelling (2002)	EN 50304	EU Directive: (Energy labelling) 2002/40/EC	Follows structure of IEC60350, but little overlap	Energy consumption under standard test procedure, oven cavity volumes	EUP study underway which could lead to the Commission proposing MEPS
EU (Electric, gas and microwave ovens)	Domestic and commercial ovens (electric, gas, and microwave)	None	NA	NA	NA	NA	EUP study underway which could lead to the Commission proposing MEPS
India (LPG stoves)	Domestic Gas Stoves using Liquefied Petroleum Gas being manufactured, imported, or sold in India	Voluntary energy labelling	IS 4246: 2002	Schedule 9 - Liquefied Petroleum Gas Stoves of 12/8/2009	NA	Thermal efficiency (%)	

Cooking appliances							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
Japan (Rice cookers)	Electric rice cookers, except the following: 1) ones for industrial use, 2) ones without electronic circuit, and 3) ones whose maximum cooking capacity is less than 0.54 litres.	Top Runner requirements and mandatory (binary type) energy label	Defined within the regulation	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2008 onwards	NA	Energy consumption efficiency is annual energy consumption efficiency (kWh/year) obtained as follows. Energy consumption is first measured for each of: rice-cooking, keep-warm, timer and standby modes, and each value is multiplied by a coefficient based on the level of usage such as the number of cooking operations carried out per year, and then the resulting values are added together	

Cooking appliances							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
Japan (Gas cooking appliances)	Gas cooking appliances, except the following: 1) gas rice cookers, 2) ones for industrial use, 3) ones using gases other than either those of City Gas 13A group or liquefied petroleum gas for fuel, 4) gas grills, 5) gas cooking tables, and 6) portable gas stoves.	Top Runner requirements and mandatory (binary type) energy label	JIS S2103	Top Runner programme. Manufacturers' products are required to reach a fleet average efficiency level by the FY as follows. Burner Section: FY 2006 Grill Section: FY 2008 Oven Section: FY 2008	NA	For gas burner sections, energy consumption efficiency is heat efficiency (%) measured as specified by JIS S2103. For grill sections and oven sections, energy consumption efficiency is gas consumption (Wh) per cooking.	

Cooking appliances							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
Japan (Microwave ovens)	<p>Microwave ovens, except the following:</p> <p>1) ones having gas oven, 2) ones for industrial use, 3) ones whose rated input voltage is exclusive to 200V, 4) ones whose internal height is less than 135 mm, and 5) ones that are incorporated into a system kitchen and the like.</p>	Top Runner requirements and mandatory (binary type) energy label	Defined within the regulation	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2008 onwards	NA	<p>Energy consumption efficiency is annual energy consumption efficiency (kWh/year) obtained as follows.</p> <p>Energy consumption is first measured for each of microwave function, oven range function and standby mode, and each value is multiplied by a coefficient based on usage such as the number of heating operations carried out per year, and then the resulting values are added together</p>	

Cooking appliances							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
USA (Cooking products ⁵)	Conventional Ranges, Conventional Cooking Tops, Conventional Ovens, and Microwave Ovens	MEPS	Appendix I to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Conventional Ranges, Conventional Cooking Tops, Conventional Ovens, and Microwave Ovens	10 CFR 430.32(b)	[research required, TP was issued on Oct 3, 1997; revisions currently underway]	Requirement that gas cooking products with an electrical cord have no pilot light.	Requirement that products without an electrical cord have no pilot light, effective April 2012. Microwave Oven TP and MEPS under development Kitchen ranges and ovens TP and MEPS under development

Table A-6. Room air conditioners

⁵ Cooking Products means consumer products that are used as the major household cooking appliances. They are designed to cook or heat different types of food by one or more of the following sources of heat: gas, electricity, or microwave energy. Each product may consist of a horizontal cooking top containing one or more surface units and/or one or more heating compartments. They must be one of the following classes: conventional ranges, conventional cooking tops, conventional ovens, microwave ovens, microwave/conventional ranges and other cooking products.

Room Air Conditioners							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	Fixed speed room air conditioners to 14kW of input power	MEPS and mandatory energy labelling	GB/T 7725-2004 GB/T 17758	GB 12021.3-2004	ISO5151	Energy input, energy output and energy efficiency ratio (W/W) at ISO T1 test point	
China (Variable speed room-air conditioners)	Variable speed room air conditioners to 14kW of input power	MEPS and mandatory energy labelling	GB/T 7725-2005	GB 21455-2008	JRA 4046-1999	Seasonal Energy Efficiency Ratio (SEER) (W/W)	
China (Multi-split room air conditioners and heat pumps)	The minimum allowable values of the IPLV and energy efficiency grades for multi-connected air-conditioner (heat pump) unit	MEPS plus mandatory and voluntary energy labelling	GB/T 18837-2002	GB 21454-2008	ARI 340/360-2000; ASHRAE 37-1988	IPLV (integrated part load value)	

Room Air Conditioners							
EU	<p>Household and similar use electric vapour compression units under 12kW cooling output.</p> <p>It does not apply to the: air-to-water and water-to-water appliances. Does apply to: split, multi-split, window/wall, single-duct room air conditioners</p>	<p>Mandatory energy labelling (2002)</p> <p>Eco-labelling</p>	<p>EN 814-1</p> <p>EN 255-1</p> <p>EN 14511</p>	<p>EU Directive: 2002/31/EC</p> <p>(Eco-labelling)</p> <p>Regulation (EC)</p> <p>No. 1980/2000</p> <p>(for heat pumps only)</p>	<p>Almost the same but not fully harmonised with ISO 5151 and ISO 15042 for multi-splits (permitted tolerances are greater) . Cooling capacity and energy measurements are the same as ISO5151 using T1 condition.</p>	<p>Cooling output and energy efficiency ratio at T1 test condition.</p>	<p>MEPs for residential room conditioning appliances currently under review in EU</p> <p>Include seasonal rating based on ISO simulation approach (defined test points), seasonal based rating system?</p>
India	<p>single-phase split and unitary air conditioners of the vapour compression type for household use up to a rated cooling capacity of 11 kW and that fall within the scope of IS1391 Part 1 and Part 2, being manufactured, imported, or sold in India.</p>	<p>Voluntary energy labelling from 2007 onwards</p>	<p>IS 1391</p> <p>Part 1 and Part 2 with all amendments.</p>	<p>Schedule – 3</p> <p>Room Air Conditioners</p>	<p>ISO 5151</p>	<p>Rated power (input).</p> <p>2. Rated capacity (output).</p> <p>3. Energy Efficiency Ratio (EER) for cooling</p>	<p>More stringent label thresholds apply from beginning of 2010</p>

Room Air Conditioners

<p>Japan</p>	<p>Cooling-cum-heating air conditioners and dedicated cooling air conditioners, except the following: 1) ones with cooling capacity of over 28 kW, 2) ones of water-cooling type, 3) ones without compressors, 4) ones using any energy other than electricity as a heat source for heating, 5) ones having temperature control function or dust control function for maintenance of machine operations or food hygiene, 6) ones which mainly cool outside air and send it into indoors, 7) spot air conditioners, 8) ones designed for vehicles and other transport, 9) ones having a duct at suction/exhaust outlet of a heat-exchanger of an outdoor unit, 10) ones having a thermal storage tank dedicated for</p>	<p>Top Runner standards, mandatory uniform energy labelling, mandatory binary energy label</p>	<p>(JIS) B8615-1 or B8615-2; JISC 9612 (2005), Appendix 3.</p>	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2007 and each subsequent FY to 2009; then from 2010 and each subsequent FY.</p>		<p>Air conditioners whose target fiscal year for attaining a Top Runner efficiency level is 2004 or 2007 EER (W/W) for cooling only units and a weighted average of EER (W/W) and COP (W/W) for reversible heat pumps. Air conditioners whose target fiscal year for attaining a Top Runner efficiency level is 2010 energy performance factor (APF), which is a numeric value calculated with the method stipulated in JISC 9612 (2005), Appendix 3.</p>	
---------------------	--	--	--	--	--	--	--

Room Air Conditioners							
USA (Room air conditioners)	a consumer product, other than a “packaged terminal air conditioner,” which is powered by a single phase electric current and which is an encased assembly designed as a unit for mounting in a window or through the wall for the purpose of providing delivery of conditioned air to an enclosed space. It includes a prime source of refrigeration and may include a means for ventilating and heating.	MEPS	Appendix F to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Room Air Conditioners	10 CFR 430.32(b)	American National Standard (ANS) Z234.1–1972, “Room Air Conditioners,” sections 4, 5, 6.1, and 6.5, and in American Society of Heating, Refrigerating and Air Conditioning in Engineers (ASHRAE) Standard 16–69, “Method of Testing for Rating Room Air Conditioners.”	Energy efficiency ratio; 16 categories of product	TP for standby and off-mode due June 2010 TP overall due June 2011

