2008 RULEMAKING on APPLIANCE EFFICIENCY REGULATIONS Efficiency Committee Workshop January 15, 2008

Staff Overview
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California Energy Commission
Appliance Efficiency Regulations

Appliance Efficiency Regulations (Title 20) govern appliances sold or offered for sale in California.

- Energy/water efficiency standards (minimum performance or design criteria)
- Test method specification
- Appliance marking or labeling requirements
- Manufacturer compliance certification (data submittal) and test laboratory approval requirements
Regulated Appliances

- Refrigeration equipment
- Air Conditioners and Heat Pumps
- Ceiling fans, whole house fans, residential exhaust fans
- Heaters; Water Heaters
- Pool Heaters, Pool Pumps, Spas
- Plumbing fittings and fixtures
- Lamps, ballasts, exit signs, luminaires, traffic signals
- Clothes washers, clothes dryers, dishwashers, cooking equipment
- Electric motors
- Distribution transformers
- External Power Supplies
- Consumer audio and video equipment
Appliance Efficiency Program

Title 20 Implementation:

- Standards Development and Adoption
- Compliance Certification and Database
- Compliance Outreach
- Testing and Enforcement

http://www.energy.ca.gov/appliances/index.html
Order Instituting Rulemaking

Scope of this rulemaking to focus initially on:

- General purpose lighting to help meet the requirements of AB 1109 – indoor residential, indoor commercial and outdoor lighting
- Battery chargers
- Updates and clarification
- Other priority matters

Rulemaking may be divided into phases.
Initial Rulemaking Schedule: General Purpose Lighting Only

Committee Establish Scope: late January, 2008
Publish Draft Standards/Amendments: mid-April
Staff Workshop: early May
Committee Workshop (If Needed): June/July
Release Proposed Standards (45-Day Language)/CEQA Analysis: early September
Committee Hearing: early October
Release Revised Proposed Standards If Needed (15-Day Language): early November
Commission Adoption Hearing: December 3, 2008
Effective Date: January 1, 2011
Assembly Bill 1109

Assembly Bill 1109 (Huffman), Chapter 534, statues of 2007 (AB 1109) - The Lighting Efficiency and Toxic Reduction Act

• 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 by not less than 50%, relative to 2007 levels.
  – Reduce average indoor commercial lighting and outdoor lighting energy by not less than 25%, relative to 2007 levels.
AB 1109 Implementation

• Adopt regulations for general purpose lighting in 2008.
• To achieve the lighting energy reduction requirements, do all of the following:
  – Evaluate statewide residential and commercial lighting electrical usage data and establish 2007 baseline lighting electrical energy use.
  – Evaluate expected growth in electrical lighting demand
  – Evaluate and prioritize other programs and activities outside of the rulemaking on general purpose lighting standards that may include:
    • Building Energy Efficiency Standards (such as measures to require lighting controls or install efficient equipment)
    • Outreach and Education (manufacturer, distributor and consumer)
    • Rebates and Incentives
Current State-Regulated Lighting

- General Service Incandescent Lamps
- Incandescent Reflector-lamps
- Emergency Lights
- Traffic Signal Modules
- Metal Halide Luminaries
- Under Cabinet Luminaries
State-Regulated General Incandescent Lamps

<table>
<thead>
<tr>
<th>Traditional Wattage</th>
<th>Maximum Wattage 1/1/2008</th>
<th>Wattage Reduction 1/1/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>38</td>
<td>5%</td>
</tr>
<tr>
<td>60</td>
<td>57</td>
<td>5%</td>
</tr>
<tr>
<td>75</td>
<td>71</td>
<td>5%</td>
</tr>
<tr>
<td>100</td>
<td>95</td>
<td>5%</td>
</tr>
</tbody>
</table>
New Federal Lighting Standards (H.R.6)
General Service Incandescent Lamps

