

APPENDIX B

FY2005 DRAFT PRIORITY-SETTING DATA SHEETS FOR:

- 1) EXISTING COVERED PRODUCTS, AND**
- 2) PRODUCTS IN THE COVERAGE PROCESS AND/OR IN PENDING LEGISLATION**

**APPLIANCE STANDARDS
BUILDING TECHNOLOGIES PROGRAM
U. S. DEPARTMENT OF ENERGY**

April 2004

Table of Contents (Existing Covered Products)

Product	Rulemaking	Priority	Page
Clothes Dryers (Residential) – (Gas/Electric)	Standards	Low	1
Clothes Dryers (Residential) – (Gas/Electric)	Test Procedure	Low	2
Clothes Washers (Residential)	Standards	Low	3
Clothes Washers (Residential)	Test Procedure	Low	4
Combination Appliances	Standards	Low	5
Combination Appliances	Test Procedure	Low	8
Commercial Air-Cooled Central Air Conditioners and Air-Source Heat Pumps, 65-240 kBtu/hr	Standards	High	9
Commercial Air-Conditioners and Heat Pumps	Test Procedure	High	10
Commercial Air-Cooled Central A/C & Heat Pump, 3 phase <65 kBtu/hr	Standards	High	11
Commercial Furnaces	Standards	Low	12
Commercial Furnaces	Test Procedures	High	13
Commercial Oil and Gas-Fired Packaged Boilers	Standards	High	14
Commercial Oil and Gas-Fired Packaged Boilers	Test Procedures	High	15
Commercial Water-Cooled A/C & Water-Source Heat Pumps	Standards	Low	16
Commercial Water Heaters	Standards	Low	17
Commercial Water Heaters	Test Procedure	High	18
Cooking Products – Gas & Electric Ranges (Ovens and Cooktops) and Microwave Ovens	Standards	Low	19
Cooking Products – Gas & Electric Ranges (Ovens and Cooktops) and Microwave Ovens	Test Procedure	Low	20
Direct Heating Equipment including Vented Hearth Products (Gas)	Standards	Low	21
Direct Heating Equipment including Vented Hearth Products (Gas)	Test Procedure	Low	22
Dishwashers (Residential)	Standards	Medium	23
Dishwashers (Residential)	Test Procedure	Low	24
Distribution Transformers	Standards	High	25
Distribution Transformers	Test Procedures	High	26
Electric Motors, 1-200 HP	Standards	Low	27
Electric Motors, 1-200 HP	Test Procedure	Low	28
Fluorescent Lamp Ballasts	Standards	Low	29
Fluorescent Lamp Ballasts	Test Procedure	Low	30
High Intensity Discharge Lamps	Determination	High	31
High Intensity Discharge Lamps	Test Procedure	Low	32
Lamps, Fluorescent	Standards	Low	33
Lamps, Fluorescent	Test Procedure	Low	34

Table of Contents (Existing Covered Products)

Product	Rulemaking	Priority	Page
Lamps, Incandescent General Service	Standards	Low	35
Lamps, Incandescent General Service	Test Procedure	Low	36
Lamps, Incandescent Reflector (Regulated)	Standards	Low	37
Lamps, Incandescent Reflector	Test Procedure	Low	38
Packaged Terminal A/C & Heat Pumps	Standards	High	39
Plumbing Fixtures/Fittings	Standards	Low	40
Plumbing Fixtures/Fittings	Test Procedure	Low	41
Pool Heaters, Gas	Standards	Low	42
Pool Heaters, Gas	Test Procedure	Low	43
Refrigerators and Refrigerator-Freezers, Freezers, and Compact Refrigerators	Standards	Low	44
Refrigerators and Refrigerator-Freezers, Freezers, and Compact Refrigerators	Test Procedure	Low, med for compacts	46
Residential Central A/C & HP (including Space-Constrained Products)	Standards	Low	47
Residential Central A/C & HP (including Space-Constrained Products with the Exception of Ductless)	Test Procedure	High	49
Residential Central Air Conditioners & Heat Pumps (Ductless)	Test Procedure	Medium	50
Residential Furnaces and Boilers	Standards	High	51
Residential Furnaces and Boilers	Test Procedure	Low	52
Residential Water Heaters – Gas, Oil & Electric	Standards	Low	53
Residential Water Heaters – Gas, Oil & Electric	Test Procedure	Low	54
Room Air Conditioners	Standards	Low	55
Room Air Conditioners	Test Procedure	Low	56
Single-Packaged Vertical Units (SPVU)	Standards	High	57
Small Electric Motors	Determination	High	58
Small Electric Motors	Test Procedure	Low	59
Tankless Gas-Fired Instantaneous Water Heaters	Standards	High	60

Table of Contents (In Coverage Process and/or In Pending Legislation)

Product	Rulemaking	Priority	Page
Battery chargers / external power supplies	Pending Legislation	Not specified	61
Battery chargers / external power supplies	Test Procedure	Not specified	62
Beverage Merchandisers and Beverage Vending Machines	Coverage (and Pending Leg.)	High	63
Ceiling Fans	Coverage (and Pending Leg.)	High	64
Commercial Reach-In Refrigerators, Freezers, and Refrigerator-Freezers	Coverage (and Pending Leg.)	High	65
Gas Unit Heaters / Gas Duct Furnaces	Pending Legislation	Not Specified	66
Illuminated Exit Signs	Pending Legislation	Not Specified	67
Lamps, Incandescent Reflector – ER/BR shaped	Coverage	High	69
Residential Furnace Fans	Pending Legislation	Not specified	71
Residential Furnace Fans	Test Procedure	Not specified	72
Torchieres	Coverage (and Pending Leg.)	High	73
Torchieres	Test Procedure	High	75
Traffic Signal Modules	Pending Legislation	Not Specified	76
Traffic Signal Modules	Test Procedure	Not Specified	78
Large Unitary Air Conditioners (≥ 240 kBtu/hr)	Previously unevaluated product	Not Applicable	79

Standards

Product: Clothes Dryers (Residential) - (Gas/Electric)

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 – 2035	Heat Pump Elec. Dryer (5.7 EF) = 4.8 ¹ Microwave Elec. Dryer (3.5 EF) = 1.6 Modulating Gas Dryer (2.8 EF) = 0.06 Heat Pump Electric Dryer (5.2 EF) = 4.5
Potential Economic Benefits/Burdens	Not available
Potential Environmental or Energy Security Benefits	Not available
Status of Required Changes to Test Procedures	Reduced annual cycles need to be considered, definitions and creation of new product class for condensing dryers.
Other Regulatory Actions	DOE regulation of clothes washers. DOE regulation of white goods for full line manufacturers.
Recommendations by Interested Parties	There appears to be a general consensus among stakeholders that updating clothes dryer standards should be given low priority.
Evidence of Market-Driven or Voluntary Efficiency Improvements	At least three U.S. manufacturers are marketing high efficiency clothes washers, which are likely to have improved moisture extraction.
Issues	Significant dryer savings potential has been considered in clothes washer rulemaking (greater moisture extraction). Mechanical extraction has been estimated to be much more cost-effective than thermal extraction. New electric dryers advertise 30% reduction in energy usage.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue rulemaking in the next year. Work would be limited to basic technology investigation and monitoring of voluntary programs.
Rationale for Priority Level	Interested parties believe this is a low priority product. Other DOE standards will impose cumulative burden on white goods manufacturers.

¹ All estimates are based on the FY'03 prioritization analysis, with a small adjustment for the 2010-2035 timeframe assumed here.

Test Procedure

Product: Clothes Dryers (Residential) - (Gas/Electric)

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure needs to be changed if there is to be a new standard.
Priority of Standard	Low
International or Other Coordinating Activities	Canadian Standards Association (CSA) has conducted specialized dryer tests and has asked DOE to consider revisions to the test procedure.
Recommendation by Interested Parties	
Statutory Deadline	
Issues	A new product class needs to be defined for condenser dryers; currently there is one waiver in effect. Numerous changes that are required prior to a standards rulemaking for clothes dryers, including the investigation of the same test cloth issues as for the clothes washer rulemaking.

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue the test procedure further in the next year.
Rationale for Priority Level	Considered to be a low priority by stakeholders.

Standards

Product: Clothes Washers (Residential)

Priority: Low

Factors for Priority Setting	Assessment
Energy Savings from Regulatory Action; Cumulative (Quads) 2004-2030	The Final Rule energy savings equal 5.5 quads over 2004-2030. These estimated savings will be achieved through the 2001 Final Rule and do not represent additional potential savings from further regulatory action. Required MEF of 1.04 in 2004 and 1.26 in 2007.
Potential Economic Benefits/Burdens	The Net Present Value (NPV) is \$15.3 billion cumulative from 2004 to 2030 in 1997 dollars.
Potential Environmental or Energy Security Benefits	For period 2004- 2030, 95 million metric tons of carbon and 254 thousand metric tons of NO _x .
Status of Required Changes to Test Procedures	Final Rule issued January 12, 2001. Changes to the test procedure were incorporated into the standards rulemaking.
Other Regulatory Actions	DOE regulation of clothes dryers. DOE regulation of white goods for full line manufacturers.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	Consortium for Energy Efficiency program with utilities. Energy Star program. Federal Energy Management Program for procurement initiative. At least three U.S. manufacturers are marketing high efficient clothes washers.
Issues	
FY 2003 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	Final Rule - January, 2001
Rationale for Priority Level	Final Rule published January 12, 2001.

Test Procedure

Product: Clothes Washers (Residential)

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard Priority of Standard International or Other Coordinating Activities Recommendation by Interested Parties Statutory Deadline Issues	<p>Test Procedure was changed as part of the standards rulemaking.</p> <p>Low</p> <p>As part of the January 12, 2001 standards final rule, the Department included revisions to the test procedure dealing with the energy test cloth. In the October 31, 2003 direct final rule, the Department modified the procedure for developing the correction factors for new production lots of energy test cloth by replacing the extractor test points at 50 g with 100 g test points.</p>

Proposed Schedule and Rationale

Proposed Schedule Rationale for Priority Level	
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Standards

Product: Combination Appliances (Residential) - (Gas/Electric)

Priority: Low

Factors for Priority Setting	Assessment					
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2010 – 2035	Type I: Oil boiler w/ tankless coil		Type II: Gas water heater w/ fan-coil		Total energy savings (quad)	
	Combination Appliances	CAE ²	Energy savings (quad)	CAE		Energy savings (quad)
	Baseline	0.78	--	0.69	--	--
	Mid efficiency	0.82 (more insulation)	0.06	0.70 (more insulation)	0.01	0.07
	High efficiency	0.85 (sub-condensing oil boiler)	0.09	0.83 (condensing water heater)	0.16	0.25
Potential Economic Benefits/Burdens	Mid Efficiency total: +0.00 B \$US (NPV) High Efficiency total: -0.68 B \$US (NPV)					
Potential Environmental or Energy Security Benefits	Not available					
Status of Required Changes to Test Procedures	ASHRAE 124 (2004) is under review by ASHRAE; once this review is complete, DOE can adopt the procedure. The current update introduced several changes (for example the water heater function of larger size water heaters is tested under SPC 118.1(the commercial boilers test procedure) instead of under SPC 118.2(the residential boilers test procedure)).					
Other Regulatory Actions	DOE regulation of residential furnaces and boilers; combination appliances are an additional class, and ~ 40% of the energy savings potential may overlap with the oil boilers furnace class (a component of Type I combination appliances). DOE regulation of water heaters, the new rule became effective on 1/20/2004.					
Recommendations by Interested Parties	Large manufacturers and energy advocates favor regulation of these appliances, to avoid product switching from more stringently regulated furnaces and boilers toward unregulated combination appliances; one small combi manufacturer believes that combi systems are already regulated as water heaters and boilers, that imposition of more stringent standards would be burdensome, and that significant savings are not available.					
Evidence of Market-Driven or Voluntary Efficiency Improvements	Several manufacturers are marketing high efficiency oil boilers (at or above 86% AFUE); recently, one major manufacturer discontinued their highest efficiency model. Almost all water heaters models (after 1/2004) are at efficiency levels which matches or exceeds the mid-efficiency level considered for this analysis.					
Issues	Lack of a combination appliance standard may allow sales of low efficiency versions of water heaters and boiler products by calling them combination appliances, as baseline combination appliances can be less efficient than the individual appliances they replace.					