Room Air Conditioners							
USA (Packaged terminal air conditioners and heat pumps)	A PTAC means a wall sleeve and a separate un-encased combination of heating and cooling assemblies specified by the builder and intended for mounting through the wall. It includes a prime source of refrigeration, separable outdoor louvers, forced ventilation, and heating availability energy.	MEPS	Under development	Scheduled for 2016	Under development	Scheduled for 2016	MEPS due September 2016

Table A-7. Other air conditioners for predominantly domestic use

Other Air Conditioners for Predominantly Domestic Use							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	None	None	None	None	None	None	
EU	None	None	None	None	None	None	
India	None	None	None	None	None	None	

Other Air Conditioners for Predominantly Domestic Use							
Japan	None	None	None	None	None	None	
USA (Central air conditioners and heat pumps)	A product, other than a packaged terminal air conditioner, which is powered by single phase electric current, air cooled, rated below 65,000 Btu per hour, not contained within the same cabinet as a furnace, the rated capacity of which is above 225,000 Btu per hour, and is a heat pump or a cooling unit only.	MEPS	Appendix M to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps	10 CFR 430.32(c)(2)	[research required, TP was issued on Oct. 11, 2005; revisions currently underway]	Seasonal energy efficiency ratio (SEER) Heating seasonal performance factor (HSPF)	TP revision due June 2011 MEPS revision due June 2011

Table A-8. Central air conditioners for predominantly non-domestic use

Central Air Conditioners for Predominantly Non-Domestic Use							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	Unitary (Packaged) air conditioners (inc. grades)	MEPS and mandatory energy labelling	GB/T17758-1999 & GB/T18836 + JB/T8072	GB 19576-2004	ASHRAE 37-1988	IPLV	
EU	None	None except Eurovent operates a voluntary certification scheme	NA	None	NA	NA	EECAC study completed 2003
India	None	None	None	None	None	None	
Japan							

Central Air Conditioners for Predominantly Non-Domestic Use							
USA (Central air conditioners and heat pumps)	A product, other than a packaged terminal air conditioner, which is powered by single phase electric current, air cooled, rated below 65,000 Btu per hour, not contained within the same cabinet as a furnace, the rated capacity of which is above 225,000 Btu per hour, and is a heat pump or a cooling unit only.	MEPS	Appendix M to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps	10 CFR 430.32(c)(2)	[research required, TP was issued on Oct. 11, 2005; revisions currently underway]	Seasonal energy efficiency ratio (SEER) Heating seasonal performance factor (HSPF)	TP revision due June 2011 MEPS revision due June 2011

Table A-9. Chillers

Chillers							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	Water chillers (inc. grades)	Voluntary labelling	GB/T 18430.1-2007; GB/T 18430.2-2008; GB/T 10870-2001	GB 19577-2004	ASHRAE 30-1995	IPLV	
EU	Liquid-chilling packages using the vapour compression cycle 300kW to 2000kW	None except Eurovent operates a voluntary certification scheme	NA	None	ISO PWD 19298-1 ISO PWD 19298-2	NA	EECAC study completed 2003
India	None	None	None	None	None	None	
Japan	None	None	None	None	None	None	
USA							

Table A-10. Commercial refrigeration equipment

Commercial Refrigeration Equipment							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	None	None	None	None	None	None	
EU (Commercial refrigerators etc)	Commercial refrigerators and freezers, including chillers, display cabinets and vending machines	Currently under review in EU. Eurovent operate a voluntary certification programme	NA	None. EUP study completed which could lead to the Commission proposing MEPS	NA	NA	EUP study completed which could lead to the Commission proposing MEPS
EU (Commercial Refrigerating and freezing equipment)	Refrigerating and Freezing Equipment: Service cabinets, Walk-in cold rooms, Chillers, Ice makers, Ice cream and Milkshake machines	None – study underway	NA	None. EUP study underway which could lead to the Commission proposing MEPS	NA	NA	None. EUP study underway which could lead to the Commission proposing MEPS
India	None	None	None	None	None	None	

Commercial Refrigeration Equipment

<p>Japan (Vending machines)</p>	<p>Vending machines for canned/bottled beverages, beverages in paper containers, and beverages served in cups, all of which are specified in JIS B8561.</p> <p>However, the following products shall be excluded.</p> <p>1) ones intended to be used only on ships, 2) ones intended to be used only on railway cars, 3) cup type beverage vending machines that cool beverages (raw materials) by means of electronic cooling (e.g., Peltier cooling), 4) ones of the countertop type, and 5) ones for alcoholic beverages other than beer (including low-malt beer).</p>	<p>Top Runner requirements and mandatory (binary type) energy label</p>	<p>JIS B8561 (2000 & 2007)</p>	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2005 and each subsequent FY to 2011; then from 2012 and each subsequent FY.</p>	<p>None</p>	<p>1) Vending machines whose target fiscal year is FY 2005 and each subsequent fiscal year (until FY 2011): Annual energy consumption (kWh/year) measured in accordance with the method specified in JIS B8561 (2000).</p> <p>(2) Vending machines whose target fiscal year is FY 2012 and each subsequent fiscal year: Annual energy consumption (kWh/year) measured in accordance with the method specified in JIS B8561 (2007).</p>	
---	--	---	------------------------------------	--	-------------	--	--

Commercial Refrigeration Equipment							
USA (Commercial refrigeration equipment)	Definition provided in footnote ⁶	10 CFR 430.32(b)	10 CFR 431.64	Subpart C— Commercial Refrigerators, Freezers and Refrigerator-Freezers 10 CFR 431.66	ANSI /AHAM HRF-1-2004, Energy, Performance and Capacity of Household Refrigerators, Refrigerator-Freezers and Freezers; and ARI Standard 1200-2006, Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets	Maximum daily energy consumption (kilowatt hours per day)	MEPS update for CRE due January 2013

⁶ Commercial refrigerator, freezer, and refrigerator-freezer means refrigeration equipment that— (1) Is not a consumer product (as defined in §430.2 of part 430); (2) Is not designed and marketed exclusively for medical, scientific, or research purposes; (3) Operates at a chilled, frozen, combination chilled and frozen, or variable temperature; (4) Displays or stores merchandise and other perishable materials horizontally, semi-vertically, or vertically; (5) Has transparent or solid doors, sliding or hinged doors, a combination of hinged, sliding, transparent, or solid doors, or no doors; (6) Is designed for pull-down temperature applications or holding temperature applications; and (7) Is connected to a self-contained condensing unit or to a remote condensing unit.

Commercial Refrigeration Equipment							
USA (Walk-In coolers and freezers)	an enclosed storage space refrigerated to temperatures, respectively, above, and at or below 32 degrees Fahrenheit that can be walked into, and has a total chilled storage area of less than 3,000 square feet; however the terms do not include products designed and marketed exclusively for medical, scientific, or research purposes.	MEPS	10 CFR 431.304 Uniform test method for the measurement of energy consumption of walk-in coolers and walk-in freezers.	Subpart R—Walk-in Coolers and Walk-in Freezers 10 CFR 431.306	ASTM C518–04 (“ASTM C518”), Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus, approved May 1, 2004	Design requirements, see 10 CFR 431.306	Test Procedure update January 2010 MEPS update for January 2012
USA (Refrigerated bottle or canned beverage vending machines)	a commercial refrigerator that cools bottled or canned beverages and dispenses the bottled or canned beverages on payment.	MEPS	10 CFR 431.294 Uniform test method for the measurement of energy consumption of refrigerated bottled or canned beverage vending machines.	Subpart Q—Refrigerated Bottled or Canned Beverage Vending Machines 10 CFR 431.296	ANSI/ASHRAE Standard 32.1–2004, “Methods of Testing for Rating Vending Machines for Bottled, Canned, and Other Sealed Beverages.”	Maximum daily energy consumption (kilowatt hours per day)	MEPS update for August 2009

Commercial Refrigeration Equipment							
USA (Automatic ice makers))	a factory-made assembly (not necessarily shipped in 1 package) that— (1) Consists of a condensing unit and ice-making section operating as an integrated unit, with means for making and harvesting ice; and (2) May include means for storing ice, dispensing ice, or storing and dispensing ice.	MEPS	10 CFR 431.134 Uniform test methods for the measurement of energy consumption and water consumption of automatic commercial ice makers.	Subpart H— Automatic Commercial Ice Makers Energy Conservation Standards 10 CFR 431.136	(1) Air-Conditioning and Refrigeration Institute (ARI) Standard 810–2003, “Performance Rating of Automatic Commercial Ice-Makers.” (2) American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 29–1988 (RA 2005), “Methods of Testing Automatic Ice Makers.”	Maximum energy use (kWh/100 lbs ice) Maximum condenser water use* (gal/100 lbs ice)	MEPS update for January 2015

