

CALIFORNIA  
ENERGY  
COMMISSION

**AMENDMENTS TO APPLIANCE  
EFFICIENCY REGULATIONS  
Initial Study –  
Proposed Negative Declaration**

**California Code Of Regulations,  
Title 20, Sections 1601 - 1608**

**DRAFT COMMISSION REPORT**

October 2004  
P400-04-013CMD



Arnold Schwarzenegger, *Governor*

# CALIFORNIA ENERGY COMMISSION

William J. Keese,  
***Chairman***

***Commissioners:***

James D. Boyd  
John L. Geesman  
Jackalyne Pfannenstiel  
Arthur H. Rosenfeld

Robert L. Therkelsen,  
***Executive Director***

R. Michael Martin  
***Project Manager***

G. William Pennington,  
***Manager***

**BUILDINGS AND  
APPLIANCES OFFICE**

Valerie T. Hall,  
***Deputy Director***  
**ENERGY EFFICIENCY AND  
DEMAND ANALYSIS  
DIVISION**

# NEGATIVE DECLARATION

## **2004 Amendments to the Appliance Efficiency Regulations, California Code of Regulations, Title 20 Sections 1601-1608**

Recent growth in electricity demand has strained the reliability of California's electricity system and has in some circumstances contributed to a substantial rise in electricity prices. Similarly, natural gas supplies are becoming tighter.

Improvements in energy efficiency are the cheapest and most environmentally friendly methods to help bring demand and supply into balance. Existing law (Public Resources Code Section 25402(c)) requires the California Energy Commission to adopt standards that prescribe minimum efficiency levels for appliances.

The Energy Commission proposes amendments to its regulations concerning the energy efficiency of appliances. The Energy Commission first adopted appliance regulations in 1976 and has periodically revised them since then. The current regulations include provisions proposing to adopt new and revised efficiency standards for twenty-five types of appliances, and new testing and data-reporting requirements (but not efficiency standards) for an additional four types.

The California Environmental Quality Act (CEQA), (Public Resources Code Sections 21000 et seq.) requires public agencies to identify and consider the potential environmental effects of their "projects," as that term is defined, and when feasible to mitigate any related adverse environmental consequences. The proposed regulations are a CEQA "project" and, therefore, the Energy Commission has prepared this Initial Study to assess the potential significant effects of the proposed regulations on the environment.

The Energy Commission has proposed the adoption of regulations on appliance efficiency. These proposed regulations, which include amendments to the Energy Commission's current regulations as well as the addition of new provisions, are contained in:

*Express Terms of Proposed Regulations (45-Day Language) -  
Amendments to Appliance Efficiency Regulations, California Code of  
Regulations, Title 20, Sections 1601 - 1608 (Docket Number 04-AAER-1,  
September 10, 2004)*

The proposed regulations are summarized in:

*Initial Statement of Reasons - Amendments to Appliance Efficiency  
Regulations, California Code of Regulations, Title 20, Sections 1601 -  
1608 (Docket No. 04-AAER-1, September 10, 2004)*

and

*Staff Report: Update of Appliance Efficiency Regulations (Publication Number 400-04-007D, July 2004)*

The potential environmental impacts of the proposed regulations are analyzed in the attached document:

*Initial Study, Environmental Checklist, and Proposed Negative Declaration - Amendments to Appliance Efficiency Regulations, California Code of Regulations, Title 20, Sections 1601 - 1608 (Docket No. 04-AAER-1, October 14, 2004)*

All of the documents listed above are available on the Energy Commission's website, [www.energy.ca.gov/appliances/documents](http://www.energy.ca.gov/appliances/documents), or by electronic mail from the Energy Commission's Residential Buildings and Appliances Office (916) 654-4064, [lfrankli@energy.state.ca.us](mailto:lfrankli@energy.state.ca.us).

### **Finding of No Significant Impact**

The Initial Study demonstrates, and the Energy Commission concludes, that the proposed regulations will not have any significant adverse effect on the environment. The attached Initial Study, Environmental Checklist, and Proposed Negative Declaration document the support for this finding.