² Combined Annual Efficiency (CAE) is calculated per ASHRAE 124 (2004).

	Labeling of an appliance for combination use may not be effective because the unit is field assembled and enforcement is problematic.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue rulemaking in the next year. Work would be limited to basic technology investigation and monitoring of voluntary programs.
Rationale for Priority Level	Interested parties believe this is a low priority product. Other DOE standards will impose cumulative burden on HVAC manufacturers.

Background Material

NCI and LBNL jointly created a straw-man estimate of the current combination appliance market to estimate potential energy savings and approximate net present value. Further refinements are possible in the future if warranted.

Description	Value	Comments/Source
Type I Baseline Definition	80% AFUE, 140kBTU Oil Boiler, .49 EF	GAMA comments, Furnace and Boiler rulemaking, oil boiler class, 2002; EF rating estimated from tank size, 2000 Water Heater Final Rule.
Mid Efficiency Unit Definition	84% AFUE (baffles, higher HX area), combined with 2" of insulation of the tank, .54 EF	Space heating function: Generally available mid-efficiency unit, special vent not generally required. Water heating function: 2000 Water Heater Final Rule, slightly higher than 2000 standard level.
High Efficiency Unit Definition	86% AFUE (higher HX area), combined with 2" of insulation of the tank, w/ stainless steel vent, .57 EF	Space heating function: Condensing not generally available in the market; 86% AFUE units are, with SS vent required. Water heating function: 2001 Water Heater rule
Annual Sales Volume	70% of total oil boiler sales, 90,000 units per year	Oil boilers market : assumed 100% retrofits. Oil boiler shipments – 130,000 (Appl.Magazine 2003). Oil-fired water heaters – 40,000 (2000 water heaters rule). The differential assumed to represent the combination appliances market.
Lifetime	18 Years	Appliance Magazine, 2001, p 58-9.
Product Cost Delta	+\$123 (Mid), +\$925 (High)	NCI Estimate. Based on insulation qty & price, HX area increase, and stainless steel vent costs (including installation).
Type II Baseline Definition	75 Gallon/ 75kBTU Gas Water Heater combined with fan-coil, .52 EF	Equivalent to the largest residential water heater size (GAMA). EF rating estimated from tank size, 2000 Water Heater Final Rule.
Mid Efficiency Unit Definition	2" increased water heater insulation, .54 EF	2000 Water Heater Final Rule, slightly higher than 2004 standard level.
High Efficiency Unit Definition	Condensing Gas Water Heater w/ new plastic vent, .86 EF	"Market Disposition of High-Efficiency Water Heating Equipment", Arthur D. Little, Inc., 1996.
Annual Sales Volume	100,000 units per year	Estimate that the lowest range from GRI's shipment forecast is appropriate, based on industry contacts (GRI Report GRI-00/0042, "Low Capacity Gas-Fired Space Heating Assessment: Final Technical Report", July 2001). Uncertainty is high, as the GRI Report indicates that due to unfamiliarity and local code restrictions, market penetration is currently limited. If full penetration is achieved, shipments could reach 500,000 units per year, with proportionally higher energy savings.
Product Lifetime	9 years	2001 Water Heater rule
Product Cost Delta	+\$108 (Mid), +\$715 (High)	NCI Estimate. Based on insulation qty & price, added SS heat exchanger and plastic vent (+ installation)
Energy Calculation Parameters	R = .71 214 Heating Days 64.3 Gallons/hour water load	ASHRAE 124 (2004) ASHRAE 124 (2004) test National average water load, 2000 Water Heater Final Rule
Discount Rate	7%	2000 Water Heater Final Rule

Test Procedure

Product: Combination Appliances (Residential) - (Gas/Electric)

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure needs to be developed if there is to be a new standard.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	Large manufacturers would like DOE to adopt ASHRAE 124 (2002); one small manufacturer is opposed to this.
Statutory Deadline	
Issues	ASHRAE is in an advanced stage of revising ANSI/ANRAE 124/1991 "Methods of Testing for Rating Combination Space-Heating and Water-Heating Appliances", and the new version of the test procedure standard may be published in October 2004. Subsequently DOE could adopt the test procedure by referencing ASHRAE 124-2004.

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue test procedure until ASHRAE approves the newly updated ASHRAE 124-2004.
Rationale for Priority Level	Given low level of potential savings, low level test priority should continue until ASHRAE fully adopts ASHRAE 124-2004.

Standards

Product: Commercial Air-Cooled Central Air Conditioners and Air-Source Heat Pumps,
65-240 kBtu/hr³

Priority: High

Factors for Priority Setting	Assessment												
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2008-2035⁴	Commercial Air-Cooled Air Conditioners Only: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>≥65 and <135 kBtu/hr</u></td> <td style="text-align: center;"><u>≥135 and <240 kBtu/hr</u></td> </tr> <tr> <td style="text-align: center;">10.5 EER: 0.39</td> <td style="text-align: center;">10.0 EER: 0.31</td> </tr> <tr> <td style="text-align: center;">11.0 EER: 0.70</td> <td style="text-align: center;">10.5 EER: 0.53</td> </tr> <tr> <td style="text-align: center;">11.5 EER: 0.98</td> <td style="text-align: center;">11.0 EER: 0.79</td> </tr> <tr> <td style="text-align: center;">12.0 EER: 1.08</td> <td style="text-align: center;">11.5 EER: 1.02</td> </tr> <tr> <td></td> <td style="text-align: center;">12.0 EER: 1.09</td> </tr> </table>	<u>≥65 and <135 kBtu/hr</u>	<u>≥135 and <240 kBtu/hr</u>	10.5 EER: 0.39	10.0 EER: 0.31	11.0 EER: 0.70	10.5 EER: 0.53	11.5 EER: 0.98	11.0 EER: 0.79	12.0 EER: 1.08	11.5 EER: 1.02		12.0 EER: 1.09
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12.0 EER: 1.08	11.5 EER: 1.02												
	12.0 EER: 1.09												
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2001) 2008-2035⁵	Commercial Air-Cooled Air Conditioners Only: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>≥65 and <135 kBtu/hr</u></td> <td style="text-align: center;"><u>≥135 and <240 kBtu/hr</u></td> </tr> <tr> <td style="text-align: center;">10.5 EER: 0.57</td> <td style="text-align: center;">10.0 EER: 0.51</td> </tr> <tr> <td style="text-align: center;">11.0 EER: 0.93</td> <td style="text-align: center;">10.5 EER: 0.83</td> </tr> <tr> <td style="text-align: center;">11.5 EER: 1.08</td> <td style="text-align: center;">11.0 EER: 1.12</td> </tr> <tr> <td style="text-align: center;">12.0 EER: 1.02</td> <td style="text-align: center;">11.5 EER: 1.24</td> </tr> <tr> <td></td> <td style="text-align: center;">12.0 EER: 1.20</td> </tr> </table>	<u>≥65 and <135 kBtu/hr</u>	<u>≥135 and <240 kBtu/hr</u>	10.5 EER: 0.57	10.0 EER: 0.51	11.0 EER: 0.93	10.5 EER: 0.83	11.5 EER: 1.08	11.0 EER: 1.12	12.0 EER: 1.02	11.5 EER: 1.24		12.0 EER: 1.20
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10.5 EER: 0.57	10.0 EER: 0.51												
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12.0 EER: 1.02	11.5 EER: 1.24												
	12.0 EER: 1.20												
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed.												
Status of Required Changes to Test Procedures	DOE plans to publish a Final Rule to incorporate test procedures similar to those referred to in ASHRAE Standard 90.1 into the CFR in FY 2005.												
Other Regulatory Actions	Possible State and regional environmental regulation (e.g. air quality).												
Recommendations by Interested Parties													
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.												
Issues	Immediate adoption of ASHRAE 90.1-1999 standards are estimated to save 0.5 quad from 2008-2035 with a cumulative NPV of 0.9 billion \$2001. DOE is considering higher efficiency standards due to greater energy savings potential.												
FY 2004 Priority	High												

Proposed Schedule and Rationale

Proposed Schedule	DOE initiated a rulemaking in FY 2002. The Department expects to publish a notice in FY 2004.
Rationale for Priority Level	Energy savings are significant.

³ DOE is currently performing an analysis of impacts of standards including energy savings, life-cycle cost, national net-present-value, and engineering analyses.

⁴ Energy savings based on the [Commercial Unitary Air Conditioner National Energy Savings](http://www.eere.energy.gov/buildings/appliance_standards/commercial/ac_hp.html) spreadsheet. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/commercial/ac_hp.html

⁵ Economic impacts based on the Commercial Unitary Air Conditioner National Energy Savings spreadsheet.

Test Procedure

Product: Commercial Air Conditioners & Heat Pumps (DOE accepts ASHRAE 90.1-1999 test procedures for all commercial air conditioner and heat pump products.)

Priority: High

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Standards set by EPACT have been amended upon revision of ASHRAE 90.1 as of January 12, 2001.
Priority of Standard	Low for most products.
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final Rule should be published in FY 2004.
Rationale for Priority Level	2004 Priority Setting

Standards

Product: Commercial Central Air Conditioners and Heat Pumps, 3 phase, <65 kBtu/hr
Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2004 - 2030	Energy Savings: ⁶ SEER 12 standard level = 2.17 SEER 13 standard level = 2.9
Potential Economic Benefits/Burdens	NPV, billions of \$1998: SEER 12 = 1.1 SEER 13 = (0.71)
Potential Environmental or Energy Security Benefits	Carbon emissions reduction: SEER 12 = 34 million tons SEER 13 = 43 million tons
Status of Required Changes to Test Procedures	DOE plans to publish a Final Rule to incorporate test procedures similar to those referred to in ASHRAE Standard 90.1 into the CFR in FY 2005.
Other Regulatory Actions	The California Energy Commission has energy efficiency standards in place (CEC Appliance Energy Regulations, 2003). Possible State and regional environmental regulation (e.g. air quality).
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	EPA phase out of HCFC refrigerants.
FY 2004 Priority	High

Proposed Schedule and Rationale

Proposed Schedule	DOE has initiated work in support of rulemaking.
Rationale for Priority Level	Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

⁶ Based on Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

Standards

Product: Commercial Furnaces

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2005-2030	0.5 ⁷ (ASHRAE Standard 90.1-1999)
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed however, estimated energy savings indicated above are indicative of the comparative emission benefits that are likely to be possible. Expected oil savings are minimal.
Status of Required Changes to Test Procedures	DOE plans to publish a Final Rule to incorporate test procedures similar to those referred to in ASHRAE Standard 90.1 into the CFR in FY 2005.
Other Regulatory Actions	Possible State and regional environmental regulation (e.g. air quality).
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	Revised ASHRAE 90.1 standards approved June 1999.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	Final Rule published January 12, 2001.
Rationale for Priority Level	Standards set by EPACT were amended to adopt revised ASHRAE 90.1. No further action.

⁷ Based on Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929

Test Procedure

Product: Commercial Furnaces

Priority: High

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Standards set by EPACT have been amended upon revision of ASHRAE 90.1 as of January 12, 2001. Low
Priority of Standard	
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final rule should be published in FY2004.
Rationale for Priority Level	

Standards

Product: Commercial Oil and Gas-Fired Packaged Boilers

Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2004-2030	Energy Savings: ⁸ 0.28 for small and large gas-fired boilers (to go beyond ASHRAE Standard 90.1-1999 levels, Max NPV)
Potential Economic Benefits/Burdens	NPV, billions of \$1998: 0.2 for small and large gas-fired boilers (to go beyond ASHRAE Standard 90.1-1999 levels, Max NPV)
Potential Environmental or Energy Security Benefits	Carbon emissions reduction: 4 million tons C over analysis period for small and large gas-fired boilers (to go beyond ASHRAE Standard 90.1-1999 levels, Max NPV)
Status of Required Changes to Test Procedures	DOE plans to publish a Final Rule to incorporate test procedures similar to those referred to in ASHRAE Standard 90.1 into the CFR in FY 2005.
Other Regulatory Actions	Possible State and regional environmental regulation (e.g. air quality).
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	Revised ASHRAE 90.1 standards approved June 1999, which would save an estimated 0.064 quad for small and large gas-fired boilers from 2001-2030 (ASHRAE 90.1-1999 relative to EPCA). DOE will consider higher standards above 90.1 for additional energy savings. Data included in the Screening Analysis only covers estimated energy savings for gas-fired packaged boilers. No analysis has yet been conducted for oil-fired packaged boilers.
FY 2004 Priority	High

Proposed Schedule and Rationale

Proposed Schedule	DOE has initiated work in support of rulemaking.
Rationale for Priority Level	Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

⁸ Based on Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

Test Procedure

Product: Commercial Oil and Gas-Fired Packaged Boilers

Priority: High

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Standards set by EPACT are being amended upon revision of ASHRAE 90.1 High
Priority of Standard	
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final rule should be published in FY2004.
Rationale for Priority Level	

Standards

Product: Commercial Water-Cooled Air Conditioners & Water Source Heat Pumps
(Products for which DOE adopted ASHRAE 90.1-1999 levels)

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2005-2030	0.6 ⁹ (ASHRAE Standard 90.1-1999)
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed, however, energy savings indicated above are indicative of the comparative emission benefits that are likely to be possible. Expected oil savings are minimal.
Status of Required Changes to Test Procedures	DOE plans to publish a Final Rule to incorporate test procedures similar to those referred to in ASHRAE Standard 90.1 into the CFR in FY 2005.
Other Regulatory Actions	EPA phase-out of HCFC refrigerants.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	Final Rule published January 12, 2001.
Rationale for Priority Level	Standards set for water-source water-cooled and evaporatively cooled commercial air conditioning and heating equipment by EPACKT were amended to adopt revised ASHRAE 90.1.