Table A-11. Water heaters

Water Heaters							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Electric storage water heaters)	Household electric storage water heaters	MEPS and mandatory and voluntary energy labelling	GB 21519-2008; GB/T 20289-2006	GB 21519-2008	IEC60335-2-21: 1997	Heat loss per 24 hours	
China (Electric storage water heaters)	Domestic electric storage water heaters	MEPS and mandatory energy labelling	GB 21519-2008 annex	GB 21519-2008	IEC60335-2-21: 1997 IEC 107-1-1995	Heat loss per 24 hours	
China (Solar water heaters)	Solar water heaters	Voluntary energy labelling	GB/T 12915-1991	GB/T 12915-1991	NA	NA	
China (Residential heat pump water heaters)	Residential heat pump water heaters	Under development	GB/T 23137-2008	Under development	NA	NA	
China (Commercial heat pump water heaters)	Commercial heat pump water heaters	Under development	GB/T 21362-2008	Under development	NA	NA	

Water Heaters							
China (Gas- water heaters and combi-boilers)	Domestic gas instantaneous water heaters and gas fired heating and hot water combi-boilers	MEPS and mandatory energy labelling	GB 6932 -2001 CJ/T 228	GB20665-2006	JIS 2109-1997 JIS S2093-1996	NA	
EU (Electric storage water heaters)	NA	None. Energy labelling under consideration EUP study completed	prEN50440 EN-IEC 60379-2004	None. EUP study completed which could lead to the Commission proposing MEPS	NA	Heat loss per 24 hours	EUP study completed which could lead to the Commission proposing MEPS
EU (Gas storage and instantaneous water heaters)	NA	None. EUP study completed	EN89-1999 EN26-1998	None. EUP study completed which could lead to the Commission proposing MEPS			EUP study completed which could lead to the Commission proposing MEPS
EU (Gas-fired water heaters)	NA	None. EUP study completed	EN13203:1-2006 EN13203:2-2006	None. EUP study completed which could lead to the Commission proposing MEPS			EUP study completed which could lead to the Commission proposing MEPS

Water Heaters							
EU (Solar thermal water heaters)	NA	None. EUP study completed	EN12976-2-2001	None. EUP study completed which could lead to the Commission proposing MEPS			EUP study completed which could lead to the Commission proposing MEPS
EU (Gas and oil-fired boilers for space heating)	Water heaters with outputs in the range 4 to 400 kW. Note, these are for space heating or combi-boiler purposes and not principally for sanitary hot water	MEPS (1992)	EN303 (boilers) EN304 (oil boilers) EN483 (gas boilers type C) EN656, prEN13836 (gas boilers type B) EN677 (gas condensing boilers)	EU Directive: 92/42/EEC	European standards not harmonised with ISO or IEC standards	Full and part-load efficiency	EUP study completed which could lead to the Commission proposing revised MEPS
India	Stationary storage type electric water heaters up to a rated capacity of 200 liters being manufactured, imported, or sold in India	Voluntary energy labelling	IS 2082: 1993 (for performance) IS 302-2-21: 1992 (for safety)	Schedule-10 Stationary Storage Type Water Heaters	IEC 60379 & IEC 60335-2-21 harmonised	Heat loss per 24 hours	

Water Heaters

<p>Japan (Gas water heaters)</p>	<p>Gas water heaters, except the following: 1) ones of water storage type, 2) ones for industrial use, 3) ones using gases other than either those of City Gas 13A group or liquefied petroleum gas for fuel, 4) bathtub water heaters installed inside of a bathroom, having an oxygen depletion safety shut-off device, 5) direct vent type bathtub gas water heaters whose air supply/exhaust outlet is connected to a duct.</p>	<p>Top Runner requirements and mandatory (binary type) energy label</p>	<p>JIS S2109</p>	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2006 and each subsequent FY.</p>		<p>For hot water supply sections and bath tub gas water heaters, energy consumption efficiency is heat efficiency (%) measured as specified by JIS S2109. For space heating sections, energy consumption efficiency is heat efficiency (%) when water temperature difference between outward flow and inward flow in a hot water circulation becomes the specified level. For bathtub gas water heaters (with hot water supply functions), energy consumption efficiency is the weighted average value obtained by a 1:3.3 ratio (1 for bath section heat efficiency, 3.3 for hot water supply section heat efficiency).</p>	
--	---	---	------------------	---	--	--	--

Water Heaters							
Japan (Oil water heaters)	Oil water heaters, except the following, 1) bathtub gas water heaters with pot-type burners, 2) ones for industrial use, 3) ones having a structure for burning firewood, and 4) hot water boilers whose gauge pressure exceeds 0.1 MPa.	Top Runner requirements and mandatory (binary type) energy label	JIS S3031	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2006 and each subsequent FY.		Heat efficiency (%)	
USA (Water heaters Residential)	Definition provided in footnote ⁷	MEPS 10 CFR 430.32(b)	Appendix E to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Water Heaters	10 CFR 430.32(d)	Research required	Energy factor calculated as a function of volume	MEPS due March 2010 TP Standby and Off-Mode March 2010

⁷ Water heater means a product which utilizes oil, gas, or electricity to heat potable water for use outside the heater upon demand, including— (a) Storage type units which heat and store water at a thermostatically controlled temperature, including gas storage water heaters with an input of 75,000 Btu per hour or less, oil storage water heaters with an input of 105,000 Btu per hour or less, and electric storage water heaters with an input of 12 kilowatts or less; (b) Instantaneous type units which heat water but contain no more than one gallon of water per 4,000 Btu per hour of input, including gas instantaneous water heaters with an input of 200,000 Btu per hour or less, oil instantaneous water heaters with an input of 210,000 Btu per hour or less, and electric instantaneous water heaters with an input of 12 kilowatts or less; and (c) Heat pump type units, with a maximum current rating of 24 amperes at a voltage no greater than 250 volts, which are products designed to transfer thermal energy from one temperature level to a higher temperature level for the purpose of heating water, including all ancillary equipment such as fans, storage tanks, pumps, or controls necessary for the device to perform its function.

Table A-12. Space heaters

Space Heaters							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Gas water heaters and combi-boilers)	Domestic gas instantaneous water heaters and gas fired heating and hot water combi-boilers	MEPS and mandatory energy labelling	GB 6932-2001 CJ/T 228	GB20665-2006	JIS 2109-1997 JIS S2093-1996	NA	
EU (Gas and oil-fired boilers for space heating)	Water heaters with outputs in the range 4 to 400 kW. Note, these are space heaters or combi-boilers	MEPS (1992)	EN303 (boilers) EN304 (oil boilers) EN483 (gas boilers type C) EN656, prEN13836 (gas boilers type B) EN677 (gas condensing boilers)	EU Directive: 92/42/EEC	European standards not harmonised with ISO or IEC standards	Full and part-load efficiency	EUP study completed which could lead to the Commission proposing revised MEPS
EU (Electric and fossil-fuelled heating equipment)	Central heating products using hot air to distribute heat (other than CHP)	None. EUP study underway.		None.			EUP study underway which could lead to the Commission proposing MEPS
India	None	None	None	None	None	None	

Space Heaters							
Japan (Space heaters)	Space heaters using gas or oil for fuel, except the following: 1) ones of unvented type, 2) ones using gases other than either those of City Gas 13A group or liquefied petroleum gas for fuel, 3) vented gas space heaters, 4) vented oil space heaters with maximum fuel consumption of over 4.0L/h, and 5) direct vent type oil space heaters with maximum fuel consumption of over 2.75L/h	Top Runner requirements and mandatory (binary type) energy label	JIS S2122 or S3031	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2006 and each subsequent FY.		Heat efficiency (%)	

Space Heaters							
Japan (Toilet heaters)	<p>Warm-water-shower toilet seats and warm toilet seats except the followings:</p> <p>(1) Warm water is supplied from other hot-water supply equipment (centralized hot-water supply system)</p> <p>(2) Toilet seats equipped with a warm-water-shower function only</p> <p>(3) Electric toilet seats for caring use, among portable ones</p> <p>(4) Electric toilet seats for the exclusive use on railway cars</p>	Top Runner requirements and mandatory (binary type) energy label	Defined in the regulation	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2006 and each subsequent FY to 2011; then from 2012 and each subsequent FY.		Annual power consumption (kWh/year) estimated via a duty cycle that ascribes energy use in operating, recovery and standby modes	
USA (Direct heating equipment)	Research required	10 CFR 430.32(b)	Research required	Research required	Research required	Research required	<p>MEPS due March 2010</p> <p>TP Standby and Off-Mode March 2010</p>

Space Heaters							
USA (Pool heaters)	an appliance designed for heating nonpotable water contained at atmospheric pressure, including heating water in swimming pools, spas, hot tubs and similar applications.	MEPS	Appendix P to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Pool Heaters	10 CFR 430.32(k)	Research required	Thermal efficiency (percent)	MEPS due March 2010 TP Standby and Off-Mode March 2010
USA (Furnace fans)		MEPS	Under development	Under development	n/a	n/a	MEPS due December 2013 TP due December 2012
USA (Residential furnaces, small furnaces, mobile home furnaces, residential boilers)	Definition provided in footnote ⁸	MEPS	Appendix N to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Furnaces and Boilers	10 CFR 430.32(e)	Research required	Annual Fuel Utilization Efficiency (percent)	MEPS due May 2011 TP Standby and Off-Mode Sept 2009

⁸ Furnace means a product which utilizes only single-phase electric current, or single-phase electric current or DC current in conjunction with natural gas, propane, or home heating oil, and which— (a) Is designed to be the principal heating source for the living space of a residence; (b) Is not contained within the same cabinet with a central air conditioner whose rated cooling capacity is above 65,000 Btu per hour; (c) Is an electric central furnace, electric boiler, forced-air central furnace, gravity central furnace, or low pressure steam or hot water boiler; and (d) Has a heat input rate of less than 300,000 Btu per hour for electric boilers and low pressure steam or hot water boilers and less than 225,000 Btu per hour for forced-air central furnaces, gravity central furnaces, and electric central furnaces, gravity central furnaces, and electric central furnaces.