\_\_\_\_\_  
WILLIAM J. KEESE  
Chair

DATE:\_\_\_\_\_

\_\_\_\_\_  
JAMES D. BOYD  
Commissioner

DATE:\_\_\_\_\_

\_\_\_\_\_  
JOHN L. GEESMAN  
Commissioner

DATE:\_\_\_\_\_

\_\_\_\_\_  
JACKALYNE PFANNENSTIEL  
Commissioner

DATE:\_\_\_\_\_

\_\_\_\_\_  
ARTHUR H. ROSENFELD  
Commissioner

DATE:\_\_\_\_\_

**INITIAL STUDY, ENVIRONMENTAL CHECKLIST,  
and  
PROPOSED NEGATIVE DECLARATION**

**AMENDMENTS TO APPLIANCE EFFICIENCY REGULATIONS**

**CALIFORNIA CODE OF REGULATIONS, TITLE 20, SECTIONS 1601 - 1608**

**CALIFORNIA ENERGY COMMISSION**

**Docket Number 04-AAER-01**

**October 14, 2004**

## TABLE OF CONTENTS

I.	Introduction and Description of the Proposed Project .....	1
II.	Proposed Project .....	2
III.	No Project Alternative .....	3
IV.	Energy and Environmental Impacts of the Proposed Project .....	4
V.	Environmental Checklist.....	5

## APPENDICES

Appendix A - Matrix of Proposed Changes to Appliance Efficiency Standards and Resulting Energy and Environmental Effects .....	Appendix A-1
Appendix B - References and Support Documentation.....	Appendix B-1
Appendix C - Glossary of Terms.....	Appendix C-1

# **I. Introduction and Description of the Proposed Project**

The California Energy Commission is proposing to amend its regulations concerning the energy efficiency of appliances. This document assesses the potential for a significant impact on the environment, and concludes there will be no such effect.

The Energy Commission was created by the Warren-Alquist Act of 1974 to develop and implement energy policy for California. One of the Energy Commission's mandates is to promote energy efficiency through a variety of means, including efficiency standards for appliances. (Public Resources Code section 25402(c)). The Energy Commission adopted its first efficiency standards in 1976 and has periodically revised them since then. The current regulations include provisions on testing of appliances to determine their efficiency, reporting of data by manufacturers to the Energy Commission, establishing mandatory minimum efficiency levels, and compliance and enforcement procedures, as well as general provisions on the scope of the regulations and definitions.

In the rulemaking proceeding that is the subject of this Initial Study, the Energy Commission is proposing to adopt new and revised efficiency standards for twenty-five types of appliances, and new testing and data-reporting requirements (but not efficiency standards) for an additional four appliances. Some of the amendments revise current standards, and some establish new standards for appliance types for which efficiency standards do not currently exist.

Since their inception, the appliance standards have saved Californians more than \$10 billion in electricity and natural gas costs. The proposed regulations are estimated to save an additional \$2 billion by 2020. During the first year when the standards take effect, the annual reductions in energy use resulting from the proposed regulations include 1400 Gwh/yr of electricity consumption, 126 MW of electricity peak demand, and 6 million therms of natural gas use; savings in future years will be higher. Reduced energy use will result in environmental benefits not only in California, but also in other parts of the western United States from which California imports energy.

The California Environmental Quality Act (CEQA)(Public Resources Code Sections 21000 et seq.) requires public agencies to identify and consider the potential environmental effects of their "projects," as that term is defined, and when feasible to mitigate any related adverse environmental consequences. The proposed regulations are a CEQA "project" and, therefore, the Energy Commission has prepared this Initial Study to assess the potential significant effects of the proposed regulations on the environment.

## II. Proposed Project

This project proposes to establish or amend the levels of efficiency required for the appliances listed below. Note that two of the appliances, portable room air cleaners and integrated receiver-decoders, are included in this analysis but will be considered in a later rulemaking. This will have the effect of slightly delaying the benefit of a small portion of the potential energy savings, but will not change the conclusion that the proposed regulations will have no significant environmental impact.