⁹ Based on Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

Standards

Product: Commercial Water Heaters

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2005-2030	0.07 ¹⁰
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed, however, estimated energy savings indicated above are indicative of the comparative emission benefits that are likely to be possible. Expected oil savings are minimal.
Status of Required Changes to Test Procedures	DOE plans to publish a Final Rule to incorporate test procedures similar to those referred to in ASHRAE Standard 90.1 into the CFR in FY 2005.
Other Regulatory Actions	
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	Revised ASHRAE 90.1 standards approved June 1999.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	Final Rule January 2001.
Rationale for Priority Level	Standards set by EPACT have been amended to adopt revised ASHRAE 90.1-1999 levels for gas- and oil-fired storage water heaters

¹⁰ Based on Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

Test Procedure

Product: Commercial Water Heaters

Priority: High

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Standards set by EPACT have been amended upon revision of ASHRAE 90.1 as of January 12, 2001
Priority of Standard	Low
International or Other Coordinating Activities	ASHRAE is in process of revising (SPC 118.1). Will include heat pump water heaters.
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale:

Proposed Schedule	Final rule should be published in FY2004
Rationale for Priority Level	

Standards

Product: Cooking Products – Gas and Electric Ranges (Ovens and Cooktops) and Microwave Ovens

Priority: Low

Factors for Priority Setting	Assessment		
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 – 2035 ¹¹	Gas Ranges <u>(Ovens + Cooktops):</u> Electronic Ignition: 0.4 High efficiency: 0.7	Electric Ranges <u>(Ovens + Cooktops):</u> High efficiency: 1.7	<u>Microwave Ovens:</u> High efficiency: 0.3
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2002) 2010-2035 ¹²	Gas Ranges <u>(Ovens + Cooktops):</u> Electronic Ignition: 0.6 High efficiency: -3.1	Electric Ranges <u>(Ovens + Cooktops):</u> High efficiency: -5.7	<u>Microwave Ovens:</u> High efficiency: -4.7
Potential Environmental or Energy Security Benefits	Not available.		
Status of Required Changes to Test Procedures	Final Rule published October 3, 1997.		
Other Regulatory Actions	DOE regulation of white goods for full line manufacturers.		
Recommendations by Interested Parties			
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.		
Issues	For gas cooking products, pilotless designs may require installation of an electrical outlet. Loss of consumer utility if loss of electrical power.		
FY 2004 Priority	Low		

Proposed Schedule and Rationale

Proposed Schedule	For electric cooking products including microwave ovens, DOE issued a Final Rule that did not add new standards - September 8, 1998. For gas cooking products, DOE does not plan to pursue a rulemaking in FY 2005.
Rationale for Priority Level	Potential energy savings for electric cooking products including microwave ovens have a high economic burden to consumers. Potential energy savings for gas cooking products are low.

¹¹ Energy savings estimates are based on an [updated analysis of cooking products](#) conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip

¹² Economic impacts are based on an updated analysis of cooking products conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site.

Test Procedure

Product: Cooking Products – Gas and Electric Ranges (Ovens and Cooktops) and Microwave Ovens

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure was changed prior to Final Rule for energy efficiency standards for electric cooking products.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final Rule issued - October 3, 1997.
Rationale for Priority Level	Test procedure was recently updated.

Standards

Product: Direct Heating Equipment including Vented Hearth Products (Gas)

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2010 – 2035 ¹³	<u>Direct Heating Equipment</u> ¹⁴ : Electronic Ignition: 0.1 Elec. Ignition + High efficiency: 0.2 <u>Hearth Products</u> ¹⁵ : Electronic Ignition: -0.1
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2002) 2010-2035 ¹⁶	<u>Direct Heating Equipment</u> : Electronic Ignition: -0.2 Elec. Ignition + High efficiency: -0.5 <u>Hearth Products</u> : Electronic Ignition: -1.2
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed.
Status of Required Changes to Test Procedures	Final Rule published May 12, 1997.
Other Regulatory Actions	None known that will impact product.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	Fuel switching. Rural communities use for backup heating during power outages. Utility concern with electronic ignition. Hearth products are relatively new. Recent shipments data show shipments of hearth products approaching one million. As hearth products gain wider acceptance in future, potential energy savings may be significant.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue rulemaking in FY 2005.
Rationale for Priority Level	Potential energy savings are low and their achievement would be an economic burden to consumers.

¹³ Energy savings estimates are based on an [updated analysis of direct heating equipment](http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip) conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip

¹⁴ Direct heating equipment includes: wall furnaces, floor furnaces, and room heaters.

¹⁵ Hearth products include: fireplaces, fireplace inserts, gas stoves, and decorative gas logs.

¹⁶ Economic impacts are based on an updated analysis of direct heating equipment conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site.

Test Procedure

Product: Direct Heating Equipment including Vented Hearth Products (Gas)

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure was changed as a result of a standards rulemaking analysis conducted in 1994.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final Rule issued May 12, 1997.
Rationale for Priority Level	Test procedure was recently updated.

Standards

Product: Dishwashers (Residential)

Priority: Medium

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 - 2035	Best Available (as listed in ENERGY STAR®) (1.19 EF) = 2.2 Current ENERGY STAR® Dishwasher (0.58 EF) = 0.5
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Not available.
Status of Required Changes to Test Procedures	Test procedure was recently revised to better reflect energy consumption for new technologies (e.g. adaptive controls) and reduced annual cycles.
Other Regulatory Actions	DOE regulation for energy efficiency of other white goods for full line manufacturers.
Recommendations by Interested Parties	Not Available.
Evidence of Market-Driven or Voluntary Efficiency Improvements	Federal Energy Management Program for procurement initiative. Adaptive control (soil sensing) dishwashers. ENERGY STAR® program. Various state- and utility-level programs.
Issues	Increased efficiency may impact product utility (e.g. may require pre-rinsing of dishes or cleaning of filters) or the availability of affordable models (contract housing). Possible increase in standby energy consumption from displays. End user tendency to pre-treat dishes, which impacts energy consumption.
FY 2004 Priority	Medium

Proposed Schedule and Rationale

Proposed Schedule	
Rationale for Priority Level	FY 2004 priority level.

Test Procedure

Product: Dishwashers (Residential)

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard Priority of Standard International or Other Coordinating Activities Recommendation by Interested Parties Statutory Deadline Issues	<p>New test procedure in effect as of February 2004 that incorporates soiled dishes and reduces the number of average-use cycles per year.</p> <p>Efforts underway to harmonize international test procedures should include dishwashers.</p> <p>New technology in product, i.e. smart controls, fuzzy logic. Stand-by losses due to displays. Time delay before reported Energy Factors match new test procedure.</p>

Proposed Schedule and Rationale:

Proposed Schedule Rationale for Priority Level	<p>Final rule published August 29, 2003 (68 FR 51887), amending test procedure.</p>
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Standards

Product: Distribution Transformers¹⁷

Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative 2010-2035 (Quads)	4.63 – 12.16 quads for both liquid-immersed and dry-type transformers, based on scaled energy savings and extrapolated shipments scenario from the ORNL Determination Analysis, 1997.
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed however, estimated energy savings indicated above are indicative of the comparative emission benefits that are likely to be possible. Expected oil savings are minimal.
Status of Required Changes to Test Procedures	Need to publish a test procedure before Notice of Proposed Rule for the standard.
Other Regulatory Actions	There is no national efficiency standard. Some States have adopted NEMA TP-1 as a minimum efficiency standard or required purchasing standard.
Recommendations by Interested Parties	NEMA recommends adopting its TP-1 standard, revised in 2002.
Evidence of Market-Driven or Voluntary Efficiency Improvements	EPA ENERGY STAR® program for liquid-immersed transformers. NEMA's TP-1 promotes energy efficient electrical products.
Issues	NEMA recommends adoption of voluntary standards as specified in TP-1. Potential energy savings from regulatory action questioned by NEMA.
FY 2004 Priority	High

Proposed Schedule and Rationale

Proposed Schedule	DOE expects to publish advance notice of proposed rulemaking in FY 2004
Rationale for Priority Level	Potential for significant energy savings through regulatory action under EPCA, as amended by EPAct.

¹⁷ DOE is currently performing an analysis of impacts of standards including energy savings, life-cycle cost, national net-present-value, and engineering analyses. The results of this analysis will be made available for public comment once they are completed.

Test Procedure

Product: Distribution Transformers

Priority: High

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure needs to be established before the NOPR stage of the Standard rulemaking.
Priority of Standard	High
International or Other Coordinating Activities	ENERGY STAR® is based on NEMA TP-2 test method; Canada uses the CAN/CSA C802.2 standard which directly references parts of NEMA TP-2.
Recommendation by Interested Parties	NEMA recommends using NEMA TP-2 test method.
Statutory Deadline	
Issues	Definition of Distribution Transformer, Compliance Demonstration.

Proposed Schedule and Rationale:

Proposed Schedule	DOE plans to issue a supplemental notice of proposed rulemaking in FY 2004.
Rationale for Priority Level	Test procedure needs to be Final Rule before the Standard rulemaking is at the Notice of Proposed Rule stage.

Standards

Product: Electric Motors, 1 - 200 HP

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 - 2035	From EPAAct to NEMA Premium: 0.28 Commercial + 1.0 Industrial = 1.28 Total. ¹⁸ Significant uncertainty in estimates due to uncertainties in efficiency of installed base and typical duty cycles.
Potential Economic Benefits/Burdens	Not Available.
Potential Environmental or Energy Security Benefits	Not Available.
Status of Required Changes to Test Procedures	
Other Regulatory Actions	None known that will impact product.
Recommendations by Interested Parties	CEE and others suggest that motors running for 2000 or fewer hours/year tend to be economically unattractive candidates for replacement with premium efficiency motors.
Evidence of Market-Driven or Voluntary Efficiency Improvements	ASHRAE 90.1. Consortium for Energy Efficiency program with utilities. DOE Motor Challenge. Motor Decisions Matter. NEMA Premium efficient motors programs. NIST Efficiency of Electric Motors program.
Issues	DOE regulates system efficiencies (e.g. HVAC) where motors are components of such systems. Many motors operate at part load, but part-load efficiency is not regulated. Duty cycles of many motors are low, which impacts the economic viability of improving efficiency.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	
Rationale for Priority Level	

¹⁸ Energy savings estimates are based on an updated [analysis of electric motors](http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip) conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip

Test Procedure

Product: Electric Motors, 1 - 200 HP

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Low
Priority of Standard	
International or Other Coordinating Activities	Natural Resources Canada: Energy Efficiency Regulations for Electric Motors International Electro technical Commission/International Standards Organization (IEC/ISO)
Recommendation by Interested Parties	CEE suggests increasing efficiency requirements tends not to be cost effective for low-duty-cycle motors (less than 2000 hours/year operation).
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	
Rationale for Priority Level	

Standards

Product: Fluorescent Lamp Ballasts

Priority: Low

Factors for Priority Setting	Assessment
Energy Savings from Regulatory Action; Cumulative (Quads) 2005-2030 ¹⁹	1.2 – 2.3 These estimated savings will be achieved through the 2000 Final Rule and do not represent additional potential savings from further regulatory action.
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$1997) 2005-2030 ²⁰	1.4 – 2.6
Potential Environmental or Energy Security Benefits; Cumulative Emission Reductions 2005-2030 ²¹	10.9 – 32.1 Mt Carbon 34.0 – 103.4 kt NOx
Status of Required Changes to Test Procedures	None required.
Other Regulatory Actions	
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	EPA Green Lights and ENERGY STAR® Buildings, ASHRAE 90.1, DOE's FEMP Procurement Guidelines and Federal Relighting Initiative, EPAAct 1992 Voluntary Luminaire Testing and Rating Program, The Energy Cost Savings Council, and some utility DSM programs.
Issues	
FY 2003 Priority	Low

Schedule and Rationale

Proposed Schedule	Final Rule –published in September 19, 2000.
Rationale for Priority Level	Final Rule published in FY 2000. New standards become effective in 2005.