Table A-13. Fluorescent lamp ballasts

Lighting fluorescent lamp ballasts							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	Limited values of energy efficiency and evaluating values of energy conservation of ballasts for tubular fluorescent lamps – test procedures vary for electronic and magnetic ballasts	MEPS and voluntary energy labelling	GB/T 717262-2002 GB/T 14044-1993 (magnetic ballasts); GB/T 15042-1994; GB/T 15144-1994; GB/T 17262-2002; GB/T13434-1992 (electronic ballasts)	GB 17896-1999	IEC 60923:2006; IEC 60901:2002; IEC 60921:2002 ANSI C78.389:2004 CAN/CSA-C 654-M 91 (electronic ballasts) IEC 60929 (magnetic ballasts)	Ballast energy efficiency index	
EU	Ballasts to drive fluorescent lamps	MEPS (2010, 2012, 2017)	EN 60921 EN 60929	EU Directive: 2005/32/EC and regulation 2009/245/EC	IEC 60921-2002 IEC 60929	Ballast energy efficiency index	Detailed new regulations come into force 2010
India	None	None	None	None	None	None	

Lighting fluorescent lamp ballasts							
Japan (see Fluorescent lamps)							
USA	a device which is used to start and operate fluorescent lamps by providing a starting voltage and current and limiting the current during normal operation.	MEPS	Appendix Q to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Fluorescent Lamp Ballasts	10 CFR 430.32(m)	American National Standard Institute (ANSI), titled "American National Standard for Fluorescent Lamp Ballasts—Method of Measurement, 1984", and designated as ANSI C82.2-1984	Ballast Efficacy Factor (BEF)	Standby and Off-mode TP due September 2009 TP due June 2011 MEPS review due June 2011

Table A-14. Linear fluorescent lamps

Linear Fluorescent Lamps							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	Double-capped tubular fluorescent lamps for general lighting service	MEPS plus mandatory and voluntary energy labelling	GB/T 10682-2002	GB 19043-2003	IEC 60081	Initial efficacy (lm/W)	
EU	Fluorescent lamps (some exceptions but include double-capped T5, T8, T9, T5 circular; and non-CFLn single capped types) without integrated ballasts	MEPS (2010, 2012)	EN 60081 EN 60901 EN 50285	EU Directive: 2005/32/EC and regulation 2009/245/EC	IEC 60081 IEC 60901	Efficacy (lm/W)	
India	4 feet tubular fluorescent lamps with input power up to 40W	Voluntary energy labelling	IS 2418(Part 1) & (Part 2): 1977	Schedule – 2 Tubular Fluorescent Lamps	IEC 60081	Initial efficacy (lm/W)	

Linear Fluorescent Lamps							
<p>Japan</p> <p>(Fluorescent lighting equipment)</p>	<p>Lighting equipment using fluorescent light only as a main light source, except the following:</p> <p>1) ones of explosion-proof type, 2) ones of heat-resistant type, 3) ones of dust-proof type, 4) ones of anti-corrosion type, 5) ones designed for vehicles and other transports, and 6) ones using fluorescent lights of less than 40 watts (excluding pendant and built-in type fluorescent lighting equipments for household and fluorescent desk lamps).</p>	<p>Top Runner requirements and mandatory (binary type) energy label</p>	<p>JIS C7601</p> <p>JISC 8105</p>	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2005 and each subsequent FY.</p>		<p>Energy consumption efficiency is a numeric value expressing total luminous flux measured in the manner stipulated by JIS C7601 and ballast lumen factor and temperature correction factor in lumens divided by power consumption (W) measured in the manner stipulated under the JISC 8105.</p>	

Linear Fluorescent Lamps							
USA	Definition provided in footnote ⁹	10 CFR 430.32(b)	Appendix R to Subpart B of Part 430 --Uniform Test Method for Measuring Average Lamp Efficacy (LE), Color Rendering Index (CRI), and Correlated Color Temperature (CCT) of Electric Lamps	10 CFR 430.32(n)	Research required	Minimum average lamp efficacy (lm/W) and minimum CRI	

Table A-15. Compact fluorescent lamps

Compact Fluorescent Lamps

⁹ Fluorescent Lamp means a low pressure mercury electric-discharge source in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light, including only the following: (1) Any straight-shaped lamp (commonly referred to as 4-foot medium bipin lamps) with medium bipin bases of nominal overall length of 48 inches and rated wattage of 25 or more; (2) Any U-shaped lamp (commonly referred to as 2-foot U-shaped lamps) with medium bipin bases of nominal overall length between 22 and 25 inches and rated wattage of 25 or more; (3) Any rapid start lamp (commonly referred to as 8-foot high output lamps) with recessed double contact bases of nominal overall length of 96 inches; (4) Any instant start lamp (commonly referred to as 8-foot slimline lamps) with single pin bases of nominal overall length of 96 inches and rated wattage of 52 or more; (5) Any straight-shaped lamp (commonly referred to as 4-foot miniature bipin standard output lamps) with miniature bipin bases of nominal overall length between 45 and 48 inches and rated wattage of 26 or more; and (6) Any straight-shaped lamp (commonly referred to 4-foot miniature bipin high output lamps) with miniature bipin bases of nominal overall length between 45 and 48 inches and rated wattage of 49 or more.

Compact Fluorescent Lamps							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (CFLi)	Single-capped fluorescent lamps with integrated ballasts	MEPS plus mandatory and voluntary energy labelling	GB/T 17263-2002	GB 19044-2003 (CFLi);	IEC 60969:2000		
China (CFLn)	Single-capped fluorescent lamps	MEPS plus mandatory and voluntary energy labelling	GB/T 17262-2002	GB 19415-2003 (CFLn)	IEC 60901:2000		
EU (CFLn)	Single capped fluorescent lamps without integrated ballasts	MEPS (2010, 2012) Energy label Eco-label	Not stated	MEPS: 2005/32/EC and regulation 2009/245/EC Energy labelling: 1998/11/EC Eco-labelling		Efficacy (lm/W)	

Compact Fluorescent Lamps							
EU (CFLi)	Non-directional household lamps with unique non-efficacy requirements for CFLi	MEPS (2009-2016) Energy label Eco-label	EN 50285:1999 EN 60969:1993	MEPS: 2005/32/EC and regulation 2009/244/EC Energy labelling: 1998/11/EC Eco-labelling	IEC 60969	Efficacy (lm/W) but more importantly quality & performance limits for: lifetime, Lamp start time/warm-up time, lumen maintenance, CRI, power factor	6 staged approach: 2009, 2010, 2011, 2012, 2013, 2016
India	None	None	None	None	None	None	
Japan (see Linear fluorescent lamps)							

Compact Fluorescent Lamps							
USA	an integrally ballasted fluorescent lamp with a medium screw base, a rated input voltage range of 115 to 130 volts and which is designed as a direct replacement for a general service incandescent lamp; however, the term does not include [list of exclusions]	10 CFR 430.32(b)	Appendix W to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Medium Base Compact Fluorescent Lamps	10 CFR 430.32(u)	DOE's "ENERGY STAR Program Requirements for CFLs," Version dated August 9, 2001	Minimum Efficacy, Lumen Maintenance, etc.	MEPS review due January 2017

Table A-16. General service and reflector lamps

General Service and Reflector Lamps							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	None	None	NA	None	NA	NA	
EU (Non-directional household lamps)	Wide range of non-directional household lamps including both GLS, CFLs and LEDs (with exceptions)	Staged withdrawal of GLS lamps, introduction of MEPS for others Energy label Eco-label	EN 50285 EN 60064 EN 60357 EN 60969	(MEPS) EU Directive: 2005/32/EC and implementing measures Commission Regulation (EC) No 244/2009, (Energy labelling) Directive 98/11/EC (Eco-labelling) Regulation (EC) No. 1980/2000	IEC 50285 IEC 60064 IEC 60357 IEC 60969	14 metrics variously apply	6 staged approach: 2009, 2010, 2011, 2012, 2013, 2016