<table>
<thead>
<tr>
<th>Maximum Wattage</th>
<th>Tier I Rated Lumens</th>
<th>Effective Date</th>
<th>Wattage Reduction</th>
<th>Tier II Required Lumens/watt</th>
</tr>
</thead>
<tbody>
<tr>
<td>72</td>
<td>1490-2600</td>
<td>1/1/2012</td>
<td>28%</td>
<td>45</td>
</tr>
<tr>
<td>53</td>
<td>1050-1489</td>
<td>1/1/2013</td>
<td>12%</td>
<td>45</td>
</tr>
<tr>
<td>43</td>
<td>750-1049</td>
<td>1/1/2014</td>
<td>19%</td>
<td>45</td>
</tr>
<tr>
<td>29</td>
<td>310-749</td>
<td>1/1/2014</td>
<td>27.5%</td>
<td>45</td>
</tr>
</tbody>
</table>
# Preemption Issues:

<table>
<thead>
<tr>
<th>Standards</th>
<th>Federal Effective Dates</th>
<th>California’s Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier I</td>
<td>Different wattage bins</td>
<td>California may put into effect the federal standard 12 months prior to federal effective dates.</td>
</tr>
<tr>
<td></td>
<td>January 1, 2012 through January 1, 2014</td>
<td></td>
</tr>
<tr>
<td>Tier II</td>
<td>Minimum 45 lumens per watt by January 1, 2020</td>
<td>California may adopt the Tier II federal standards effective on or after Jan 1, 2018. Can California adopt a different standard than Tier II standards?</td>
</tr>
</tbody>
</table>
Other Lighting Issues/Opportunities

- Indoor commercial lighting
  - Commercial
  - Industrial
  - Common Areas High Rise Residential
  - Common Areas Hotel/Motel
- Outdoor lighting considered as in Title 24
  - All Nonresidential
  - Outdoor House lights High Rise Residential
  - Outdoor House Lights Hotel/Motel
  - Outdoor House Lights Multi-Family
  - Residential Parking Greater than 8 Spaces per Site
Battery Chargers

- Over 600 million products that contain battery chargers (e.g., cordless products including power tools, small household appliances, personal care products like electric shavers, and high-power battery-operated forklifts). The amount of energy consumed by battery chargers is being researched.
- System efficiencies of battery chargers are very low – often 30% or less - significant savings can be achieved by improving efficiency.
- Battery chargers in inactive mode can draw as much as 5 to 20 times more energy than is actually stored in the battery.
Battery Chargers (cont.)

Power Consumed by Battery Charger in Different Modes:

<table>
<thead>
<tr>
<th>Power Mode</th>
<th>Power Consumed</th>
<th>Charging Time</th>
<th>Equipment State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Large</td>
<td>Medium</td>
<td>When battery is being charaged.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Medium</td>
<td>Large</td>
<td>Fully charged battery installed, and charger attached to wall plug.</td>
</tr>
<tr>
<td>Standby</td>
<td>Small</td>
<td>Large</td>
<td>Battery not installed, but charger attached to wall plug.</td>
</tr>
</tbody>
</table>
Battery Chargers (cont.)

- Advanced designs for battery chargers are available that can improve energy consumption by more than 35%.
- Significant energy savings can be achieved with the use of efficient battery chargers, in millions of (kWh) per year.
- Electric energy savings generated by use of efficient battery chargers would result in preventing the release of millions of tons of greenhouse gas emissions.
Battery Chargers (cont.)

- DOE adopted a test method in July 2006.
  - Test method measures power consumption for maintenance mode and standby mode.
- California Energy Commission’s Public Interest Energy Research Program (PIER) funded Ecos Consulting to develop a comprehensive test method.
- Ecos published test method on September 21, 2007. Ecos test method covers:
  - All types of residential and commercial battery charger systems
  - Testing in active mode, maintenance mode, and standby mode
Battery Chargers (cont.)

2007 EPAct requires the U.S. Department of Energy (DOE) to:

- Determine that no energy conservation standard are technically feasible and economically justifiable for battery chargers by July 1, 2011,
  
  or

  Prescribe standards for battery chargers by July 1, 2011.

- Prescribe a test procedure for battery chargers no later than December 31, 2008.

- Energy Commission will consider adopting test method developed by Ecos and prescribing standards for battery chargers.
2008 Rulemaking: Updates /Clarifications and Other Priority Matters

- Updates to clarify standards and make consistent with federal legislation (e.g., Table V)
- Consumer electronics – Televisions, set-top boxes, labeling of home entertainment systems (SB 332)
Questions?

Template available for detailed proposals.

http://www.energy.ca.gov/appliances/index.html