¹⁹ Energy savings from DOE's Final Rule, September 19, 2000. DOE's analysis of fluorescent ballasts is in the Technical Support Document available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/notices_rules.html#2000

²⁰ Economic impacts from DOE's Final Rule, September 19, 2000.

²¹ Emission reductions from DOE's Final Rule, September 19, 2000.

Test Procedure

Product: Fluorescent Lamp Ballasts

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	No test procedure changes required for issuing new energy efficiency standards.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	DOE completed the rule in FY2000. DOE does not plan to pursue rulemaking in FY 2005.
Rationale for Priority Level	No need to revise test procedure.

Determination Analysis

Product: High Intensity Discharge (HID) Lamps²²

Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2010-2035	0.5 ²³
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2001) 2010-2035	Not available.
Potential Environmental or Energy Security Benefits	Not available.
Status of Required Changes to Test Procedures	IES and ANSI procedures are in place. Issues with definitions, covered products and sampling.
Other Regulatory Actions	EPA mercury disposal requirements apply.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	Market-driven replacement of inefficient mercury vapor lamps with metal halide and high-pressure sodium lamps has occurred.
Issues	
FY 2004 Priority	High

Proposed Schedule and Rationale:

Proposed Schedule	DOE plans a determination notice for FY 2004.
Rationale for Priority Level	Determination required by EPACT.

²² DOE is currently performing an analysis of impacts of standards including energy savings, life-cycle cost, national net-present-value, and engineering analyses.

²³ Based on a calculation method consistent with that used for DOE's FY 2003 priority setting with the exception that shipments of mercury vapor lamps are assumed to decline at a rate consistent with what is observed in the historical data. DOE's analysis of HID lamps for the FY 2003 priority setting is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site.

http://www.eere.energy.gov/buildings/appliance_standards/2004_priority_setting.html

Test Procedure

Product: High Intensity Discharge (HID) Lamp

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure needs to be developed for standard.
Priority of Standard	High for determination.
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Test procedure development is dependent on outcome of Determination.
Rationale for Priority Level	

Standards

Product: Lamps, Fluorescent

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2008 - 2030	<i>Best Available</i> FEMP procurement recommendation levels (4-foot, 8-foot, and U-tube lamps) = 0.47 ²⁴ <i>Recommended</i> FEMP procurement recommendation levels (4-foot, 8-foot, and U-tube lamps) = 0.14
Potential Economic Benefits/Burdens	Not Available.
Potential Environmental or Energy Security Benefits	Not Available.
Status of Required Changes to Test Procedures	IES and ANSI procedures are in place, DOE test procedure Final Rule issued May 29, 1997.
Other Regulatory Actions	Existing EPA mercury disposal requirements apply, but EPA issued a final rule July 6, 1999, including lamps as Universal Hazardous Waste.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	ENERGY STAR® Buildings, ASHRAE 90.1, FEMP Procurement Guidelines and Federal Relighting Initiative, and some utility DSM programs.
Issues	Because lamps are components of systems, establishment of standards is more difficult.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue rulemaking in the next year.
Rationale for Priority Level	Low energy savings potential.

²⁴ Both estimates are from the FY2003 prioritization analysis. These estimates are not adjusted to the 2010-2035 timeframe.

Test Procedure

Product: Lamps, Fluorescent

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure changes are not needed for standard.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final Rule issued May 29, 1997.
Rationale for Priority Level	

Standards

Product: Lamps, Incandescent General Service

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 - 2035	1.5% efficacy increase = 0.9 3% efficacy increase = 1.8 17% efficacy increase (halogen lamp)= 10.0 ²⁵
Potential Economic Benefits/Burdens	Not Available.
Potential Environmental or Energy Security Benefits	Not Available.
Status of Required Changes to Test Procedures	DOE test procedure Final Rule issued May 29, 1997 incorporating IES and ANSI testing procedures. Test procedure is applicable to this product.
Other Regulatory Actions	
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	ENERGY STAR® Buildings, ASHRAE 90.1, FEMP Federal Relighting Initiative, and some utility DSM programs, Voluntary Luminaire Testing and Rating Program.
Issues	Because lamps are components of systems, establishment of standards is more difficult.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue rulemaking in the next year.
Rationale for Priority Level	Low priority because the economic viability of more efficient technology has not been demonstrated.

²⁵ Analysis is based on cumulative energy savings compared to A-type incandescent lamps. All estimates are based on the FY'03 prioritization analysis, with a small adjustment for the 2010-2035 timeframe assumed here.

Test Procedure

Product: Lamps, Incandescent General Service

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure changes not needed for standard.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final Rule issued May 29, 1997
Rationale for Priority Level	

Standards

Product: Lamps, Incandescent Reflector (Regulated)

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 - 2035	Currently Regulated ²⁶ 1.5% efficacy increase = 0.1 3% efficacy increase = 0.2 30% efficacy increase (HIR) = 1.6 Note: Halogen Infrared Reflector (HIR)
Potential Economic Benefits/Burdens	Not Available.
Potential Environmental or Energy Security Benefits	Not Available.
Status of Required Changes to Test Procedures	DOE test procedure Final Rule issued May 29, 1997 incorporating IES and ANSI testing procedures. Test procedure is applicable to this product.
Other Regulatory Actions	
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	ENERGY STAR® Buildings, ASHRAE 90.1, FEMP Federal Relighting Initiative, and some utility DSM programs, Voluntary Luminaire Testing and Rating Program.
Issues	Because lamps are components of systems, establishment of standards is more difficult.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	DOE plans to assess whether to classify currently exempt incandescent reflector lamps as covered products.
Rationale for Priority Level	Based on completion of assessment.

²⁶ Lamps in this analysis are regulated reflector lamps that comply with the 1992 EPC Act standards. These are primarily parabolic aluminized reflector (PAR) halogen lamps. All estimates are based on the FY'03 prioritization analysis, with a small adjustment for the 2010-2035 timeframe assumed here.

Test Procedure

Product: Lamps, Incandescent Reflector

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure changes not needed for standard.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final Rule issued May 29, 1997.
Rationale for Priority Level	

Standards

Product: Packaged Terminal Air Conditioners and Heat Pumps

Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2004 - 2030	Energy Savings: ²⁷ 0.03 (to go beyond ASHRAE Standard 90.1-1999 new construction equip. levels) 0.56 (to go beyond ASHRAE Standard 90.1-1999 replacement equip. levels)
Potential Economic Benefits/Burdens	NPV, billions of \$1998: 0.01 (to go beyond ASHRAE Standard 90.1-1999 new construction equip. levels) 0.5 (to go beyond ASHRAE Standard 90.1-1999 replacement equip. levels)
Potential Environmental or Energy Security Benefits	Carbon emissions reduction: 1 million tons (to go beyond ASHRAE Standard 90.1-1999 new construction equip. levels) 8 million tons (to go beyond ASHRAE Standard 90.1-1999 replacement equip. levels)
Status of Required Changes to Test Procedures	
Other Regulatory Actions	EPA phase out of HCFC refrigerants.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	Revised ASHRAE 90.1 standards approved June 1999, which would save an estimated 0.11 quad from 2001-2030. DOE will consider higher standards for additional energy savings.
FY 2004 Priority	High

Proposed Schedule and Rationale

Proposed Schedule	DOE has initiated work in support of rulemaking.
Rationale for Priority Level	Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

²⁷ Based on Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

Standards

Product: Plumbing Fixtures/Fittings

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads)	The Department has not conducted any recent analysis regarding potential energy savings for this product.
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Not available.
Status of Required Changes to Test Procedures	
Other Regulatory Actions	None.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	As flow rates and water consumption decline the effects on utility need to be carefully considered.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue rulemaking in the next year. Work would be limited to basic technology investigation and monitoring of voluntary programs.
Rationale for Priority Level	Dependent upon revision by ASME and approval by ANSI to ASME/ANSI A112.18.1 and ASME/ANSI A112.19.6.

Test Procedure

Product: Plumbing Fixtures/Fittings

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard Priority of Standard International or Other Coordinating Activities Recommendation by Interested Parties Statutory Deadline Issues	<p>Low</p> <p>The performance requirements previously called out in the ASME A112.19.6 standard (Hydraulic Requirements for Toilets and Urinals) will be incorporated into the parent standard, ASME A112.19.2 and will be titled: "Vitreous China Plumbing Fixtures and Hydraulic Requirements for Toilets and Urinals."</p>

Proposed Schedule and Rationale

Proposed Schedule	Amend test procedure during FY2005 to account for the ASME name change as described in the <i>issues</i> line item above.
Rationale for Priority Level	

Standards

Product: Pool Heaters (Gas)

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2010 -2035 ²⁸	Electronic Ignition: 0.3 Non-Condensing Limit: 0.4 Condensing (Induced Draft): 0.5 Condensing (Pulse): 0.6
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2002) 2010-2035 ²⁹	Electronic Ignition: 0.4 Non-Condensing Limit: 0.3 Condensing (Induced Draft): -1.2 Condensing (Pulse): -2.9
Potential Environmental or Energy Security Benefits	Not available.
Status of Required Changes to Test Procedures	Final Rule published May 12, 1997.
Other Regulatory Actions	None known.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	Solar pool heating market share growing.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to actively pursue rulemaking in FY 2005.
Rationale for Priority Level	Potential energy savings are low.

²⁸ Energy savings estimates are based on an updated [analysis of pool heaters](#) conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip

²⁹ Economic impacts are based on an updated analysis of pool heaters conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site.

Test Procedure

Product: Pool Heaters (Gas)

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	No test procedure changes required for issuing new energy efficiency standards.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final rule issued May 12, 1997.
Rationale for Priority Level	Test procedure was recently updated.

Standards

Product: Refrigerators and Refrigerator-Freezers, Freezers, and Compact Refrigerators

Priority: Low

Factors for Priority Setting	Assessment		
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 -2035 ³⁰	Standard Refrigerators and Refrigerator/Freezers: FEMP (4% energy decrease): 0.8 ENERGY STAR® (15% decrease): 2.9 CEE Tier 1 (20% decrease): 3.9 CEE Tier 2 (25% decrease): 4.8 CEE Tier 3 (30% decrease): 5.8	Compact Refrigerators: ENERGY STAR® (20% decrease): 0.5	Freezers: ENERGY STAR® (20% decrease): 0.4
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2002) 2010-2035 ³¹	Standard Refrigerators and Refrigerator/Freezers: FEMP (4% energy decrease): 1.0 ENERGY STAR® (15% decrease): 0.5 CEE Tier 1 (20% decrease): -1.3 CEE Tier 2 (25% decrease): -4.1 CEE Tier 3 (30% decrease): -7.9	Compact Refrigerators: ENERGY STAR® (20% decrease): 0.9	Freezers: ENERGY STAR® (20% decrease): 0.6
Potential Environmental or Energy Security Benefits	Not available.		
Status of Required Changes to Test Procedures	<p>AHAM test procedure has been revised (AHAM HRF-1-2002) to correct repeatability and reproducibility issues with the testing of compact refrigerators.</p> <p>DOE test procedure still references AHAM HRF-1-1979.</p> <p>DOE issued a direct Final Rule on March 7, 2003 to make a small modification to the defrost calculations for some models.</p> <p>DOE issued a Final Rule on December 19, 2001 to include a maximum temperature of the fresh food storage compartment and to exclude certain appliances whose physical configuration makes them unsuitable for general storage of perishable foods.</p>		
Other Regulatory Actions	<p>EPA phase-out of HCFC-141b in 2003 as a blowing agent for foam insulation.</p> <p>DOE regulation of white goods for full line manufacturers.</p>		
Recommendations by Interested Parties	FY04 priority setting comments: Some interested parties recommend a medium priority setting for refrigerators.		
Evidence of Market-Driven or Voluntary Efficiency Improvements	Market share of ENERGY STAR® qualifying products in 2002 is 25 percent.		
Issues	<p>Industry recently had to comply with two regulations: (1) new energy efficiency standards which became effective July 1, 2001 and (2) a phase-out of the most commonly used blowing agent for foam insulation, HCFC-141b, in 2003.</p> <p>DOE needs to write specific guidelines for beverage centers.</p> <p>Compact refrigerators are used in non-residential applications.</p>		
FY 2004 Priority	Low		

³⁰ Energy savings estimates are based on an [updated analysis of refrigerators and freezers](#) conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip

³¹ Economic impacts are based on an updated analysis of refrigerators and freezers conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Appliances and Commercial Equipment Standards web site.