General Service and Reflector Lamps							
EU (Directional household lamps)	Directional household lamps	Currently under review in EU	NA	None	NA	NA	EUP study underway which could lead to the Commission proposing MEPS
India	None	None	None	None	None	None	
Japan	None	None	None	None	None	None	
USA (General service incandescent lamps)	a standard incandescent or halogen type lamp that is intended for general service applications; has a medium screw base; has a lumen range of not less than 310 lumens and not more than 2,600 lumens; and is capable of being operated at a voltage range at least partially within 110 and 130 volts; however this definition does not apply to the following incandescent lamps [list of 18 types]	MEPS	Appendix R to Subpart B of Part 430 --Uniform Test Method for Measuring Average Lamp Efficacy (LE), Color Rendering Index (CRI), and Correlated Color Temperature (CCT) of Electric Lamps	10 CFR 430.32(x)	Research required	Maximum rate wattage and minimum rate life-time for a lumen range	MEPS review due January 2017

General Service and Reflector Lamps							
USA (General service LEDs and OLEDs)	LED means a p-n junction solid state device of which the radiated output, either in the infrared region, the visible region, or the ultraviolet region, is a function of the physical construction, material used, and exciting current of the device. OLED means a thin-film light-emitting device that typically consists of a series of organic layers between 2 electrical contacts (electrodes).	MEPS	Not started yet	Not started yet	n/a	n/a	MEPS due January 2017

General Service and Reflector Lamps							
USA (Incandescent reflector lamps)	any lamp in which light is produced by a filament heated to incandescence by an electric current, which: is not colored or designed for rough or vibration service applications that contains an inner reflective coating on the outer bulb to direct the light; has an R, PAR, ER, BR, BPAR, or similar bulb shapes with an E26 medium screw base; has a rated voltage or voltage range that lies at least partially in the range of 115 and 130 volts; has a diameter that exceeds 2.25 inches; and has a rated wattage that is 40 watts or higher.	MEPS	Appendix R to Subpart B of Part 430 --Uniform Test Method for Measuring Average Lamp Efficacy (LE), Color Rendering Index (CRI), and Correlated Color Temperature (CCT) of Electric Lamps	10 CFR 430.32(n)(4) and (5)	Research required	Minimum average lamp efficacy (lm/W)	MEPS review due January 2017

Table A-17. High intensity lamps and ballasts

High Intensity Lamps and Ballasts							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (HPS lamps)	High pressure sodium lamps	MEPS and voluntary energy labels	GB/T 13434-2008	GB 19573-2004	ANSI C78.389-2007	Efficacy (lm/W)	
China (Metal halide lamps)	Metal halide lamps from 175W~1500W	MEPS and voluntary energy labels	GB 18661-2008 QB/T2511	GB 20054-2006	ANSI ANSLG C78.43-2007	Efficacy (lm/W)	
China (HPS ballasts)	High pressure sodium lamp ballasts	MEPS and voluntary energy labels	GB/T 717262-2002	GB 19574-2004	IEC 60901:2002	Ballast efficiency factor (W/W)	
China (Metal halide ballasts)	Metal halide lamp ballasts	MEPS and voluntary energy labels	QB/T 2515-2001	GB 20053-2006	IEC 60969 ANSI C78.387	Ballast efficiency factor (W/W)	
EU (HID lamps)	HID lamps (includes single or double ended, HPS, LPS, MH, MV types)	MEPS (2010, 2012, 2017)	EN 60662 (HPS) EN 61167 (MH)	EU Directive: 2005/32/EC and regulation 2009/245/EC	IEC 60662 IEC 61167	Efficacy (lm/W)	Detailed new regulations come into force 2010

High Intensity Lamps and Ballasts							
EU (HID ballasts)	Ballasts to drive HID lamps	MEPS (2010, 2012, 2017)	EN 60923	EU Directive: 2005/32/EC and regulation 2009/245/EC	IEC 60923	Ballast energy efficiency index	Detailed new regulations come into force 2010
India	None	None	None	None	None	None	
Japan	None	None	None	None	None	None	
USA (High-intensity discharge lamps)		MEPS	Pending determination	Pending determination	n/a	n/a	Determination due June 2010
USA (Metal halide lamp fixture)	a light fixture for general lighting application designed to be operated with a metal halide lamp and a ballast for a metal halide lamp.	MEPS	Under development	10 CFR 431.326	Based on ANSI C82.6-2005	Percent efficiency of the metal halide lamp ballast	TP due September 2009 MEPS due January 2012
USA (Mercury vapor lamp ballasts)	a device that is designed and marketed to start and operate mercury vapor lamps intended for general illumination by providing the necessary voltage and current.	MEPS (Design ban)	n/a	10 CFR 431.286	n/a	MV lamp ballasts shall not be manufactured or imported	

Table A-18. Other lighting products

Other Lighting Products							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
EU (Linear fluorescent lamp luminaires)	Linear fluorescent lamp luminaires	MEPS (2010, 2012, 2017)		EU Directive: 2005/32/EC and regulation 2009/245/EC	IEC compatible	Power limits based on sum of separate lamp and ballast power limits	Detailed new regulations come into force 2010
EU (HID luminaires)	HID luminaires	MEPS (2010, 2012, 2017)		EU Directive: 2005/32/EC and regulation 2009/245/EC	IEC compatible	Power limits based on sum of separate lamp and ballast power limits	Detailed new regulations come into force 2010

Other Lighting Products							
USA (Ceiling fan light kits)	equipment designed to provide light from a ceiling fan that can be— (1) Integral, such that the equipment is attached to the ceiling fan prior to the time of retail sale; or (2) Attachable, such that at the time of retail sale the equipment is not physically attached to the ceiling fan, but may be included inside the ceiling fan at the time of sale or sold separately for subsequent attachment to the fan.	MEPS	Appendix V to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Ceiling Fan Light Kits	10 CFR 430.32(s)	Requires research	Design requirements	

Other Lighting Products							
USA (Exit signs)	a sign that— (1) Is designed to be permanently fixed in place to identify an exit; and (2) Consists of an electrically powered integral light source that— (i) Illuminates the legend “EXIT” and any directional indicators; and (ii) Provides contrast between the legend, any directional indicators, and the background.	MEPS	10 CFR 431.204 Uniform test method for the measurement of energy consumption of illuminated exit signs.	10 CFR 431.206	Environmental Protection Agency “ENERGY STAR Program Requirements for Exit Signs,” Version 2.0 issued January 1, 1999	Maximum watts per face	
USA (Torchieres)	a portable electric lamp with a reflector bowl that directs light upward to give indirect illumination.	MEPS	n/a (design standard)	10 CFR 430.32(t)	n/a	Maximum wattage consumption, current limiting device	

Other Lighting Products							
USA (Traffic signal modules and pedestrian modules)	<p>Pedestrian module means a light signal used to convey movement information to pedestrians.</p> <p>Traffic signal module means a standard 8-inch (200 mm) or 12-inch (300 mm) traffic signal indication that— (1) Consists of a light source, a lens, and all other parts necessary for operation; and (2) Communicates movement messages to drivers through red, amber, and green colors.</p>	MEPS	10 CFR 431.224 Uniform test method for the measurement of energy consumption for traffic signal modules and pedestrian modules.	10 CFR 431.226	<p>(1) Environmental Protection Agency, “ENERGY STAR Program Requirements for Traffic Signals,” Version 1.1 issued February 4, 2003.</p> <p>(2) Institute of Transportation Engineers (ITE), “Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement,” June 27, 2005.</p>	A nominal wattage and maximum wattage, no greater than	

Table A-19. Distribution transformers

Distribution transformers							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China	Three-phase oil-immersed power distribution transformers 6kVA to 500kVA	MEPS	GB 1094.1-1996; GB 6450	GB 20052-2006	IEC 60076-11 IEC 76-1-1993 IEC 50(421):1990	Losses (%) (W/kVA)	
EU	Distribution transformers	EUP study underway	NA	None	IEC60076 (wet) IEC60726 (dry)	NA	Potential future MEPS under the EUP directive
India	Oil immersed, naturally air cooled, three phase, and double wound non sealed type outdoor distribution transformers form 11 kVA to 200 kVA.	Voluntary energy labelling	IS 1180(Part 1) & (Part 2):1989	Schedule 5 – Distribution Transformer	Harmonised with IEC 60076	Losses (W) as a function of kVA	

Distribution transformers

<p>Japan</p>	<p>Transformers that run on alternating current and whose rated primary voltage is over 600V up to 7,000V, except the following:</p> <p>1) ones using gas for insulation, 2) ones using H type insulation material, 3) ones with Scott connection,</p> <p>4) ones having 3 or more windings, 5) ones installed on utility poles, 6) single-phase transformers whose rated capacity is up to 5 kVA or over 500 kVA, 7) triple-phase transformers whose rated capacity is up to 10 kVA or over 2,000 kVA, 8) triple-phase transformers using resinous insulation material and intended to</p>	<p>Top Runner requirements and mandatory (binary type) energy label</p>	<p>JIS C4304 JIS C4306</p>	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by:</p> <p>FY 2006 for Oil-filled transformers,</p> <p>FY 2007 for Molded transformers</p>		<p>Energy consumption efficiency is the total loss (W) acquired through the no-load loss and load loss measured using the method stipulated by JIS C4304 and C4306.</p>	
---------------------	---	---	--------------------------------	--	--	---	--

