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2008 Appliance Efficiency Rulemaking Phase I - Draft Regulations

Efficiency Committee Workshop May 15, 2008

Staff Overview and Recommendations

Appliance Efficiency Program Staff
Buildings and Appliances Office
California Energy Commission



2008 Appliance Efficiency Rulemaking Phase I

- Committee Scoping Order (4/2/08) established topics for consideration in Phase 1, Parts A and B.
- Committee Workshop Notice (4/30/08) divided Phase 1 topics as follows:
 - **Part A**
 - General purpose lighting
 - Portable lighting fixtures
 - **Part B**
 - High intensity discharge metal halide fixtures
 - Battery charger test method
 - Residential pool pumps (clarification) and portable electric spas (test method clarification)
 - Updates and revisions necessary for consistency with federal laws and other non-substantive changes
 - **Part C**
 - Televisions



Staff Report and Draft Regulations Phase I, Parts A and B

- *Staff Report: Phase I, Parts A and B* provides background and draft regulations for all topics
- *Draft Regulations: Part B – Draft Amendments to the Appliance Efficiency Regulations* provides
 - Non-substantive changes (without regulatory effect) for Parts A (definitions) and B
 - Changes with regulatory effect (“express terms” equivalent) for Part B topics only



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Updates and Revisions Necessary for Consistency With Federal Laws and Other Non-substantive Changes

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Non-substantive Changes

Non-substantive changes are shown in the draft regulations with blue-highlighted text that is either struck-out or underlined. These reflect:

- Changes without regulatory effect, found in:
 - 10 Code of Federal Regulations (CFR) Section 430
 - 10 CFR Section 431
 - Energy Independence and Security Act of 2007 (EISA 2007)
- Other clarifications
- Staff welcomes stakeholders review and comments



Federal Standards Updated or Added

Section 1605.1 includes updated or new federal standards for:

- Commercial Refrigerators
- Commercial Automatic Ice Makers
- Walk-in Coolers and Freezers
- Through the wall and small duct, high velocity Air Conditioner (AC) & Heat Pump (HP)
- Commercial AC & HP
- Single package vertical AC & HP
- Ceiling Fans, Ceiling Fan Light Kits
- Dehumidifiers
- Residential Boilers



Federal Standards Updated or Added (cont.)

Section 1605.1 includes updated or new federal standards for:

- Duct Furnaces
- Commercial Pre-Rinse Spray Valves
- Fluorescent Lamp Ballasts, Lamps, Exit Signs, Traffic Signals, Torchieres, Metal-Halide Luminaires
- Residential Dishwashers
- Clothes Washers (residential and commercial)
- Electric Motors
- Distribution Transformers
- External Power Supplies



Other Clarifications

Where appropriate, standards in 1605.3 have either:

- Been removed, where federal standards are already in effect; or
- Have an end-date incorporated, where federal standards take effect in the future.



Changes with Regulatory Effect

Text shown highlighted in red, and either ~~struck-out~~ or underlined, represents either:

- Changes (draft regulations) for Part B topics only that are not found in
 - 10 CFR Section 430
 - 10 CFR Section 431
 - EISA 2007
- Changes to data collection requirements (Table V) due to changes with and without regulatory effect.

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Residential Pool Pumps (Clarifications) And Portable Electric Spas (Test Method Clarification)

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PG&E Proposal

- Proposal Information Template submitted by PG&E (January 30, 2008) included multiple recommendations.
- Proposal narrowed to address specific deficiencies of current standards for pool pump motors and test method for portable electric spas.
- PG&E to submit revised template in May 2008.



Residential Pool Pumps Clarification of Standards

Proposed regulatory language will:

- Clarify that standards apply to replacement motors installed in existing pool pumps
- Add testing and data certification for Curve “C” to facilitate showing of compliance with Title 24
- Add a data collection point to enable manufacturers to show compliance with pump control requirements



Portable Electric Spas Clarification of Test Method

Current test method specifies:

- minimum water temperature
- maximum ambient air temperature

Proposed regulatory language will

- Insert two-sided temperature tolerances
- Remove the spa insulation R-value and spa cover R-value from data reporting requirements

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Battery Charger Test Method Proposals

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Battery Charger Test Method Proposal

- PG&E submitted Proposal Information Template for Battery Charger Systems (January 30, 2008) recommending
 - Adoption of Ecos Energy Efficient Battery Charger Systems Test Procedure Version 1.1
 - Call for Test Data from manufacturers, interested parties



Battery Charger Test Method Proposal (cont.)