Proposed Schedule and Rationale

Proposed Schedule	Final Rule Issued - April 28, 1997.
Rationale for Priority Level	New energy efficiency standards became effective on July 1, 2001.

Test Procedure

Product: Refrigerators and Refrigerator-Freezers, Freezers, and Compact Refrigerators
Priority: Medium for compact refrigerators and refrigerator/freezers, Low for all others

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	No changes are required for purposes of changing the efficiency standard.
Priority of Standard	Low
International or Other Coordinating Activities	North American Energy Working Group (NAEWG) has harmonized test procedures between the U.S.A., Canada and Mexico.
Recommendation by Interested Parties	
Statutory Deadline	
Issues	AHAM test procedure has been revised (AHAM HRF-1-2002) to correct repeatability and reproducibility issues with the testing of compact refrigerators. DOE test procedure still references AHAM HRF-1-1979. DOE needs to update its test procedure to cite AHAM HRF-1-2002. Definitions and test procedures are needed for a new product: combination compact refrigerator and wine cooler.

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to pursue rulemaking in FY 2005 but notes that the test procedure will need to be updated in the future to cite updated AHAM test procedure.
Rationale for Priority Level	

Standards

Product: Residential Central Air Conditioners & Heat Pumps (including Space-Constrained Products)

Priority: Low

Factors for Priority Setting	Assessment
Energy Savings from Regulatory Action; Cumulative (Quads) 2006 - 2030³²	Minimum energy efficiency standards of 13 SEER and 7.7 HSPF for non-space constrained products save 4.2 quads. National energy savings for space constrained products are a small fraction of this amount because they capture a very small share of the residential central air conditioner and heat pump market.
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$1998) 2006-2030³³	Minimum energy efficiency standards of 13 SEER and 7.7 HSPF for non-space constrained products save 1 billion dollars.
Potential Environmental or Energy Security Benefits; Cumulative Emission Reductions 2006-2020³⁴	Minimum energy efficiency standards of 13 SEER and 7.7 HSPF for non-space constrained products save 32.7 Mt of Carbon and 93.8 kt of NO _x by 93.8 kt.
Status of Required Changes to Test Procedures	The test procedure is currently being revised.
Other Regulatory Actions	On Jan. 13, 2004, the U.S. Appeals Court for the Second Circuit in New York ruled to invalidate DOE's May 23, 2002 Final Rule which established 12 SEER and 7.4 HSPF efficiency standards for non-space constrained central air conditioners and heat pumps. The May 23, 2002 Final Rule also established separate product classes for two space constrained products, through-the-wall (TTW) and small duct high velocity (SDHV) air conditioners and heat pumps, and established efficiency standards for TTW systems. Due to the Appellate Court's decision, DOE's previous Final Rule (dated January 22, 2001), which enacted standards of 13 SEER and 7.7 HSPF, became the applicable efficiency standards for non-space constrained products and SDHV systems. Standards were reserved for space constrained products including TTW, ductless split (i.e., mini-split), and single package and non-weatherized.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	
Issues	Although the January 22, 2001 Final Rule defined space constrained products, due to questions posed by stakeholders, DOE will issue informal guidelines to clarify what constitutes a space constrained product.
FY 2004 Priority	High

³² Energy savings from DOE's Final Rule, January 22, 2001. DOE's [analysis of residential central air conditioners and heat pumps](http://www.eere.energy.gov/buildings/appliance_standards/residential/ac_central.html) is in the Technical Support Document available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. These estimated savings will be achieved through the 2001 Final Rule and do not represent additional potential savings from further regulatory action.

³³ Economic impacts from DOE's Final Rule, January 22, 2001.

³⁴ Emission reductions from DOE's Final Rule, January 22, 2001.

Proposed Schedule and Rationale

Proposed Schedule	DOE will not publish a rulemaking for a space constrained products in FY 2005.
Rationale for Priority Level	Potential energy savings for space constrained products are low.

Test Procedure

Product: Residential Central Air Conditioners & Heat Pumps (including Space-Constrained Products with the exception of Ductless)

Priority: High

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure for residential central air conditioners and heat pumps is being updated but will not impact product efficiency ratings.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	Industry is supportive of changes to up date test procedure.
Statutory Deadline	
Issues	Test procedure is being updated in two phases. The first phase consists of a comprehensive update to the method of test and is expected to be published as a Final Rule in FY 2004. The second phase consists of changes to the method of test for SDHV systems as well as further updates to other sections of the test procedure (e.g., frost accumulation testing, multi-capacity system testing, and test reporting). The second phase of the update is expected to be published as a NOPR in FY 2005.

Proposed Schedule and Rationale

Proposed Schedule	The Department expects to publish the first phase of the test procedure update as a Final Rule in FY 2004. The Department expects to publish the second phase of the test procedure update as a NOPR in FY 2005.
Rationale for Priority Level	Comprehensive updates are required to ensure the proper testing of products.

Test Procedure

Product: Residential Central Air Conditioners & Heat Pumps (Ductless)

Priority: Medium

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test Procedure does not need to be changed for standard.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	Ductless split system manufacturers would prefer to use calorimeter test.
Statutory Deadline	
Issues	Calorimeter test (which is used for room air conditioners) is more suitable and accurate for testing ductless split central air conditioners, but this test is not currently in the DOE central air conditioning test procedure.

Proposed Schedule and Rationale

Proposed Schedule	The Department will not pursue a test procedure rulemaking specifically for ductless until the test procedure updates for non-space constrained products has been finalized.
Rationale for Priority Level	Change would make test procedure more accurate for ductless.

Standards

Product: Residential Furnaces & Boilers³⁵

Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2012 - 2042	Total range considered: [1.8 - 15.1] ³⁶
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed however, estimated energy savings indicated above are indicative of the comparative emission benefits that are likely to be possible.
Status of Required Changes to Test Procedures	Final rule issued May 12, 1997.
Other Regulatory Actions	Possible State and regional environmental regulation.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	ENERGY STAR® program. Wisconsin state condensing furnace/boiler program. Consortium for Energy Efficiency (CEE) promotes a residential gas heating initiative specifying three high efficiency tier levels for gas furnaces and one high efficiency tier for gas boilers.
Issues	Regional variations, venting and electricity issues.
FY 2004 Priority	High

Proposed Schedule and Rationale

Proposed Schedule	The Department expects to publish a notice in FY 2004.
Rationale for Priority Level	Potential energy savings are significant.

³⁵ DOE is currently performing an analysis of impacts of standards including energy savings, life-cycle cost, national net-present-value, and engineering analyses. The results of this analysis will be made available for public comment once they are completed.

³⁶ Based on LBNL rough estimate for gas and oil, September 2001. DOE is currently performing an analysis of impacts of standards including energy savings, life-cycle cost, rational net-present-value, and engineering analyses. The results of this analysis will be made available for public comment once they are completed.

Test Procedure

Product: Residential Furnaces & Boilers

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	<p>Test Procedure not needed to be changed for standard. The test procedure for combined space- and water-heating appliances (a separate product class within the standards rulemaking) is currently under development by the Department.</p> <p>High</p> <p>ASHRAE SPC 124 has released an update for public review for a test procedure for combined appliances.</p>
Priority of Standard	
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	Final rule issued May 12, 1997.
Rationale for Priority Level	

Standards

Product: Residential Water Heaters - Gas, Oil & Electric

Priority: Low

Factors for Priority Setting	Assessment
Energy Savings from Regulatory Action; Cumulative (Quads) 2004-2030	The Final Rule energy savings equal 4.6 quads over 2004-2030. These estimated savings will be achieved through the 2001 Final Rule and do not represent additional potential savings from further regulatory action.
Potential Economic Benefits/Burdens	The Net Present Value (NPV) is \$2.0 billion cumulative from 2004 to 2030 in 1997 dollars.
Potential Environmental or Energy Security Benefits	For period 2004- 2030, 152 million metric tons of carbon and 273 thousand metric tons of NO _x .
Status of Required Changes to Test Procedures	Changes not required for standards. Final rule for test procedure was published in 1998.
Other Regulatory Actions	EPA phase out of HCFCs for insulation (2003). Consumer Product Safety Commission initiative for prevention of ignition of flammable vapors by gas water heaters.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	Demand-side management programs for high efficiency water heaters.
Issues	Fuel switching. Replacement blowing agent for insulation. Installation in small spaces.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	NOPR – April, 2000 Final Rule - January, 2001
Rationale for Priority Level	Final Rule published January 17, 2001. Reviewed April 12, 2001.

Test Procedure

Product: Residential Water Heaters - Gas, Oil & Electric

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	No change needed
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to pursue rulemaking in the next year.
Rationale for Priority Level	Test procedure published in May, 1998.

Standards

Product: Room Air Conditioners

Priority: Low

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 -2035 ³⁷	ENERGY STAR®, 10.8 EER (10% more efficient): 0.8 CEE Tier One, 11.3 EER (15 % more efficient): 1.2 CEE Tier Two, 11.8 EER (20% more efficient): 1.5
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2002) 2010-2035 ³⁸	ENERGY STAR®: 0.0 CEE Tier One: -4.1 CEE Tier Two: -6.3
Potential Environmental or Energy Security Benefits	Not available.
Status of Required Changes to Test Procedures	None required.
Other Regulatory Actions	EPA phase-out of HCFC-22 in 2010 for new appliances.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	Market share of ENERGY STAR® qualifying products in 2002 is 19 percent.
Issues	Industry must find a replacement refrigerant for HCFC-22 due to its phase-out in new appliances starting in 2010.
FY 2004 Priority	Low

Proposed Schedule and Rationale

Proposed Schedule	Final Rule Issued - September 24, 1997.
Rationale for Priority Level	New energy efficiency standards became effective on October 1, 2000. Potential new standards either have moderate energy savings or have a high economic burden to consumers.

³⁷ Energy savings estimates are based on an [updated analysis of room air conditioners](#) conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip

³⁸ Economic impacts are based on an updated analysis of room air conditioners conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site.

Test Procedure

Product: Room Air Conditioners

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	No test procedure changes required for issuing new energy efficiency standards.
Priority of Standard	Low
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	Test procedure does not measure the benefits of designs which improve the seasonal performance of the appliance (e.g., variable speed compressors).

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to pursue rulemaking in FY 2005.
Rationale for Priority Level	No need to revise test procedure.

Standards

Product: Single-Packaged Vertical Units (SPVU)

Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2004-2030	Not available.
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed.
Status of Required Changes to Test Procedures	
Other Regulatory Actions	
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	SPVUs were not included in previous priority settings. ASHRAE published Addendum d to ASHRAE Standard 90.1-2001, which provides minimum EER and COP levels for SPVAC and SPVHP products and references ARI Standard 390-2001 as the applicable test procedure. ARI has since updated Standard 390 to the 2003 version. DOE is evaluating the efficiency levels in Addendum d to ASHRAE Standard 90.1-2001 and the test procedures the referenced ARI Standard 390. EPA phase out of HCFC refrigerants.
FY 2004 Priority	None.

Proposed Schedule and Rationale:

Proposed Schedule	DOE has initiated work in support of rulemaking.
Rationale for Priority Level	Re-evaluation of ASHRAE 90.1 1999 levels.