Distribution transformers							
USA ¹⁰	<u>Low-voltage Dry-type</u> - a distribution transformer that— (1) Has an input voltage of 600 volts or less; (2) Is air-cooled; and (3) Does not use oil as a coolant.	10 CFR 430.32(b)	Appendix A to Subpart K of Part 431 --Uniform Test Method for Measuring the Energy Consumption of Distribution Transformers	Subpart K— Distribution Transformers 10 CFR 431.196(a)	[research required, TP was issued on Apr 27, 2006; revisions currently underway]	Percent efficiency at 35% of nameplate load	

¹⁰ Distribution transformer means a transformer that— (1) Has an input voltage of 34.5 kV or less; (2) Has an output voltage of 600 V or less; (3) Is rated for operation at a frequency of 60 Hz; and (4) Has a capacity of 10 kVA to 2500 kVA for liquid-immersed units and 15 kVA to 2500 kVA for dry-type units; but (5) The term “distribution transformer” does not include a transformer that is an— (i) Autotransformer; (ii) Drive (isolation) transformer; (iii) Grounding transformer; (iv) Machine-tool (control) transformer; (v) Nonventilated transformer; (vi) Rectifier transformer; (vii) Regulating transformer; (viii) Sealed transformer; (ix) Special-impedance transformer; (x) Testing transformer; (xi) Transformer with tap range of 20 percent or more; (xii) Uninterruptible power supply transformer; or (xiii) Welding transformer.

Distribution transformers							
Distribution transformers (defined in footnote below)	<u>Medium-voltage Dry-Type</u> (a distribution transformer in which the core and coil assembly is immersed in a gaseous or dry-compound insulating medium, and which has a rated primary voltage between 601 V and 34.5 kV.) <u>and Liquid-Immersed</u> (a distribution transformer in which the core and coil assembly is immersed in an insulating liquid.)	MEPS	Appendix A to Subpart K of Part 431 --Uniform Test Method for Measuring the Energy Consumption of Distribution Transformers	Subpart K— Distribution Transformers 10 CFR 431.196(b) and (c)	[research required, TP was issued on Apr 27, 2006; revisions currently underway]	Percent efficiency at 50% of nameplate load	Review MEPS and publish by October 1, 2011, either: (1) a determination that standards do not need to be amended, or (2) a NOPR proposing amended standards, and a final rule no later than Oct 1, 2012.

Table A-20. Electric motors

Electric motors							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Three-phase electric motors)	Small and medium three-phase asynchronous motors from 0.55kW-315kW	MEPS plus mandatory and voluntary energy labelling	GB/T 1032-2005	GB 18613-2006	IEC60034-2:1972 IEC 61972-2002 IEEE 112 Method B	Efficiency (%), (output power divided by input power)	

Electric motors

<p>EU (Three-phase electric motors)</p>	<p>Electric single speed, three-phase 50 Hz or 50/60 Hz, squirrel cage induction motor that:</p> <ul style="list-style-type: none"> – has 2 to 6 poles, – has a rated voltage of up to 1000 V, – has a rated output P_N between 0,75 kW and 375 kW, – is rated on the basis of continuous duty operation 	<p>MEPS (2009), from June 2011, motors shall not be less efficient than the IE2 level</p> <p>from January 2015:</p> <p>(i) motors with a rated output of 7,5-375 kW shall not be less efficient than the IE3 efficiency level, as defined in Annex I, point 1, or meet the IE2 efficiency level, as defined in Annex I, point 1, and be equipped with a variable speed drive</p> <p>from 1 January 2017:</p> <p>(i) all motors with a rated output of 0,75-375 kW shall not be less efficient than the IE3 efficiency level, as defined in Annex I, point 1, or meet the IE2 efficiency level, as defined in Annex I, point 1, and be equipped with a variable speed drive</p>	<p>EN 60034</p>	<p>EU Directive: 2005/32/EC and implementing measure 2009/640/EC</p>	<p>IEC 60034-2-1 2007</p> <p>This standard now harmonises the previously different international standards into a single global standard. EN 60034 is now harmonised with it.</p>	<p>Efficiency (%), (output power divided by input power) as a function of output power.</p> <p>IE2 (from June 2011)</p>	<p>MEPS change to IE3 in 2015 with relaxations if VSD fitted</p>
---	--	--	-----------------	--	---	---	--

Electric motors							
India	Three phase squirrel cage induction motor in 2 Pole and 4 Pole for continuous duty (S1) operation at suitable for voltage and frequency variation as per IS 12615:2004 with the following output rating 0.75 kW, 1.1 kW, 1.5 kW, 2.2 kW, 3.7 kW, 5.5 kW, 7.5 kW, 9.3 kW, 11 kW and 15 kW	Voluntary energy labelling	IS 12615: 2004; IS: 4029 – 1967 reaffirmed 2002; IS 325: 1996 including all amendments.	Schedule – 6 Energy Efficient Induction Motors- Three Phase Squirrel Cage	IEC 60034-1 IEC 60038	Efficiency (%), (output power divided by input power)	
Japan	None	None	None	None	None	None	
USA (Electric motors)	1 to 500 horsepower; three phase and three digit frame	MEPS	Appendix B to Subpart B of Part 431 –Uniform Test Method for Measuring Nominal Full Load Efficiency of Electric Motors	Subpart B—Electric Motors 10 CFR 431.25	IEEE Standard 112–1996 Test Method B; NEMA Standards Publication MG1; CSA Standard C390–93 Test Method (1)	Percent efficiency	Test Procedure revisions – Sept 2010 MEPS revision – Dec 2012

Electric motors							
USA (Small electric motors)	a NEMA general purpose alternating current single-speed induction motor, built in a two-digit frame number series in accordance with NEMA Standards Publication MG1-1987, including IEC metric equivalent motors.	MEPS	10 CFR 431.444 Test procedures for the measurement of energy efficiency.	[to be determined]	IEEE Std 112-2004, IEEE Standard Test Procedure for Polyphase Induction Motors and Generators; IEEE Std 114-2001, IEEE Standard Test Procedure for Single-Phase Induction Motors, CSA C747 and CSA C390.	Percent efficiency	MEPS regulation issued in February 2010

Table A-21. Electric pumps

Electric Pumps							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Centrifugal pump for fresh water)	Centrifugal Pump for Fresh Water	MEPS plus voluntary energy labelling	GB/T 3216-2005	GB19762-2007	ISO 2548:1973 ISO 9908: 1993		
EU (Electric pumps)	Electric pumps used for clean water duty	MEPS (expected 2010)	ISO 9906-1999 class 2.	EU Directive: 2005/32/EC and implementing measure (currently under discussion)	ISO 9906-1999	Defined by formulae	Best in class efficiency label under consideration, Further change in MEPS expected 4 years after introduction (all requirements currently under discussion in EU)
EU (Circulators)	Impeller pump 1W- 2500W for use in heating or cooling systems	MEPS (2013)	Fully detailed in the Regulation	EU Directive: 2005/32/EC and implementing measure	Not known	EEL, Fully detailed in the Regulation	MEPs change in 2015

Electric Pumps							
India (Pump sets)	Three phase open well submersible pump sets; Three phase submersible pump sets; Three phase Mono-set pumps. All having 2 poles.	Voluntary energy labelling	IS 9079 : 2002 for Electric Mono set pumps for clear, cold water and water supply purposes, IS 8034: 2002 for Submersible pump sets, IS 14220: 1994 Open well submersible pump sets and IS 11346:2004 for testing purposes of the above mentioned pump sets	Schedule – 7 Pump Sets		Overall efficiency of the pump set is including the efficiency factor for induction motors. The overall efficiency is calculated as per IS 14220:1998, IS 8034:2002 and IS 9079: 2002 for pump sets and IS 12615: 2004, IS: 4029 – 1967, IS 325: 1996 for induction motors	
Japan	None	None	None	None	None	None	
USA	None	None	None	None	None	None	

Table A-22. Electric fans

Electric Fans							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions

Electric Fans							
China (Fans)	Electric fans with blade spans of from 200 to 1800mm	MEPS plus voluntary energy labelling	GB/T 1236-2000 GB/T 10178-2000	GB 197691-2009	ISO 5801-1997 ISO 5802-2001	m ³ /(min·W)	
China (Fans residential)		MEPS plus voluntary energy labelling	GB/T 13380-2007	GB 12021.9-2008	IEC 60879:1986		
China (Range hoods and ventilation fans)	Range Hoods & Electric Ventilation Fans	MEPS plus voluntary energy labelling	IEC 60665: 1980	GB/T 14806-2003	IEC 60665: 1980		
EU (Electric fans)	125W-500kW	MEPS (expected 2010)	ISO 13348:2006	EU Directive: 2005/32/EC and implementing measure (currently under discussion)	ISO 5801,13347 (noise) and 13348:2006	MEL defined by formulae for 8 categories of fans	Further change in MEPS expected 2012, 2020 (all requirements currently under discussion in EU)