### Affected Appliances Included in this Initial Study

1. Commercial Refrigerators and Freezers with Solid Doors
2. Commercial Refrigerators and Freezers with Transparent Doors
3. Commercial Refrigerators and Freezers without Doors
4. Walk-In Freezers and Refrigerators
5. Refrigerated Bottled and Canned Beverage Vending Machines
6. Automatic Commercial Ice Makers
7. Portable Room Air Cleaners (minimum energy efficiency standards for this appliance will be considered for adoption in a separate rulemaking in 2005)
8. Unit Heaters and Duct Furnaces
9. Water Dispensers
10. Large Packaged Air-Source Commercial Air Conditioners (240,000 - 760,000 Btu/Hour) - First Tier and Second Tier
11. Residential Pool Pumps
12. Portable Electric Spas
13. Dishwasher Pre-Rinse Spray Valves - Gas and Electric
14. State-Regulated General Service Incandescent Lamps Tier 1 and 2
15. State-Regulated General Service Incandescent Reflector Lamps
16. Traffic Signal Modules for Pedestrian Control
17. Luminaires for Metal Halide Lamps
18. Under Cabinet Fluorescent Luminaires Ballasts
19. Commercial Hot Food Holding Cabinets
20. External Power Supplies - First and Second Tier
21. Televisions
22. Compact Audio Players
23. DVD Players
24. Integrated Receivers-Decoders (minimum energy efficiency standards for this appliance will be considered for adoption in a separate rulemaking in 2005)
25. Digital Television Adaptors
26. Ceiling Fans - Reporting Requirements Only
27. Whole House Fans - Reporting Requirements Only
28. Residential Exhaust Fans - Reporting Requirements Only
29. Evaporative Coolers - Reporting Requirements Only

**The proposed regulations are contained in:**

*Express Terms of Proposed Regulations (45-Day Language) – Amendments to Appliance Efficiency Regulations, California Code of Regulations, Title 20, Sections 1601 – 1608 (Docket Number 04-AAER-1, September 10, 2004);*

**The proposed regulations are summarized in:**

*Initial Statement of Reasons – Amendments to Appliance Efficiency Regulations, California Code of Regulations, Title 20, Sections 1601 - 1608 (Docket No. 04-AAER-1, September 10, 2004)*

and

*Staff Report: Update of Appliance Efficiency Regulations (Publication Number 400-04-007D, July 2004)*

This initial study assesses the potential environmental impact of the amendments contained in Section 1605.3 of the proposed regulations, which establishes California efficiency standards for appliances that are not regulated by federal appliance efficiency standards. The proposed regulations also contain amendments to the lists of federal standards that are in section 1605.1 of the regulations, but as those changes are controlled by the U.S. government, they are not assessed in this Initial Study. The proposed regulations also contain changes to the implementing provisions of the regulations, such as test methods and data-reporting requirements. Those provisions could not possibly have any significant effect on the environment and therefore they are not assessed in this Initial Study.

### **III. No Project Alternative**

If the Energy Commission did not strengthen the energy efficiency standards for appliances through this project, California would forego the savings that will result from the proposed regulations: reduction in its summer peak electricity demand by 126 megawatts (MW), reduction in its yearly electricity consumption by 1,400 Gigawatt-hours (GWh), and reduction in annual consumption of natural gas by 6 million therms, all in the first year of the standards. The lost savings would increase every year thereafter. Also, California would continue the annual release of air pollutants from natural gas appliance use in California, and from power generation both in California and across the western united states, that would otherwise be saved by the standards, as follows: oxides of nitrogen (NOx) by 280 tons, carbon monoxide (CO) by 165 tons, and PM10 (particulate matter ten microns or smaller) by 44 tons, as well as emissions of greenhouse gases such as CO2.

## **IV. Energy and Environmental Impacts of the Proposed Project**

### **Energy Impacts**

All of the energy efficiency standards being proposed have effects that are positive, that is, the proposed changes reduce the use of energy (or water) with no significant change in the energy or materials needed to manufacture the appliances. Refer to the previous paragraph for the estimated energy savings resulting from the proposed regulations.