Determination Analysis

Product: Small Electric Motors³⁹

Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads): 2010-2030 ⁴⁰	0.2 – 1.2
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2000) 2010-2030 ⁴¹	\$0.1 – \$1.3
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed, however, estimated energy savings indicated above are indicative of the comparative emission benefits that are likely to be possible. Expected oil savings are minimal.
Status of Required Changes to Test Procedures	IEEE 114 – 2001 test procedure for single-phase induction motors was published May 24, 2002. IEEE 112 – 1996 test procedure for poly phase motors is in effect.
Other Regulatory Actions	Small motors used in NAECA “covered products” (e.g. white goods) and certain commercial equipment are exempt.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	None known.
Issues	
FY 2004 Priority	High

Proposed Schedule and Rationale

Proposed Schedule	DOE plans to publish a determination in FY 2004.
Rationale for Priority Level	Determination required by EPCA.

³⁹ DOE has performed an analysis of impacts of standards including energy savings, life-cycle cost, national net-present-value, and engineering analyses. The results of the analysis are available in a draft report entitled “Analysis of Conservation Standards for Small Electric Motors” from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/commercial/small_motors.html

⁴⁰ Based on “Analysis of Conservation Standards for Small Electric Motors”, Draft for Public Comment, June 2003.

⁴¹ Based on “Analysis of Conservation Standards for Small Electric Motors”, Draft for Public Comment, June 2003.

Test Procedure

Product: Small Electric Motors

Priority: Low

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	
Priority of Standard	High for determination.
International or Other Coordinating Activities	
Recommendation by Interested Parties	
Statutory Deadline	
Issues	

Proposed Schedule and Rationale

Proposed Schedule	DOE does not plan to pursue rulemaking in FY05.
Rationale for Priority Level	Waiting on determination.

Standards

Product: Tankless Gas-Fired Instantaneous Water Heaters

Priority: High

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad): 2004-2030	Energy Savings: ⁴² 0.10 (to go beyond ASHRAE Standard 90.1-1999 levels, Max NPV)
Potential Economic Benefits/Burdens	NPV, billions of \$1998: 0.05 (to go beyond ASHRAE Standard 90.1-1999 levels, Max NPV)
Potential Environmental or Energy Security Benefits	Carbon emissions reduction: 2 million tons (to go beyond ASHRAE Standard 90.1-1999 levels, Max NPV)
Status of Required Changes to Test Procedures	DOE plans to publish a Final Rule to incorporate the test procedures referred in ASHRAE Standard 90.1 into the CFR in FY 2004.
Other Regulatory Actions	The California Energy Commission has energy efficiency standards in place (CEC Appliance Energy Regulations, 2003).
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	Instantaneous gas-fired water heater market share seems to be growing.
Issues	
FY 2004 Priority	High

Proposed Schedule and Rationale:

Proposed Schedule	DOE has initiated work in support of rulemaking.
Rationale for Priority Level	Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

⁴² Based on Screening Analysis Report for Commercial HVAC Standards, see 65 FR 30929.

Pending Legislation

Product: Battery Chargers and External Power Supplies (residential & commercial)

Priority: Not specified

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 -2035 ⁴³	80% efficiency: 1.8
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2002) 2010-2035	Not available.
Potential Environmental or Energy Security Benefits	Not available.
Status of Required Changes to Test Procedures	DOE does not have a test procedure for battery chargers and power supplies.
Other Regulatory Actions	Being considered for efficiency regulation in draft legislation before Congress. California Energy Commission (CEC) is considering minimum efficiency regulations on power supplies and battery chargers.
Recommendations by Interested Parties	FY04 priority setting comments: Some interested parties recommend that battery chargers and external power supplies should not be designated as a covered product until draft legislation has been approved by Congress.
Evidence of Market-Driven or Voluntary Efficiency Improvements	EPA has issued a draft ENERGY STAR® Specification in February, 2004. European Code of Conduct has established voluntary minimum efficiency specifications. Market penetration of more efficient switch mode power supplies is increasing because they tend to be lighter and smaller in size. More efficient power supplies can be made more compatible with different frequencies and voltages making them more suitable for the international market.
Issues	Clear product definitions required.
FY 2004 Priority	Not applicable.

Proposed Schedule and Rationale

Proposed Schedule	Not specified. Draft legislation before Congress requires that within 3 years after the date of the Bill's enactment, a Final Rule must be issued to determine the viability of energy conservation standards for battery chargers and external power supplies.
Rationale for Priority Level	Waiting on Congressional action.

⁴³ Energy savings estimates are based on an [analysis of battery chargers and power supplies](http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip) conducted for DOE's FY05 priority setting. The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip

Test Procedure

Product: Battery Chargers and External Power Supplies (residential & commercial)

Priority: Not specified

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	DOE does not have a test procedure. A test procedure needs to be developed before establishing energy efficiency standards.
Priority of Standard	Not specified.
International or Other Coordinating Activities	EPA has issued a test procedure for external power supplies. CEC supports the EPA test procedure. European Union has issued a Code of Conduct for test procedures and voluntary efficiency specifications. International Electrotechnical Commission (IEC) test procedure (IEC 62301) exists for testing standby power. IEEE 1515-2000 provides background on general test conditions and brief references to efficiency. Australian government is interested in establishing an internationally harmonized test procedure.
Recommendation by Interested Parties	Some interested parties recommend further research for purposes of developing an appropriate test procedure.
Statutory Deadline	Waiting on Congressional action.
Issues	Clear product definitions required for test procedure development.

Proposed Schedule and Rationale

Proposed Schedule	Not specified. Draft legislation before Congress requires that within 18 months after the date of the Bill's enactment, DOE shall prescribe by notice and comment, definitions and test procedures for the power use of battery chargers and external power supplies.
Rationale for Priority Level	Waiting on Congressional action.

Coverage (also in Pending Legislation)

Product: Beverage Merchandisers and Beverage Vending Machines

Priority: High (test procedure priority also high)

Factors for Priority Setting	Assessment				
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010-2035	Beverage Merchandisers		Vending Machines		
	Energy Savings Efficiency Level	Energy Reduction (%)	Energy Savings (quad)	Energy Reduction (%)	Energy Savings (quads)
	< 2 yr. payback (ADL 1996)	44	0.47	32	0.81
	< 5 yr. payback (ADL 1996)	55	0.59	42	1.06
	Royal Vendors Econo-Cool Technology	-	-	47	1.19
	Energy Star Tier 1	-	-	0	0
	Energy Star Tier 2	-	-	13	0.33
	CEC Tier 1	29	0.31	-	-
	CEC Tier 2	36	0.39	-	-
	CEC Design Requirements	-	-	14	0.35
	Combination: 1	35	0.38	28	0.71
Potential Economic Benefits/Burdens	Not Available.				
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed				
Status of Required Changes to Test Procedures	The ASHRAE 32.1 and ASHRAE 117 test procedures have been identified as the recommended basis for a DOE test procedure for beverage vending machines and beverage merchandisers, respectively.				
Other Regulatory Actions	California Energy Commission has a design standard for refrigerated beverage vending machines. The CEC treats beverage merchandisers as glass door commercial reach-in refrigerators, which are regulated. (CEC Appliance Efficiency Regulations, 2003)				
Recommendations by Interested Parties	Conduct background work and develop test procedures. (ACEEE and NEEP comments from FY2004 Priority Setting Process)				
Evidence of Market-Driven or Voluntary Efficiency Improvements	<p>ENERGY STAR® Standards</p> <p>Vending Machines shall consume equal or less energy in a 24-hour period than the values obtained from the equations below.</p> <p>Tier 1: $Y \leq 0.55[8.66 + (0.009 * C)]$ to be implemented April 1, 2004</p> <p>Tier 2: $Y \leq 0.45[8.66 + (0.009 * C)]$ to be implemented January 1, 2007</p> <p>Y = 24 hour energy consumption (kWh/day) after the machine has stabilized</p> <p>C = vendible capacity</p> <p>(ENERGY STAR® Program Requirements for Refrigerated Beverage Vending Machines, Version 1.0)</p> <p>There are no ENERGY STAR® program requirements for beverage merchandisers.</p>				
Issues	This is being considered in draft legislation by Congress.				
FY 2004 Priority	High				

Proposed Schedule and Rationale

Proposed Schedule	Proposed Rule FY 2005
Rationale for Priority Level	2004 Priority Setting

Coverage (also in Pending Legislation)

Product: Ceiling Fans

Priority: High (test procedure priority also high)

Factors for Priority Setting	Assessment				
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010-2035	Energy Savings Efficiency Level	Air Moving Efficiency		Lighting Efficacy	
		Energy Reduction (%)	Energy Savings (quads)	Energy Reduction (%)	Energy Savings (quads)
	Future Technology	62	1.93	78	4.22
	Best Available	39	1.22	78	4.22
ENERGY STAR®	18	0.57	78	4.22	
Potential Economic Benefits/Burdens	Not Available.				
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed.				
Status of Required Changes to Test Procedures	The Solid State Test Method has been identified as the recommended basis for a DOE test procedure for suspended ceiling fans. (ENERGY STAR® Testing Facility Guidance Manual: Building a Testing Facility and Performing the Solid State Test Method for ENERGY STAR® Qualified Ceiling Fans, 2002)				
Other Regulatory Actions	The California Energy Commission is considering, at least on a preliminary basis, new or modified test methods, efficiency standards, labeling rules, or associated administrative compliance, and enforcement regulations for ceiling fans. (State of California Order Instituting Rulemaking Proceeding, 2003)				
Recommendations by Interested Parties	Conduct background work and develop test procedures. (ACEEE and NEEP comments from FY2004 Priority Setting Process)				
Evidence of Market-Driven or Voluntary Efficiency Improvements	ENERGY STAR® Standards: Low Fan Speed – 1,250CFM minimum airflow, 155CFM/watt efficiency; Medium Fan Speed – 3,000CFM minimum airflow, 100CFM/watt efficiency; High Fan Speed – 5,000 minimum airflow, 75CFM/watt efficiency. All integral and attachable light kits must meet the requirements of the ENERGY STAR® RLF specification. (ENERGY STAR® Program Requirements for Residential Ceiling Fans, Version 2.0)				
Issues	Suspended ceiling fans are being considered in draft legislation by Congress. Lighting is often integral with ceiling fans and warrants consideration for inclusion (95% of ceiling fans have lighting). Ceiling fans have various designs: fan diameters, three speed or single speed fans, and hugger or suspended configurations.				
FY 2004 Priority	High				

Proposed Schedule and Rationale

Proposed Schedule	Proposed Rule FY2005
Rationale for Priority Level	2004 Priority Setting

Coverage (also in Pending Legislation)

Product: Commercial Reach-In Refrigerators, Freezers, and Refrigerator-Freezers

Priority: High (test procedure priority also high)

Factors for Priority Setting	Assessment							
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2010-2035	Energy Savings Efficiency Level		Reach-in Refrigerator		Reach-in Freezer		Reach-in Refrigerator-Freezer	
			Energy Reduc. (%)	Energy Savings (quad)	Energy Reduc. (%)	Energy Savings (quad)	Energy Reduc. (%)	Energy Savings (quad)
	Energy Star		29	0.32	20	0.27	-	-
	CEC Tier 1		0	0.00	8	0.11	-	-
	CEC Tier 2		9	0.10	13	0.17	-	-
	< 2 yr. payback (ADL 1996)		35	0.39	30	0.40	-	-
	< 5 yr. payback (ADL 1996)		45	0.50	44	0.59	-	-
	Combination 1		44	0.49	35	0.47	35	0.08
	Combination 2		67	0.74	-	-	-	-
	Combination 3		80	0.89	-	-	-	-
Potential Economic Benefits/Burdens	Not Available.							
Potential Environmental or Energy Security Benefits	Specific estimates of emission reductions have not been developed.							
Status of Required Changes to Test Procedures	The ASHRAE 117 test procedure has been identified as the recommended basis for a DOE test procedure for commercial refrigerators and freezers.							
Other Regulatory Actions	California Energy Commission has an efficiency standard for reach-in refrigerators, reach-in freezers, and reach-in refrigerator-freezers for both solid and transparent doors. (CEC Appliance Efficiency Regulations, 2003). Also, ODC phase-out.							
Recommendations by Interested Parties	Conduct background work and develop test procedures. (ACEEE and NEEP comments from FY2004 Priority Setting Process)							
Evidence of Market-Driven or Voluntary Efficiency Improvements	ENERGY STAR® Standards (solid door units only): Refrigerators – Energy consumption under test procedures $\leq 0.10V + 2.04\text{kWh/day}$ Freezers – Energy consumption under test procedures $\leq 0.40V + 1.38\text{kWh/day}$ Refrigerator/Freezers - Energy consumption under test procedures $\leq 0.27AV - 0.71 \text{ kWh/day}$ $V = \text{internal volume in cu. ft.}$ $AV = \text{adjusted volume} = (1.63 * \text{freezer volume in cu. ft.}) + \text{refrigerator volume in cu. ft.}$ (ENERGY STAR® Program Requirements for Commercial Solid Refrigerators and Freezers, Version 1.0)							
Issues	This is being considered in draft legislation by Congress. Potentially burdensome test procedure.							
FY 2004 Priority	High							