- Energy Commission staff conducted meetings including:
 - Battery charger stakeholders (AHAM, PTI, CEA, other industry representatives)
 - U.S. Department of Energy
 - Natural Resources Canada.
- Active discussion with substantive and non-substantive changes proposed
- PG&E/Ecos Consulting submitted Ecos Energy Efficient Battery Charger Systems Test Procedure Version 1.2 (April 22, 2008) in response to comments received.



Battery Charger Test Method Staff Recommendation

- Ecos Battery Chargers Systems Test Procedure Version 1.2 is comprehensive and measures energy consumption in active, maintenance, and standby modes.
- Further discussion of proposed call for test data.
- Follow-up meeting including manufacturers of large battery chargers scheduled for May 28, 2008.

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Lighting Energy Regulations – Recent California and Federal Legislation

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Assembly Bill 1109 Requirements

Assembly Bill 1109 (Huffman), Chapter 534, statutes of 2007 (AB 1109)

- On or before December 31, 2008, the Energy Commission shall adopt minimum energy efficiency standards for all general purpose lights on a schedule specified in the regulations.
- The regulations combined with other programs shall:
 - Reduce average indoor residential lighting energy $\geq 50\%$, relative to 2007 levels
 - Reduce average indoor commercial lighting and outdoor lighting energy by $\geq 25\%$, relative to 2007 levels.



Federal Regulation

EISA 2007 provisions for future lighting and appliance efficiency standards

- Requirements for general service lamps provision to accelerate the effective dates of federal standards in California
- Metal halide fixtures, with provision for adoption of California standards

Energy Commission draft regulations are intended to meet the lighting energy reduction requirements of AB 1109, in compliance with EISA 2007 and existing federal regulations.



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General Purpose Lighting

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General Purpose Lighting Proposal

PG&E submitted Proposal Information Template for General Purpose Lighting (January 30, 2008) recommending adoption of:

- EISA-2007 Tier I requirements one year prior to federal effective dates, and
- EISA-2007 Tier II backstop requirement two years prior to federal effective date.



General Purpose Lighting Proposal

Current California Regulated Wattage	EISA 2007 Tier-I Maximum Wattage	Tier I Rated Lumens	Proposed California Effective Date	Federal Effective Date	Tier II Backstop Effective 2018 Requirement Lumens/watt
95	72	1490-2600	1/1/2011	1/1/2012	45
71	53	1050-1489	1/1/2012	1/1/2013	45
57	43	750-1049	1/1/2013	1/1/2014	45
38	29	310-749	1/1/2013	1/1/2014	45



General Purpose Lighting Proposal

- The Energy Commission staff met with the lighting industry representatives on March 13, 2008, including
 - American Lighting Association (ALA)
 - National Electric Manufacturers Association (NEMA)
 - California Lighting Technology Center (CLTC)
- General agreement for early adoption
- Consistent with provisions of EISA 2007



GU-24 Base – Staff Recommendation

Incandescent lamps shall not contain GU-24 base:

- Corresponds with proposed requirements for portable lighting fixtures, and
- Consistent with *Title 24 2008 Building Energy Efficiency Standards*, adopted April 23, 2008.



GU-24 Base Examples



General Purpose Lighting Staff Recommendation

- Adoption of EISA-2007 Tier I one year prior to federal effective dates.
- Adoption of Tier II backstop requirement two years prior to federal effective date.
- Incandescent lamps shall not contain GU-24 Base.

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Portable Luminaires

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Portable Lighting Proposals

Energy Commission received two proposals:

- *Analysis of Standards Options for Portable Lighting Fixtures*, prepared for Pacific Gas & Electric Company (PG&E) by the American Council on an Energy Efficient Economy (ACEEE)
- Proposal Information Template – Portable Lighting Fixtures, submitted by American Lighting Association (ALA)



Portable Lighting Proposals

And received:

- Comments in response to the ALA Proposal that was prepared for PG&E by ACEEE
- Staff conducted meetings with lighting industry representatives, PG&E and consultants to discuss proposals



PG&E Proposal

Portable luminaires would require one of the following:

- Integrated power limiter
 - Max 35 W for screw based lamps
 - Max 40 W non-screw based low-voltage halogen
- Designed only for Energy Star® high efficacy lamps



PG&E Proposal (cont.)