### **Environmental Impacts**

The Energy Commission completed the environmental checklist that is contained in the CEQA Guidelines (California Code of Regulations, title 14, Section 15000 et seq., Appendix G) to address the potential environmental effects of the proposed regulations. The results of this analysis, which are shown in Section V below, indicate that implementing the proposed amendments to the Appliance Efficiency Regulations will have no adverse effect on the environment. In fact, the new standards will result in major environmental benefits due to reductions in electricity, natural gas, and water use in both residential and nonresidential appliances, and consequent emissions reductions in California and the western United States.

## V. Environmental Checklist

<b>Project Title</b>	<b>2004 Amendments to the Appliance Efficiency Regulations</b>
Lead agency name and address	California Energy Commission 1516 Ninth Street – MS 25 Sacramento, California 95814
Contact person and phone number	Tony Rygg, CEQA Manager, Buildings and Appliances Office, Energy Efficiency and Demand Analysis Division, (916) 653-7271, <a href="mailto:trygg@energy.state.ca.us">trygg@energy.state.ca.us</a>  Michael Martin, Project Engineer, Appliance Efficiency Standards, Energy Efficiency and Demand Analysis Division, (916) 654-4039, <a href="mailto:mmartin@energy.state.ca.us">mmartin@energy.state.ca.us</a>
Project Description	The Energy Commission is proposing changes to the appliance efficiency regulations.
Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement)	None

### Environmental Factors Potentially Affected:

The environmental factors checked below could potentially have been affected by this project, involving at least one impact that is a "Potentially Significant Impact" or change as indicated by the checklist on the following pages. However, the analysis reveals no significant adverse impacts.

	I. Aesthetics	X	VII. Energy		XIII. Noise
	II. Agriculture Resources		VIII. Hazards & Hazardous Materials		XIV. Population/Housing
X	III. Air Quality		IX. Hydrology/ Water Quality		XV. Public Services
	IV. Biological Resources		X. Land Use/ Planning		XVI. Recreation
	V. Cultural Resources		XI. Mineral Resources		XVII. Transportation/Traffic
	VI. Geology/Soils		XII. Natural Resources		XVIII. Utilities/Service Systems
				X	XIX. Mandatory Findings of Significance

**Issues:**

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporation</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
<b>I. AESTHETICS</b> -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				X
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>II. AGRICULTURE RESOURCES</b> -- In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert prime farmland, unique farmland, or farmland of statewide importance (farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
<b>III. AIR QUALITY</b> -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				X
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?				X
d) Expose sensitive receptors to substantial pollutant concentrations?				X
e) Create objectionable odors affecting a substantial number of people?				X
<i>Improvements in the energy efficiency of appliances will have no impact to the concerns listed above. The appliance standards changes will result in reduced power plant operation (in California and the western United States) compared to existing appliance standards. Reduced power plant operation in turn results in fewer emissions of criteria and non-criteria pollutants.</i>				
<b>IV. BIOLOGICAL RESOURCES</b> -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				X

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporation</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Dept of Fish and Game or US Fish and Wildlife Service?				X
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wild-life corridors, or impede the use of native wildlife nursery sites?				X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>V. CULTURAL RESOURCES</b> -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?				X

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
c) Directly or indirectly destroy a unique pale ontological resource or site or unique geologic feature?				X
d) Disturb any human remains, including those interred outside of formal cemeteries?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>VI. GEOLOGY AND SOILS -- Would the project:</b>				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				X
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?				X
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporation</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>VII. Energy</b> -- Would the project:				
a) Use exceptional amounts of fuel or energy?				X
b) Increase demand upon existing sources of energy, or require the development of new sources of energy?				X
<i>Improvements in the energy efficiency of appliances will result in reduced energy use.</i>				
<b>VIII. HAZARDS AND HAZARDOUS MATERIALS</b> -- Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				X
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				X
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>IX. HYDROLOGY AND WATER QUALITY -- Would the project:</b>				
a) Violate any water quality standards or waste discharge requirements?				X
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporation</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?				X
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?				X
f) Otherwise substantially degrade water quality?				X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>X. LAND USE AND PLANNING</b> -- Would the project:				
a) Physically divide an established community?				X