Proposed Schedule and Rationale

Proposed Schedule	Proposed Rule FY 2005
Rationale for Priority Level	2004 Priority Setting

Pending Legislation

Product: Gas Unit Heaters/Gas Duct Furnaces

Priority: Not Specified

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 - 2035	Power Vent with Separated Combustion: 0.67 for unit heaters; 0.13 for duct furnaces Best Available (Condensing): 1.8 for unit heaters; 0.34 for duct furnaces
Potential Economic Benefits/Burdens	Not available.
Potential Environmental or Energy Security Benefits	Not available
Status of Required Changes to Test Procedures	No DOE test procedure. Current ANSI test procedures do not account for cycling losses and other seasonal effects.
Other Regulatory Actions	Products not covered by DOE. The National Energy Bill, if passed, would place efficiency-related requirements on unit heaters.
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	Condensing and power vent products available on the market (both unit heaters and duct furnaces).
Issues	Significant impacts on design possible (such as requiring vent dampers and banning pilots) associated with possible Other Regulatory Actions.
FY 2004 Priority	None

Proposed Schedule and Rationale

Proposed Schedule	
Rationale for Priority Level	

Pending Legislation

Product: Illuminated Exit Signs

Priority: Not Specified

Factors for Consideration	Assessment
<p>Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2010-2035</p>	<ul style="list-style-type: none"> In the event that Congress passes the Energy Policy Act of 2003, a national standard will be enacted for exit signs manufactured on or after January 1, 2005 that shall meet "Version 2.0 ENERGY STAR® Program performance requirements for illuminated exit signs prescribed by the Environmental Protection Agency." Cumulative Energy Savings 2010-2035: 0.16 Quad.
<p>Product / Technology Availability (Including Price/Cost information):</p>	<ul style="list-style-type: none"> Product is primarily directed toward the commercial sector. Readily available for building owners - ENERGY STAR® has 45 certified manufacturers. Total costs over a ten-year period, including first cost, energy, and maintenance will be approximately \$380 for incandescent signs and about \$65 for LED signs. Even on a first cost basis, which can be an important purchasing determinant, LEDs have become cost competitive. While incandescent signs without battery backup are still marginally less expensive than LED signs, the price for both types of signs with battery backup is about the same because the incandescent system requires a much larger battery.
<p>Cumulative Burden</p>	<ul style="list-style-type: none"> California mandated that exit signs should be ENERGY STAR® level on or after March 1, 2003. Some states banned incandescent lamps from exit signs in the 1990's. Safety related features are regulated (dimensions, operating hours, etc.).
<p>Status of Test Procedures</p>	<ul style="list-style-type: none"> EPA has developed and ENERGY STAR® test procedure, which draws upon industry standard methods, including those of Underwriters Laboratories and the National Fire Protection Association.
<p>Other Regulatory Actions</p>	<ul style="list-style-type: none"> In the event that Congress passes the Energy Policy Act of 2003, a national standard will be enacted for illuminated exit signs manufactured on or after January 1, 2005 that shall meet "Version 2.0 ENERGY STAR® Program performance requirements for illuminated exit signs prescribed by the Environmental Protection Agency."
<p>Evidence of Market-Driven or Voluntary Efficiency Improvements</p>	<ul style="list-style-type: none"> The ENERGY STAR® program has 45 certified manufacturers. Of the total installed base of exit signs in the United States, approximately 80% are already ENERGY STAR® / Light Emitting Diode (NCI, 2003).
<p>Issues</p>	<ul style="list-style-type: none"> Codes from all types of jurisdictions require regular exit sign inspection, despite predicted lamp life.

Background Material

Description	Value	Comments/Source
Total Energy Use (quad, 2003)	0.0282	NCI, 2003
Unit Energy Consumption (kWh)	78.0 kWh/yr	Weighted average UEC of installed stock, NCI 2003.
Installed Base (millions)	33.0	NCI, 2002.
Product Lifetime (years)	11	Average fixture life, estimated from 2002 shipments (NEMA, 2003) and installed base (NCI, 2002).
Minimum Efficiency Standard	CEC: 5 W/face No national	CEC has set a maximum wattage of 5W/face, effective March 1, 2003. There is no national standard.
Stock Efficiency (W)	8.9	Average of stock efficiency. NCI, 2003.
Typical New Efficiency (W)	6	Assume LED exit sign. NCI, 2003.
Best Available Efficiency	<1	Some ENERGY STAR® Exit Signs are listed that consume less than one watt. EPA, 2004b.
ENERGY STAR® Efficiency	5 W/face	ENERGY STAR® Program Requirements for Exit Signs. Eligibility Criteria. EPA, 2004.
Maximum Efficiency (Future Technology)	< 1	Electroluminescent and some LED panels already use 1 W or less.

Coverage

Product: Lamps, Incandescent Reflector - ER/BR shaped

Priority: High (test procedure priority also high)

Factors for Consideration	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010-2035	<ul style="list-style-type: none"> • Scenario 1: Halogen Standard = 0.74 quad • Scenario 2: Halogen Infrared Standard = 2.17 quads
Product / Technology Availability (Including Price/Cost information):	<ul style="list-style-type: none"> • Product is primarily directed toward the residential sector, but is also used in other sectors. • Readily available at retail outlets.
Cumulative Burden	<ul style="list-style-type: none"> • ER/BR lamps were exempted from the standard that regulated other incandescent reflector lamps in the Energy Policy Act of 1992. • By 2001, 57% of all reflector lamp shipments were ER/BR lamps (NEMA, 2003), and these lamps accounted for approximately 77% of reflector lamp shipments to the residential sector. • ER/BR lamps are not part of the draft Energy Bill.
Status of Test Procedures	<ul style="list-style-type: none"> • The Department has a test procedure for incandescent reflector lamps that is applicable to ER/BR lamps.
Other Regulatory Actions	<ul style="list-style-type: none"> • None.
Evidence of Market-Driven or Voluntary Efficiency Improvements	<ul style="list-style-type: none"> • None.
Issues	<ul style="list-style-type: none"> • If regulated, consumers may try and substitute non-regulated lamps (e.g., A-type or K-type) in sockets that had previously used ER/BR reflector lamps. If so, the overall system (fixture and lamp) efficiency may be lower than before the regulation. • PAR lamps, which are already regulated and more efficient than ER/BR lamps, are readily able to be installed in sockets that currently use ER/BR lamps.

Background Material

Description	Value	Comments/Source
Total Energy Use (quad, 2003)	0.166	Installed base, NEMA, 2003; Operating hours, NCI, 2002.
Unit Energy Consumption (kWh)	91.7	Installed base, NEMA, 2003; Operating hours, NCI, 2002.
Annual Shipments (millions)	107	ER, 1.8; BR: 102.5; BPAR: 3.3. NEMA, 2003.
Installed Base (millions)	165	Estimate, calculated from annual shipments (NEMA, 2003), operating hours (NCI, 2002) and lamp operating hours (manufacturer catalogues, 2003)
Product Lifetime (years)	1.57	Weighted average lifetime of ER/BR lamps in residential and non-residential applications (NCI, 2002).
Minimum Efficiency Standard	None	Not regulated, exempt from EPCACT 1992..
Stock Efficiency	12 LPW	Efficacy of a 75 watt reflector lamp.
Halogen Efficiency	14.2 LPW	Halogen reflector lamp of equivalent wattage
HIR Efficiency	18.5 LPW	Halogen infrared reflector lamp of equivalent wattage
Maximum Efficiency (Future Technology)	18.5 LPW	No known method of improving performance of incandescent technology without changing technology (e.g., CFL, LED)

Pending Legislation

Product: Residential Furnace Fans

Priority: Not specified

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010 -2035 ⁴⁴	Brushless permanent magnet motor: 5.0 Backward inclined blower + Brushless permanent magnet motor: 5.9
Potential Economic Benefits/Burdens; Cumulative NPV (billions of \$2002) 2010-2035 ⁴⁵	Brushless permanent magnet motor: 6.2 Backward inclined blower + Brushless permanent magnet motor: 5.4
Potential Environmental or Energy Security Benefits	Not available
Status of Required Changes to Test Procedures	Current DOE furnace test procedure reports annual auxiliary consumption of entire furnace. New test needs to be developed specifically for residential furnace fan efficiency.
Other Regulatory Actions	Being considered for efficiency regulation in draft legislation before Congress.
Recommendations by Interested Parties	Furnace and Boiler standards rulemaking comments: Several state and non-governmental organizations recommend regulating furnace fan efficiency. Gas Research Institute (GRI) and Edison Electric Institute (EEI) recommend separate rulemakings on electricity and gas consumption. American Gas Association (AGA) recommends standards on motors. A manufacturer (Trane) does not want electricity regulated under a residential furnace standards rulemaking. Another manufacturer (Lennox) recommends considering the use of E _{AE} if electricity consumption is to be regulated.
Evidence of Market-Driven or Voluntary Efficiency Improvements	Consortium for Energy Efficiency (CEE) and Gas Appliance Manufacturers Association (GAMA) have agreed on specifications for electrically efficient condensing furnaces. Some electric utilities are offering incentives for electrically efficient furnaces.
Issues	
FY 2004 Priority	Not applicable.

Proposed Schedule and Rationale

Proposed Schedule	Not specified.
Rationale for Priority Level	Waiting on Congressional action.

⁴⁴ Energy savings estimates are based on an [analysis of residential furnace fans](#) conducted for DOE's FY05 priority setting . The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site. http://www.eere.energy.gov/buildings/appliance_standards/docs/fy05_priority_setting_spreadsheets.zip

⁴⁵ Economic impacts are based on an analysis of residential furnace fans conducted for DOE's FY05 priority setting . The spreadsheet is available from the DOE Building Technologies Program, Appliances and Commercial Equipment Standards web site.

Test Procedure

Product: Residential Furnace Fans

Priority: Not specified

Factors for Priority Setting	Assessment
Relationship to Changes in Standard	Test procedure will be necessary if draft legislation before Congress is signed into law.
Priority of Standard	Not specified.
International or Other Coordinating Activities	None
Recommendation by Interested Parties	Furnace and Boiler rulemaking comments: Some interested parties recommend Watt per CFM rating.
Statutory Deadline	Waiting on Congressional action.
Issues	E _{AE} includes more components than furnace fan. Should air distribution fans for heat pumps be included.

Proposed Schedule and Rationale

Proposed Schedule	Not specified.
Rationale for Priority Level	Waiting on Congressional action.