Definition of portable luminaire:

- Broadly applied to all plug-in table and floor lamps regardless of lamp/socket configuration
 - Except federally-regulated torchieres



Discussion - PG&E Proposal

- Treats floor and table luminaires the same – but higher wattage may be needed for floor luminaires
- Luminaires with more than two sockets may need higher wattage than allowed
- May drive California consumers to internet sales



ALA Proposal

New single- and multiple-socket portable luminaires would require one of the following:

- When medium based socket – shall be rated 150 W maximum with dimmer
 - Marked for use with incandescent or dimmable compact fluorescent light (CFL)
 - Exempts all other lamp/socket configurations
- GU-24 line-voltage sockets
- Dedicated 2- or 4-pin sockets wired to appropriate fluorescent ballasts



ALA Proposal (cont.)

Definition of portable luminaire:

- Limited to medium screw-based - residential plug-in floor, table, task, and other portable and decorative luminaires.
 - Except federally-regulated torchieres



ALA Proposal (cont.)

Voluntary Programs Outside Title 20 Scope

- Portable luminaire conversion
- GU-24 adaptor
- Rebates for trade-ins or conversions



Discussion - ALA Proposal

- Limiting to medium base sockets will only affect subset of portable luminaire types
 - Creates loophole to switch to other lamp/socket configurations
- 150 W cap will affect < 25% portable luminaires



Discussion - ALA Proposal (cont.)

- CFLs not readily compatible with dimmers
 - Virtually all retail screw-based CFLs not dimmable
 - Speculative to think dimmable CFLs will be readily available.
 - Percentage of Californians already using screw-in CFL
 - No longer able to do so
 - May actually increase overall energy consumption
 - May increase CFL failure



Discussion - ALA Proposal (cont.)

- Even though GU-24 products are dominantly high efficacy at this time – no federal or state standards prohibit incandescent lamps with GU-24 bases
 - Therefore, staff also recommends no incandescent lamps with GU-24 bases be sold in California
- Allowing 2-pin fluorescent sockets will allow magnetic ballasts – which are less efficient than Energy Star®



Staff Proposal

Portable luminaires manufactured on or after January 1, 2010 shall meet one of the following requirements:

- Maximum wattage per Table N-3
- Equipped only with GU-24 line-voltage sockets
- Be high efficacy as defined by Table N-4



Staff Proposal (cont.)

Proposed Table N-3

Luminaire Type	Number of Sockets per Luminaire		
	1	2	Greater than 2
Portable floor luminaire using other than low voltage halogen lamps	35 W	58 W	23 W per additional socket up to 150 W total
Portable floor luminaires using low voltage halogen lamps	40 W	63 W	
All other portable luminaires, including portable table luminaires using other than low voltage halogen lamps	35 W		16 W per additional socket up to 150 W total
All other portable luminaires	40 W		



Staff Proposal (cont.)

Proposed Table N-4 High Efficacy	
System Input Power Rating	Minimum System Efficacy
≤ 5 watts	30 lumens per watt
> 5 watts to ≤ 15 watts	40 lumens per watt
> 15 watts to ≤ 40 watts	50 lumens per watt
> 40 watts	60 lumens per watt

Identical to Table 150-C in Title 24 2008 Building Energy Efficiency Standards adopted April 23, 2008.



Staff Proposal (cont.)

GU-24 Standards - manufactured on or after 1/1/10:

- Luminaires with GU-24 sockets shall not be rated for use with incandescent lamps of any type, including line-voltage or low-voltage
- GU-24 adaptors shall not adapt a GU-24 socket to any other line-voltage socket

*Above requirements dovetail with
Title 24 2008 Building Energy
Efficiency Standards adopted
April 23, 2008*



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High Intensity Discharge (HID) Metal Halide Luminaires

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PG&E Proposal

- *Analysis of Standards Options for High-Intensity Discharge Lighting Fixtures*, prepared for PG&E by ACEEE
- Proposed standards affect new fixtures in commercial applications
- Energy savings help meet AB 1109 requirements



Regulations for Metal Halide Luminaires

- California's current Title 20 regulations became effective 2006 and January 1, 2008
- EISA 2007 contains requirements that will become effective January 1, 2009
- EISA 2007 allows California to adopt revised standards by December 31, 2011



Comparison of Existing and Proposed Regulations

Ballast Type	CA 2008		Federal 2009			Proposed CA 2010		
Probe Start	Not Allowed		Allowed			Not Allowed		
Pulse Start	Allowed		Allowed			Allowed		
Minimum Ballast Efficiency	All Types	88%	Pulse- Start	88%		Pulse-Start	>275-500W	92%
			Magnetic Probe-Start	94%			150-≤275W	90%
			Electronic Probe- Start	>250W	92%	All Probe-Start	Not Allowed	
				≤250W	90%			

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