Electric Fans							
India (Ceiling fans)	ceiling fans covering 1200mm sweep	Voluntary energy labelling	IS 374: 1979	Schedule – 8 Ceiling Fans All ceiling fans covered under this standard shall comply with minimum Air Delivery of 210 cu m/min	IEC 60879 Test protocol is harmonized with IEC except the air delivery readings are taken up to 15 m/s. The specific values of power input, air delivery and service values are based on the Indian standard since IEC does not specify performance values.	Service value as per IS 374:1979	
Japan	None	None	None	None	None	None	
USA (Ceiling fans)	a non-portable device that is suspended from a ceiling for circulating air via the rotation of fan blades.	MEPS	Appendix U to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Ceiling Fans	10 CFR 430.32(s)	EPA's "ENERGY STAR Testing Facility Guidance Manual: Building a Testing Facility and Performing the Solid State Test Method for ENERGY STAR Qualified Ceiling Fans," Version 1.1, December 9, 2002	Design requirements	

Table A-23. Standby power, external power supplies and electronics

Standby Power, External Power Supplies and Electronics							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Standby)	None	None	None	None	None	None	
EU (Standby)	Horizontal requirements applicable to electrical and electronic household and office equipment.	MEPS (2009)	To be determined by CENELEC	EU Directive: 2005/32/EC and implementing measure	Not known	1W (reactivation function), 2W (information/status display (can be combined with reactivation function)). Off or standby mode must be provided	MEPs change in 2013 and power management requirements introduced
India (Standby)	None	None	None	None	None	None	
Japan (Standby)	None	None	None	None	None	None	

Standby Power, External Power Supplies and Electronics							
USA (Standby)	For the US, standby is incorporated into each product's test procedure and is taken into account in each MEPS regulation.	MEPS	See various product test procedures	See various products MEPS	Often bespoke, but based on IEC 62301	Varies	Will continue to be updated and revised, along with TPs and MEPS.
China (External Power Supplies)	single voltage external AC-DC and AC-AC power supplies	MEPS plus voluntary energy labelling	GB20943-2007 appendix	GB20943-2007	NA		
EU (External power supplies)	Single output (AC or DC) external power supplies with an output power up to 250 W (@<6v, >550ma)	MEPS (2009) corresponding to US Federal Regs (2008)	To be determined by CENELEC	EU Directive: 2005/32/EC and implementing measure	Energy Star	Measure no load then efficiency at 25%, 50%, 75% and 100% rated output	2 nd stage corresponding to Energy Star Version 2 in 2011
India (External power supplies)	None	None	None	None	None	None	
Japan (External power supplies)	None	None	None	None	None	None	

Standby Power, External Power Supplies and Electronics							
USA (External power supplies)	Class A External Power Supply ¹¹	MEPS	Appendix Z to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of External Power Supplies	10 CFR 430.32(w)	EPA/CEC "Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies," August 11, 2004	Measurement of no-load mode (in watts) and active mode (in percent efficiency).	TP due July 2011 MEPS update due July 2011
USA (External power supplies)	Non-Class A External Power Supply	MEPS	Appendix Z to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of External Power Supplies	(No MEPS rulemaking unless Determination is positive)	EPA/CEC "Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies," August 11, 2004	(No MEPS rulemaking unless Determination is positive)	Determination due Dec 2009 TP due July 2011

¹¹ Class A external power supply (1) Means a device that— (i) Is designed to convert line voltage AC input into lower voltage AC or DC output; (ii) Is able to convert to only one AC or DC output voltage at a time; (iii) Is sold with, or intended to be used with, a separate end-use product that constitutes the primary load; (iv) Is contained in a separate physical enclosure from the end-use product; (v) Is connected to the end-use product via a removable or hard-wired male/female electrical connection, cable, cord, or other wiring; and (vi) Has nameplate output power that is less than or equal to 250 watts; (2) But, does not include any device that— (i) Requires Federal Food and Drug Administration listing and approval as a medical device in accordance with section 513 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 360(c)); or (ii) Powers the charger of a detachable battery pack or charges the battery of a product that is fully or primarily motor operated.

Standby Power, External Power Supplies and Electronics							
USA (Battery Chargers)	A device that charges batteries for consumer products, including battery chargers embedded in other consumer products.	MEPS	Appendix Y to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Battery Chargers	Under development.	Under development.	Under development.	TP due July 2011 MEPS due July 2011

Table A-24. PCs, Monitors and ICT

PCs, Monitors and ICT							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Computers)	Desktop computers and PCs	MEPS and voluntary energy label under development	NA	CCEC/T22-2003 under development	NA	NA	
China (Monitors)	Computer monitors (CRTs and LCDs)	MEPS plus mandatory and voluntary energy labelling	GB 21520-2008 annex GB/T 4288-1992	GB 21520-2008; CCEC/T23-2003	NA	Power per unit resolution area (m2nit/W) and luminous efficacy (cd/W) and standby power (W)	
China (Copiers)	Copying machines of less than 16A input current	MEPS plus mandatory and voluntary energy labelling	GB 21521-2008 GB/T 10992.1-2008 GB/T 10992.2-2008	GB 21521-2008	NA	Typical energy consumption (kWh), defined through a duty cycle of energy use under different modes (off, active, ready, sleep, auto- off) and standby power (W)	

PCs, Monitors and ICT							
China (Fax machines)	Fax machines	MEPS (awaiting adoption) and voluntary energy labelling	CCEC/T24-2003 appendix	CCEC/T24-2003	USB,IEEE1394; ISO/IEC8360:2007 ISO/IEC 10561:1999	Typical energy consumption (kWh) (defined through a duty cycle of energy use under different modes (off, active, ready, sleep, auto-off) and standby power (W)) per unit speed	
China (Printers)	Printers	MEPS (awaiting adoption) and voluntary energy labelling	CCEC/T18-2003 appendix	Awaiting adoption	USB, IEEE1394; ISO/IEC 28360:2007	Typical energy consumption (kWh) (defined through a duty cycle of energy use under different modes (off, active, ready, sleep, auto-off) and standby power (W)) per unit speed	
China (MFDs)	Multi-function devices	Voluntary energy labelling		CSC/T31-2006	NA	NA	
China (Servers)	Computer servers	Under development		Under development			

PCs, Monitors and ICT

<p>EU (Imaging equipment)</p>	<p>Copiers, faxes, printers, scanners, multifunctional devices</p>	<p>Currently under review in EU</p>		<p>Regulation (EC) No 2422/2001 of the European Parliament and of the Council of 6 November 2001 on a Community energy efficiency labelling programme for office equipment</p>			
--	--	-------------------------------------	--	--	--	--	--

PCs, Monitors and ICT							
EU (Computers)	Personal computers (desktops and laptops) and computer monitors	Currently under review in EU		Regulation (EC) No 2422/2001 of the European Parliament and of the Council of 6 November 2001 on a Community energy efficiency labelling programme for office equipment			
				(Eco-labelling) Regulation (EC) No. 1980/2000			

PCs, Monitors and ICT

<p>Japan (Computers)</p>	<p>Digital central processing units (CPUs) and personal computers (PCs) stipulated by the Japan Standard</p> <p>Commodity Classification, except the following:</p> <p>1) ones whose processing units, main memory units, input/output controllers and power supplies are structurally multiplexed, 2) ones whose theoretical operation* is 50,000 MTOPS or more, 3) ones capable of computation using a processing unit composed of over 256 processors, 4) ones with 512 or more input/output signal transmission channels (limited to those whose maximum data transfer rate is 100 megabit or more per second), 5) ones whose theoretical operation is less</p>	<p>Top Runner requirements and mandatory (binary type) energy label</p>	<p>NA</p>	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2007 and each subsequent FY.</p>	<p>NA</p>	<p>Value obtained by driving average power consumption (W) in idle state and in low power mode, by theoretical operation (MTOPS).</p>	
-------------------------------------	---	---	-----------	---	-----------	---	--

PCs, Monitors and ICT							
Japan (Magnetic hard disks)	<p>Magnetic disk units stipulated by the Japan Standard Commodity Classification, except the following:</p> <p>1) ones whose memory capacity is less than 1 GB, 2) ones whose disks size is less than 40 mm in diameter, and 3) ones whose maximum data transfer rate is over 70 GB/second</p>	Top Runner requirements and mandatory (binary type) energy label	NA	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2007 and each subsequent FY.	NA	Energy consumption efficiency is a numeric value obtained by dividing power consumption (W) by memory capacity (GB).	

