

Proposal Information Template for: **General Purpose Lighting**

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Proposal Information Template – General Purpose Lighting

2008 Appliance Efficiency Standards

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CONTENTS

Purpose	2
Methodology	3
Recommendations.....	3
Bibliography and Other Research.....	5

Purpose

This document is a report template to be used by researchers who are evaluating proposed changes to the California Energy Commission's (Commission) appliance efficiency regulations (Title 20, Cal. Code Regs, §§ 1601 – 1608). This report specifically covers general purpose lighting.

Overview

Description of Standards Proposal	This brief report covers general purpose lighting options for CEC. Given that newly-adopted federal standards essentially pre-empt California's Title 20 authority to regulate most general service lighting technologies, this document reviews ten strategies that the California could pursue, to increase efficiency of general purpose lighting without violating the pre-emption clauses of the federal legislation.
California Stock and Sales	Ecos has modeled California residential lighting on an initial basis and could provide suggestions, if requested, to those at the CEC who are conducting official modeling for AB 1109 compliance.
Energy Savings and Demand Reduction	Per-household energy use reductions of approximately 50 to 54% under extremely optimistic assumptions (most of the measures proposed here adopted fully and promptly). Per-lamp demand reductions of approximately 57%, yielding overall demand reductions of slightly less than 50%.
Economic Analysis	Would require extensive modeling by the CEC to calculate fully.
Non-Energy Benefits	Longer lamp lifetimes would improve convenience for consumers. Lower heat output would improve comfort in warm climates and safety.

Environmental Impacts	Adoption of efficient lighting technologies generally has positive impacts on landfill volume, but also some complex issues surrounding the mercury in CFLs. The mercury impact is more than offset by the reductions in mercury emissions from coal-fired power plants, even at California's relatively low use of coal. However, these reductions are outside of California, whereas some increase in mercury due to adoption of CFLs will occur within California. PG&E's sub-contractor, Ecos, has completed analyses of both landfill and mercury impacts via separately-funded research through the California Lighting Technology Center.
Acceptance Issues	Federal standards allow the sale of far dimmer lamps within proposed lumen bins of fixed wattage. This will likely lead to "bin-jumping" by many customers to obtain sufficient light, reducing the resulting energy savings. The proposals below help to discourage this by highlighting and rewarding the most efficient products that reduce power consumption without sacrificing light output.
AB 1109 (California Lighting Efficiency and Toxics Reduction Act)	Meeting AB1109 requirements for indoor residential lighting will largely require significant market penetration by CFLs. This could possibly be accomplished by early-adoption of federal Tier 1 lighting standards, but federal Tier 2 standards will not be in place in time to materially affect AB1109 requirements, even if adopted early. Outdoor residential lighting and commercial lighting have not been addressed in this document and would need further analysis elsewhere. Various other options that might impact AB1109 requirements are discussed below.
Federal Pre-emption or other Regulatory or Legislative Considerations	Federal pre-emption largely eliminates California's ability to adopt more stringent standards for general purpose lighting. However, early adoption of the federal standards would achieve significant savings of electricity. The recommendations below include options available to California for regulating products and strategies not covered or pre-empted by the federal legislation.

Methodology

PG&E's sub-contractors Energy Solutions and Ecos have identified the ten strategies for increasing efficiency of general purpose lighting in California, based on analytical research conducted by PG&E and its subcontractors, including analysis of federal legislation, review of other, relevant literature, and professional evaluation.

Recommendations

1. Adopt federal Tier 1 standards one year early and Tier 2 standards two years early, as allowed in EISA (Energy Independence and Security Act of 2007).
2. Adopt mandatory efficiency standards for portable fixtures (dealt with in a separate PG&E recommendation).

3. Adopt standards to increase the efficiency of linear fluorescent fixtures (dealt with in a separate PG&E recommendation).
4. Regulate products not covered by federal legislation, including:
 - a. Vibration service
 - b. Rough service
 - c. 3-way
 - d. Shatter resistant
 - e. G lamps 5" or more in diameter
 - f. Other specialty lamps of 40W or less.
5. Implement Title 24 standards changes to reduce average hours of operation and increase installation of efficient fixtures, such as linear fluorescent lighting, CFLs, and LEDs in new construction. Changes could include such measures as requiring all dimmable sockets to have dimmable CFLs pre-installed, rather than incandescents.
6. Rigorously pursue enforcement of existing and future regulations:
 - a. Impose financial penalties on retailers who sell products that are not compliant with Title 20 standards. Such penalties would escalate for repeat or protracted violations and scale with the number of non-compliant products sold.
 - b. Revenue generated by enforcement penalties should be used to fund additional enforcement via the CEC or the Attorney General's office, including random sampling and testing of products sold at retail in California and public disclosure of retailers found to sell non-compliant products.
7. Adopt disincentives on the sale of less-efficient lighting products (would require legislative proposal in 2008, to be implemented in 2009):
 - a. \$0.25 fee for bulbs that meet California Tier 2, but not federal Tier 1 standards.
 - b. \$0.50 fee for products that are less efficient than California Tier 2 (primarily modified spectrum and various niche products).
 - c. Revenue to be used either for standards enforcement or additional rebates on efficient products.
8. California utilities should expand and redirect incentives offered for sale of efficient lighting products:
 - a. Shift CFL incentives to the most efficient products, not just Energy Star compliant products.
 - b. Provide higher incentives for "super-CFLs" such as dimmable and improved-light-quality products.
 - c. LED products.
9. Labelling: EISA directs the Federal Trade Commission to open rulemaking to consider effectiveness of current lamp labelling and alternative approaches, to be completed by June of 2010. Although California is pre-empted from requiring labelling different from that proposed by FTC, California utilities could work proactively to test various label strategies in retail stores and focus groups, to determine which are effective in increasing sales of efficient products. This would have to be completed in 2008, in order to affect the FTC process in time.

10. Gather comprehensive statistics: California's efforts would be greatly enhanced by a CEC commitment to gathering comprehensive, state-wide statistics tracking the sales and stocks of light bulbs and lighting technologies. Attempts to estimate procedures required to achieve AB1109 requirements have revealed the lack of a central source for accurate data on lighting products in California. If this data gathering included modified spectrum and other exempted lamp categories, California could also track overall energy use for lighting more easily.

Bibliography and Other Research

http://energy.ca.gov/appliances/2008rulemaking/documents/2008-01-15_workshop/presentations/Calwell_Chris_Presentation.pdf