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>XI. MINERAL RESOURCES</b> -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
<i>Improvements in the energy efficiency of appliances will have no adverse impact to any of the concerns listed above.</i>				
<b>XII. NATURAL RESOURCES</b> -- Would the project result in:				
a) Significant increase in the rate of use of any natural resources?				X
b) Significant depletion of any non-renewable natural resource?				X
<i>Improvements in the energy efficiency of appliances will have no negative impact to any of the concerns listed above. The standards will reduce the rate of use and depletion of natural resources.</i>				
<b>XIII. NOISE</b> -- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>XIV. POPULATION AND HOUSING</b> – Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
<b>XV. PUBLIC SERVICES</b> -- Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				X
Fire protection?				X
Police protection?				X
Schools?				X
Parks?				X
Other public facilities?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>XVI. RECREATION</b> -- Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>XVII. TRANSPORTATION AND TRAFFIC</b> -- Would the project:				
a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				X

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?				X
f) Result in inadequate parking capacity?				X
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				X
<i>Improvements in the energy efficiency of appliances will have no impact to any of the concerns listed above.</i>				
<b>XVIII. UTILITIES AND SERVICE SYSTEMS</b> -- Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers' existing commitments?				X
f) Be served by a landfill with sufficient permitted capacity to accommodate the projects solid waste disposal needs?				X
g) Comply with federal, state, and local statutes and regulations related to solid waste?				X
<i>Improvements in the energy efficiency of appliances will have no adverse impact to any of the concerns listed above. By reducing electricity and natural gas use the standard will have beneficial effects on all .</i>				
<b>XIX. MANDATORY FINDINGS OF SIGNIFICANCE</b>				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				X

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				X
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?				X
<i>Improvements in the energy efficiency of appliances standards result in reduced power plant operation and reduce the need to build power plants in the future in California and the western United States.</i>				

**DETERMINATION:**

**On the basis of this evaluation:**

X	I find that the proposed project WILL NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.
<p>S/O Robert L. Therakelsen _____ Date _____ ROBERT L. THERKELSEN Executive Director California Energy Commission</p>	

## Appendix A - Matrix of Proposed Changes to Appliance Efficiency Standards and Resulting Energy and Environmental Effects<sup>1</sup>

	<i>Appliance Type</i>	<i>Existing Standard</i>	<i>Proposed Standard or Description of Changes</i>	<i>Estimated Energy Effects</i>	<i>Potential Environmental Issues</i>
1	Commercial Refrigerators and Freezers with Solid Doors <sup>2,3</sup>	There are minimum efficiency requirements which vary by type and size of unit, establishing maximum allowed kWh use per day.	<p>The new requirements also vary by type and size of unit, establishing lower maximum allowed kWh use per day based on design and size.</p> <p>Modifications: May include variable-speed compressors, improved insulation, or higher-efficiency fans, motors, or compressors.</p>	<p>Number of new units sold in California annually: solid door refrigerators 13,000, solid door freezers 8,000.</p> <p>Coincident demand factor: 70% for both.</p> <p>Energy savings per individual unit annually: solid door refrigerators 777 kWh, solid door freezers 586 kWh.</p> <p>Energy savings for this whole class of appliance: 9.54 GWh/yr taken together.</p> <p>Peak demand savings: 0.70 MW taken together.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 2.8 tons/yr taken together.</p> <p>CO reduction: 1.7 tons/yr taken together.</p> <p>PM10 reduction: 0.44 tons/yr taken together.</p> <p>MATERIALS: Use of higher-efficiency fans, motors, or compressors or improved insulation can rely on existing available technology. No significant effects on the environment will occur.</p>

<sup>1</sup> The impact of materials were all found to be insignificant. All materials where increases may occur were determined to increase California's use of that material by no more than 1 one hundredth of a percent.