PCs, Monitors and ICT							
Japan (Copiers)	<p>Dry process, indirect electrostatic copying machines mainly used at offices, except the following:</p> <p>1) ones capable of color copying, 2) ones capable of copying onto A2 or larger paper, 3) ones capable of copying 86 sheets or more per minute, 4) ones structurally combined with printing device, and 5) ones structurally combined with facsimile device</p>	Top Runner requirements and mandatory (binary type) energy label	EnergyStar	Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2006 and each subsequent FY.	EnergyStar	<p>Energy consumption efficiency E (Wh) is a numeric value calculated with the following formula:</p> $E = (A+7_B) / 8.$ <p>Here, "A" indicates energy consumption (Wh), which is measured for one hour after the machine is turned on. "B" indicates energy consumption (Wh), which is measured for another one hour after the measurement of "A".</p>	
USA		10 CFR 430.32(b)			EnergyStar		

Table A-25. TVs and home entertainment equipment

TVs and Home Entertainment Equipment							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Televisions)	Colour televisions	MEPS and voluntary energy labelling	GB/T 17309.1-1998	GB 12021.7-2005 replaces GB 12021.7-1989	IEC 62087-2008		
China (Flat screen Televisions)	Flat screen televisions (both LCD and Plasma)	MEPS and voluntary energy labelling (under development)	GB/T 8170-2008; GB/T 14857; GB/T 17309.1-1998; GB 20943 ; SJ/T 11324-2006; SJ/T 11339-2006; SJ/T 11343-2006; SJ/T 11348-2006;	Under development	IEC 62087-2008	Energy efficiency index based on a duty cycle that includes the operating efficiency of the screen (cd/W) and standby power W (different thresholds apply for LCD and plasma TVs) compared with an average model	

TVs and Home Entertainment Equipment							
China (Digital set top boxes)	Simple DTA type	MEPS under development, voluntary energy labelling		Under consideration	ISO/IEC 13818-1: 1996 ITU-TH.262:1995 IEC 62087-2008		
China (VCRs and DVDs)	VCRs and/or DVDs	Voluntary energy labelling	US EnergyStar, EU Energy Star	CCEC/T25-2003	US EnergyStar, EU Energy Star		
EU (Televisions)	Products designed primarily for the display and reception of Audio visual signals. May include additional components for data storage and/or display	Labelling and MEPS (2012)	To be determined by CENELEC	EU Directive: 2005/32/EC and implementing measure	IEC62087-2008	EEI based on energy per screen area	MEPs change in 2013/14 and 2017
EU (Digital set top boxes)	Digital conversion (simple DTA type)	MEPS (2010)	To be determined by CENELEC	EU Directive: 2005/32/EC and implementing measure	Not known	Power consumption by standby and active modes	Auto shut down from 2011, MEPs change in 2013, complex boxes to be covered at a later date

TVs and Home Entertainment Equipment							
India (Televisions)	Colour television including CRT, LCD and Plasma technologies being manufactured, imported, or sold in India for household and similar use	Voluntary energy labelling	IS 13384 (Part 1):1992 IS 13384 (Part 2):1997 IEC 62301, Ed 1.0 Draft IEC 62087, Ed 2.0	Schedule-11 Colour Televisions	IEC 62301, Ed 1.0: Household Electrical Appliances – Measurement of Standby Power Draft IEC 62087, Ed 2.0: Methods of Measurement for the Power Consumption of Audio, Video and Related Equipment, Section 11, “Measuring conditions of television sets for On (average) mode.”	Energy consumption (kWh/year) as a function of screen area	
India (Digital set top boxes)	None	None	None	None	None	None	

TVs and Home Entertainment Equipment

<p>Japan (Televisions)</p>	<p>CRT, LCD, or plasma TV sets except:</p> <p>1) ones for industrial use, 2) CRT sets with a horizontal frequency exceeding 33.8 kHz</p> <p>supporting multi-scanning, 3) ones intended for visitors from overseas, 4) ones of rear projection type, 5) ones of 10 size, 10 V size or less, 6) ones of wireless type, 7) LCD TV sets without direct-view-type</p> <p>fluorescent-tube backlighting, 8) plasma TV sets having 1080 or more pixels in the vertical direction and 1920 or more pixels in the horizontal direction, and 9) computer displays having TV broadcast receiving function.</p>	<p>Top Runner requirements and mandatory (binary type) energy label</p>	<p>JIS C6101-1 (1998) for CRT on mode</p> <p>IEC62087 Ed.2.0 for LCD and Plasma TV on mode</p>	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by FY 2003 for CRT sets and FY 2008 for LCD and plasma TV sets.</p>	<p>IEC62087 Ed.2.0 for LCD and Plasma TV on mode</p> <p>IEC 62087:2008</p>	<p>Energy consumption efficiency is annual energy consumption (kWh/year) that is measured based on the assumption that a TV set operates for 4.5 hours per day and stays in standby mode for the rest</p>	
---------------------------------------	--	---	--	---	--	---	--

TVs and Home Entertainment Equipment							
Japan (DVD recorders)	<p>DVD recorders that run on alternating current, except the followings:</p> <p>1) ones for industrial use, 2) ones without video cassette recorder (VCR) or magnetic disk unit (HDD), 3) ones having game function, 4) ones having server function, and 5) ones whose laser beam used to write to or read from an optical disc has a wavelength of 600 nanometers or shorter (next generation recording equipment (Blue-ray disk recorders and HD DVD recorders)).</p>	Top Runner requirements and mandatory (binary type) energy label	Defined in the regulation	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by a target FY as follows. (1) Non DTB ([Digital Terrestrial Broadcasting) capable DVD recorders: FY 2008 and each subsequent fiscal year</p> <p>(2) DTB-capable DVD recorders: FY 2010 and each subsequent fiscal year</p>	None	<p>Energy consumption efficiency is annual energy consumption (kWh/year) obtained as follows. First, each of standby power, power consumption when operating DVD, VCR or HDD, and power consumption when acquiring EPG (electronic program guide) is multiplied by respective annual standby/operation hours, and then the resulting values are added together to obtain annual energy consumption</p>	

TVs and Home Entertainment Equipment

<p>Japan (VCRs)</p>	<p>Video cassette recorders that run on alternating current, except the following: 1) ones for industrial use, 2) ones that process electronic audio and video signals in digital form, 3) ones that process electronic signals with 1,125 or more scanning lines, 4) ones structurally equipped only with playback functions, and 5) ones having built-in digital broadcasting receivers</p>	<p>Top Runner requirements and mandatory (binary type) energy label</p>	<p>Defined in the regulation</p>	<p>Top Runner programme. Manufacturer's products are required to reach a fleet average efficiency level by 2003 and each subsequent FY.</p>	<p>None</p>	<p>Energy consumption efficiency is a numeric value obtained as follows. First, the difference in standby power (W) between with (clock, etc.) display ON and OFF is multiplied by 0.2, and then the result is subtracted from standby power with (clock, etc.) display ON to obtain energy consumption efficiency</p>	
<p>USA (Televisions)</p>		<p>10 CFR 430.32(b)</p>					
<p>USA (Digital set top boxes)</p>							

Table A-26. Other products

Other Products							
Economy/ Product	Scope	Program	Test Method	Regulation	Test Method Origin (harmonisation)	Energy Efficiency Metric	Future Directions
China (Air compressors)	Displacement air compressors	MEPS and voluntary energy labelling	GB/T 3853-1998	GB 19153-2009 GB 19153-2009	ISO 1217:1996	NA	
China (Irons)	Electric irons	MEPS		GB10154-1998; GB12021.5-1989	NA		
China (Radios)	Radio Receiver/Recorder	MEPS		GB 12021.8-1989	NA		
China (Showerheads)	Showerheads	Voluntary energy labelling					
China (Water dispensers)	Water dispensers	MEPS (under development); Mandatory and voluntary energy labelling	CSC/T42-2006 appendix	CSC/T42-2006			

Other Products							
China (AC contactors)		MEPS and mandatory energy labelling	GB 21518-2008	GB 21518-2008			
EU (Industrial and laboratory furnaces and ovens)		*Currently on EU indicative list working plan					
EU (Machine tools)		*Currently on EU indicative list working plan					
EU (Network, data processing and data storing equipment)		*Currently on EU indicative list working plan					
EU (Sound and imaging equipment)		*Currently on EU indicative list working plan					

Other Products							
EU (Water-using equipment)		*Currently on EU indicative list working plan					
USA (Dehumidifier)	a self-contained, electrically operated, and mechanically refrigerated encased assembly consisting of—(1) A refrigerated surface (evaporator) that condenses moisture from the atmosphere; (2) A refrigerating system, including an electric motor; (3) An air-circulating fan; and (4) Means for collecting or disposing of the condensate.	MEPS	Appendix X to Subpart B of Part 430 --Uniform Test Method for Measuring the Energy Consumption of Dehumidifiers	10 CFR 430.32(v)	Section 4, "Test Criteria," of EPA's "ENERGY STAR Program Requirements for Dehumidifiers," effective January 1, 2001	Minimum energy factor (liters/kWh)	New MEPS standard becomes applicable on Oct 2012. Test Procedure for dehumidifier standby and off-mode due Mar 2011.

* These product areas may be further subdivided when the EC initiates preparatory studies