Coverage (also in Pending Legislation)

Product: Torchieres

Priority: High

Factors for Consideration	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quads) 2010-2035	<ul style="list-style-type: none"> • Wattage Limit set at 190 W = 0.87 • Wattage Limit set at 70 W = 3.27⁴⁶
Product / Technology Availability (Including Price/Cost information):	<ul style="list-style-type: none"> • Product is primarily purchased by and used in the residential sector. • Readily available at homeware retail outlets and lighting showrooms. • Utilities have sponsored turn-in and rebate programs for halogen torchieres. • Most halogen or incandescent torchieres retail in the range of \$10 to \$30, while non-subsidized CFL torchieres typically cost between \$40 to \$70
Cumulative Burden	<ul style="list-style-type: none"> • California mandated that torchieres manufactured on or after March 1, 2003 shall not consume more than 190 watts and shall not be capable of operating with lamps that total more than 190 watts. • Many manufacturers are responding to the combination of safety concerns and high energy consumption, by installing safety measures such as lower wattage lamps and protective cages to avoid combustible materials from coming into contact with the lamp.
Status of Test Procedures	<ul style="list-style-type: none"> • No test procedure for efficiency, although applicable measurement standards on efficacy, lamp life, color rendering, etc. do exist (EPA, 2001). These testing standards are promulgated by the IESNA, ANSI and IEEE. <p>EPA has developed ENERGY STAR® Program Requirements for Residential Light Fixtures.</p>
Other Regulatory Actions	<ul style="list-style-type: none"> • In the event that Congress passes the Energy Policy Act of 2003, a national standard will be enacted for torchieres manufactured on or after January 1, 2005 that “(1) Shall consume not more than 190 watts of power; and (2) Shall not be capable of operating with lamps that total more than 190 watts.”
Evidence of Market-Driven or Voluntary Efficiency Improvements	<ul style="list-style-type: none"> • Sales of incandescent torchieres ~82% of market, CFL just under 7% of market • DOE worked with LBNL to develop a CFL-based torchiere lamp in the late 1990’s (BTS, 2000); market share of these CFL torchieres have never been more than 7% of annual shipments (Ecos Consulting, 2003) • Many universities (e.g., Brown, Harvard, Stanford, Yale) have banned halogen torchieres from dormitories for safety reasons (LBNL, 1998) • FEMP and several utilities around the country have sponsored “Torchiere Trade-in” schemes, where consumers swap their old halogen torchiere for a new ENERGY STAR® torchiere (FEMP 1998; HE, 1999).
Issues	<ul style="list-style-type: none"> • Regulations should be considered across all sectors (e.g., not excluding residential) as this is primarily a residential sector product. • While not an energy efficiency regulation issue, regulations could lead to lower wattage lamps and may reduce fire risk.

⁴⁶ Savings based on a shipments-weighted baseline consumption of 222 Watts. Savings estimates based on assumption that installed base remains constant (i.e., no growth in sales). Greater savings will be realized if sales increase.

Background Material

Description	Value	Comments/Source
Total Energy Use (quad, 2003)	0.238	Ecos Consulting, 2003.
Unit Energy Consumption (kWh/year)	314	Stock weighted average energy consumption (253 W). Ecos Consulting, 2003.
Annual Shipments (millions)	12.2	Halogen, 1.3; Incandescent: 10; CFL: 0.85. Ecos Consulting, 2003.
Installed Base (millions)	69.0	Ecos Consulting, 2003.
Product Lifetime (years)	4.25	Stock weighted average for three types of torchieres, Ecos Consulting, 2003.
Minimum Efficiency Standard	None (CA: 190 W)	There is no national efficiency standard for torchiere fixtures. CEC has set a maximum wattage of 190W for California, effective 03.01.03. UL (1996) set a maximum of 500W for UL listing.
Stock Efficiency (watts)	253	Average of stock efficiency. Ecos Consulting, 2003.
Typical New Efficiency (watts)	225	Assume incandescent torchiere. Ecos Consulting, 2003.
Best Available Efficiency (watts)	~ 55	Assume light output of ENERGY STAR® light source held constant with 225 W incandescent (3500 lumens)
ENERGY STAR® Efficiency (watts)	70	Assume light output of CFL source held constant with baseline.
Maximum Efficiency (Future Technology) (watts)	~ 40	Assume efficacy will improve to highest linear florescent tube (100 LPW) and 4000 lumen demand.

Test Procedure

Product: Torchieres

Priority: High

Factors	Assessment
Test Procedure Overview	<ul style="list-style-type: none"> ENERGY STAR® requires testing using the reference standard methods given in the table below for performance characteristics including input power and source light output. CEC standards do not specify a test method for torchiere fixtures.
Future/Potential Test Procedure(s)	ENERGY STAR® states that there will potentially be revisions for durability testing that may include on-off cycling, voltage variations and current variations among other factors. The ENERGY STAR® test method may be modified at some point in the future to enable light sources such as metal halide and solid state lighting sources to qualify for ENERGY STAR® certification.
How effectively do test procedure(s) and metric(s) represent actual annual energy consumption and potential savings?	<p>The test procedures measure energy consumption and source light output. Fixture performance (i.e., reflector bowl efficiency) and overall system performance are not measured.</p> <p>System performance may be a better measure, as it's the performance of the appliance – luminaire light output for energy input that consumers are interested in.</p>
Product Peak Load Impact and Correlation with Test Procedure and Metric, by Technology	Test procedure and metric of energy input correlate highly with the peak load impact.

Table 1: Residential Indoor and Outdoor Lights: ENERGY STAR®

Performance Characteristic	Reference standard for method of measurement
Efficacy Light output Input power	IESNA LM-9; LM-66 IESNA LM-9; LM-66; ANSI C82.2
Power factor	ANSI C82.11-3.3.1
Lamp current crest factor	ANSI C82.11-3.3.3
Lamp start time	ANSI C82.11-5.2
Lamp Life	IESNA LM-40; LM-65
Lamp Color Rendering	IESNA LM-58; LM-16
Lamp Correlated Color Temperature	IESNA LM-58; LM-16
Dimming	Use manufacturer protocol
Warranty	Use manufacturer protocol
Safety – Portable Fixtures	ANSI/UL 153
Safety – Hardwired Fixtures	UL 1598
Safety – Ballasts and “Fluorescent Adapters”	ANSI/UL 935; UL 1993
Ballast Frequency	IESNA LM-28
Transient Protection	IEEE C 62.41

Pending Legislation

Product: Traffic Signals

Priority: Not Specified

Factors for Consideration	Assessment
<p>Potential Energy Savings from Regulatory Action; Cumulative (quad) 2010-2035</p>	<ul style="list-style-type: none"> • In the event that Congress passes the Energy Bill, a national standard will be enacted for traffic signals manufactured on or after January 1, 2006 that shall meet “the performance requirements used under the ENERGY STAR® program of the Environmental Protection Agency for traffic signals, as in effect on the date of enactment of this subsection, and shall be installed with compatible, electrically connected signal control interface devices and conflict monitoring systems.” • Cumulative Energy Savings 2010-2035: 0.662 quad.
<p>Product / Technology Availability (Including Price/Cost information):</p>	<ul style="list-style-type: none"> • Readily available for municipalities. The ENERGY STAR® program identifies seven manufacturing partners. • A red LED traffic signal costs about \$75 compared to \$3 for an incandescent signal, the lower energy consumption and extended operating life (and associated maintenance savings) equate to lower life-cycle costs. For example, the cost of ownership of red LED traffic signals is about one-third that of incandescent traffic signal lamps over a seven-year period (CEE, 2002).
<p>Cumulative Burden</p>	<ul style="list-style-type: none"> • California mandated that traffic signals must be illuminated by LEDs, or meet certain standards put forth
<p>Status of Test Procedures</p>	<ul style="list-style-type: none"> • In the event that Congress passes the draft Energy Bill, the test procedure EPA has developed for ENERGY STAR® Traffic Signal Program will become the Department’s test procedure. The ENERGY STAR® program for Traffic Signals signal specification is based on a low energy requirement and conformance to the Institute for Transportation Engineer’s (ITE) “Interim LED Purchase Specification, Vehicle Traffic Control Signal Heads, Part 2: Light Emitting Diode (LED) Vehicle Traffic Signal Modules” (VTCSH Part 2) (EPA, 2004).
<p>Other Regulatory Actions</p>	<ul style="list-style-type: none"> • In the event that Congress passes the Energy Policy Act of 2003, the following legislation will go into effect: “Traffic signal modules manufactured on or after January 1, 2006, shall meet the performance requirements used under the ENERGY STAR® program of the Environmental Protection Agency for traffic signals, as in effect on the date of enactment of this subsection, and shall be installed with compatible, electrically connected signal control interface devices and conflict monitoring systems.”
<p>Evidence of Market-Driven or Voluntary Efficiency Improvements</p>	<ul style="list-style-type: none"> • The ENERGY STAR® program identifies seven manufacturing partners. • ~27% of the traffic and pedestrian crossing signal market has already moved to LEDs (installed base weighted-average). Market penetration for colored ball: Red (39% LED), green (29% LED) (NCI, 2003).
<p>Issues</p>	<ul style="list-style-type: none"> • None

Background Material

Description	Value	Comments/Source
Total Energy Use (quad, 2002)	0.0374	NCI, 2003
Unit Energy Consumption (kWh/year)	222.5	Stock weighted average UEC, including incandescent and LED (NCI, 2003)
Annual Shipments (millions)	NA	Not available.
Installed Base (millions)	15.3 million	All types of traffic and pedestrian control signal modules (NCI, 2003).
Product Lifetime (years)	10	Estimate
Minimum Efficiency Standard	None CEC: 2003	No national energy standard, however California has passed minimum efficiency standards that are consistent with ENERGY STAR®.
Stock Efficiency (W)	95.2 watts	Average of stock efficiency, all signal types. NCI, 2003.
Typical New Efficiency (W)	NA	Not available.
Best Available Efficiency	10 watts	Red ten inch signal head (NCI, 2003)
ENERGY STAR® Efficiency	Various	ENERGY STAR® Program Requirements for are shown in the table (EPA, 2004)
Maximum Efficiency (Future Technology)	5 watts	Assume doubling of LED system efficiency by 2020, relative to today's LED efficiencies (NCI, 2003).

Table A7-1: Energy-Efficiency Criteria for ENERGY STAR® Qualified Traffic Signal Modules

Module Type	Maximum Wattage (at 74°C)	Nominal Wattage (at 25°C)
12 inch Red Ball	17 watts	11 watts
8 inch Red Ball	13 watts	8 watts
12 inch Red Arrow	12 watts	9 watts
12 inch Green Ball	15 watts	15 watts
8 inch Green Ball	12 watts	12 watts
12 inch Green Arrow	11 watts	11 watts
Combination Walking Man/Hand	16 watts	13 watts
Walking Man	12 watts	9 watts
Orange Hand	16 watts	13 watts

Test Procedure Summary

Product: Traffic Signals

Priority: Not Specified

Factors	Assessment
Test Procedure Overview	In the event that Congress passes the draft Energy Bill, the ENERGY STAR® test procedure for traffic signals will become the Department’s test procedure. The ENERGY STAR® program for Traffic Signals signal specification is based on a low energy requirement and conformance to the Institute for Transportation Engineer’s (ITE) “Interim LED Purchase Specification, Vehicle Traffic Control Signal Heads, Part 2: Light Emitting Diode (LED) Vehicle Traffic Signal Modules” (VTCSH Part 2) (EPA, 2004).
Future/Potential Test Procedure(s)	No other test procedures have been identified, nor are considered necessary. The ENERGY STAR® test procedure is based on industry reviewed and accepted methods.
How effectively do test procedure(s) and metric(s) represent actual annual energy consumption and potential savings?	The test procedure is effective and accurate accessing the energy consumption of the traffic signal.
Product Peak Load Impact and Correlation with Test Procedure and Metric, by Technology	The correlation with peak load is significant, as traffic signals generally operate 24 hours per day every day, no matter what time the peak occurs, it will be impacted by this product.

Previously Unevaluated Product

Product: Large Unitary Air Conditioners (≥ 240 kBtu/hr)

Priority: Not Applicable

Factors for Priority Setting	Assessment
Potential Energy Savings from Regulatory Action; Cumulative (Quad) 2010 - 2035	0.25 quad (CEE Tier 2: 10.0 EER) 0.7 quad (Best Available: 11.0 EER ⁴⁷)
Potential Economic Benefits/Burdens	Not Available.
Potential Environmental or Energy Security Benefits	Not Available
Status of Required Changes to Test Procedures	Product currently not covered by DOE. Current ARI test procedure does not correlate well with annual energy consumption and does not account for energy saved by energy recovery approaches. ARI committee developing proposal for improved IPLV test procedure.
Other Regulatory Actions	HCFC phaseout
Recommendations by Interested Parties	
Evidence of Market-Driven or Voluntary Efficiency Improvements	ARI committee developing proposal for federal standard (to counter multiple state-level standards initiatives); CEE (Tier 2 standard); ASHRAE 90.1 levels
Issues	Physical space constraints (both for shipping and installation) limit opportunities for improving efficiency, particularly in larger-capacity units.
FY 2004 Priority	None

Proposed Schedule and Rationale

Proposed Schedule	
Rationale for Priority Level	

⁴⁷ Available in smaller capacity units only, but savings calculated as if available across the full capacity range.