<sup>2</sup> For solid and transparent door refrigerators and freezers first year statewide energy savings do not include the 18 to 55% of sales that already meet the proposed standards

<sup>3</sup> Source of data :*Analysis of Standards Options For Commercial packaged Refrigerators, Freezers, Refrigerator-Freezers and Ice Maker*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
2	Commercial Refrigerators and Freezers with Transparent Doors <sup>4,5</sup>	The current requirement Includes a design requirement for T-8 fluorescent lighting and electronic ballasts. This applies to transparent doors only. In addition there are minimal efficiency requirements which vary by type and size of unit, establishing maximum allowed kWh use per day.	The new requirements also vary by type and size of unit, establishing lower maximum allowed kWh use per day based on design and size.  Modifications: May include variable-speed compressors, improved insulation, or higher-efficiency fans, motors, or compressors.	Number of new units sold in California of commercial transparent door refrigerators: 8,460 and commercial transparent door freezers 1,760.  Coincident demand factor: 70% for both.  Energy savings per individual unit annually for transparent door refrigerators: 1,354 kWh and for transparent door freezers: 2,647 kWh.  Energy savings for this whole class of appliance: 8.36 GWh/yr taken together.  Peak demand savings: 0.70 MW taken together.	EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:  NO <sub>x</sub> reduction: 3.06 tons/yr taken together.  CO reduction: 1.84 tons/yr taken together.  PM10 reduction: 0.48 tons/yr taken together.  MATERIALS: Use of higher-efficiency fans, motors, or compressors or improved insulation can rely on existing available technology. No significant effects on the environment will occur.

<sup>4</sup> For solid and transparent door refrigerators and freezers first year statewide energy savings do not include the 18 to 55% of sales that already meet the proposed standards

<sup>5</sup> Source of data: *Analysis of Standards Options For Commercial Packaged Refrigerators, Freezers, Refrigerator-Freezers and Ice Maker*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
3	Commercial refrigerators and freezers without doors <sup>6,7</sup>	No Current Standards	<p>The new requirements vary by type and size of unit, establishing a maximum allowed kWh use per day. The standards are two-tiered with implementation dates for Tier 1 of January 1, 2006 and Tier 2 of January 1, 2007. This standards category includes refrigerators designed and used for the display and sale of beverages.</p> <p>Modifications: May include variable-speed compressors, improved insulation, or higher-efficiency fans and or motors</p>	<p>Number of new units sold in California annually: 17,800.</p> <p>Coincident demand factor: 70% for both.</p> <p>Energy savings per individual unit: 250 kWh/yr.</p> <p>Energy savings for this class of appliance: 0.22 GWhr/yr.</p> <p>Peak demand savings: 0.02 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 0.84 tons/yr taken together.</p> <p>CO reduction: 0.51 tons/yr taken together.</p> <p>PM10 reduction: 0.13 tons/yr taken together.</p> <p>MATERIALS: Use of higher-efficiency fans, motors, or compressors or improved insulation can rely on existing available technology. No significant effects on the environment will occur.</p>

<sup>6</sup> The first year statewide energy savings assumes that 95% of sales already meet the proposed standards

<sup>7</sup> Source of data: *Analysis of Standards Options for Open Case Refrigerators and Freezers*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
4	Walk-in freezers and walk-in Refrigerators <sup>8</sup>	No current Standard	<p>The new standards specify energy efficiency design features for walk-in refrigerators and walk-in freezers</p> <p>Modifications include: Automatic door closers: minimum envelope insulation, high efficiency motors and/or controls.</p>	<p>Number of new units sold in California annually: 3,960 walk-in refrigerators and 2,040 walk-in freezers.</p> <p>Coincident demand factor: 70% for both.</p> <p>Energy savings per individual unit: 5,995 kWh/yr for refrigerators and 11,875 kWh/yr for freezers.</p> <p>Energy savings for this whole class of appliance: 48.0 GWh/yr taken together.</p> <p>Peak demand savings: 3.8 MW taken together.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 9.1 tons/yr taken together.</p> <p>CO reduction: 5.5 tons/yr taken together.</p> <p>PM10 reduction: 1.44 tons/yr taken together.</p> <p>MATERIALS: Use of higher-efficiency fans, motors, improved insulation can rely on existing available technology. No significant effects on the environment will occur.</p>

<sup>8</sup> Source of data: *Analysis of Standards Options for Walk-in Coolers (Refrigerators) and Freezers*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
5	Refrigerated bottled and canned beverage vending machines <sup>9</sup>	Current Standard requires new beverage vending machine lights to be T-8 type fluorescent lamps with electronic ballast or equivalent efficacy	<p>The proposed standard replaces the lighting design standard with minimal efficiency requirements which vary by type and size of unit, establishing a maximum allowed kWh use per day based on design and size and removes lighting design requirement.</p> <p>Modifications: May include variable-speed compressors, improved insulation, or higher-efficiency fans, motors and electronic controls for automated off and on.</p>	<p>Number of new units sold in California annually: 41,000.</p> <p>Coincident demand factor: 70%.</p> <p>Energy savings per individual unit: 308 kWh/yr.</p> <p>Energy savings for this class of appliance: 12.6 GWh/yr.</p> <p>Peak demand savings: 1.0 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 2.4 tons/yr.</p> <p>CO reduction: 1.45 tons/yr.</p> <p>PM10 reduction: 0.37 tons/yr.</p> <p>MATERIALS: Changing compressor types, adding insulation, or shut off controls can all be based on current technology. No significant effects on the environment will occur.</p>

<sup>9</sup> Source of data: *Analysis of Standards Options for Refrigerated Beverage Vending Machines*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
6	Commercial Ice Makers <sup>10</sup>	No Current Standard	<p>The new efficiency standard varies by type and size of unit, establishing a maximum allowed kWh per 100 pounds of ice.</p> <p>Modifications: May include variable-speed compressors, improved insulation, or higher-efficiency fans, motors</p>	<p>Number of new units sold in California annually: 20,353.</p> <p>Coincident demand factor: 70%.</p> <p>Energy savings per individual unit averages 928 kWh/yr.</p> <p>Energy savings for this class of appliance averages 6.6 GWh/yr.</p> <p>Peak demand savings: 0.53 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 4.06 tons/yr.</p> <p>CO reduction: 2.45 tons/yr.</p> <p>PM10 reduction: 0.64 tons/yr.</p> <p>MATERIALS: Use of higher-efficiency fans, motors, or compressors or improved insulation can rely on existing available technology. No significant effects on the environment will occur.</p>

<sup>10</sup> Source of data: *Analysis of Standards Options for Commercial packaged Refrigerators, Freezers, Refrigerator-Freezers and Ice Maker*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
7	Water Dispensers <sup>11</sup>	No Current Standard	<p>The new efficiency standard is for a maximum standby loss.</p> <p>Modifications: Include insulation or re-design modifications.</p>	<p>Number of new units sold in California annually: 23,100.</p> <p>Coincident demand factor: 50%.</p> <p>Energy savings per individual unit: 266 kWh/yr.</p> <p>Energy savings for this class of appliance: 6.1 GWh/yr.</p> <p>Peak demand savings: 0.35 MW.</p>	<p>EMISSIONS: Emission reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 1.17tons/yr.</p> <p>CO reduction: 0.71 tons/yr.</p> <p>PM10 reduction: 0.184 tons/yr.</p> <p>MATERIALS: Use of improved insulation can rely on existing available technology. No significant effects on the environment will occur.</p>

<sup>11</sup> Source of data: *Analysis of Standards Options for Water Dispensers*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
8	Large Package Central Air Conditioners and Heat Pumps <sup>12</sup>	Currently no requirements for Large Package air cooled AC over 240 to 760 kBtu.	<p>Proposed Energy Efficiency Standards</p> <p>Effective October 1, 2006: EER 10.0</p> <p>Effective January 1, 2010: EER 10.5</p> <p>Modifications: Include increase compressor efficiency, increase coil size, and fan motor efficiency.</p>	<p>Number of new units sold in California annually: 3,600.</p> <p>Coincident demand factor: 100%.</p> <p>Energy savings per individual unit: 3,742 kWh/yr from tier 1.</p> <p>Energy savings per individual unit: 6,533 kWh/yr from tier 2.</p> <p>Energy savings for this whole class of appliance: 13.5 GWh/yr from tier 1.</p> <p>Energy savings for this whole class of appliance: 23.5 GWh/yr from tier 2.</p> <p>Peak demand savings of 1.54 MW from tier 1.</p> <p>Peak demand savings: 2.67 MW from tier 2.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 2.6 tons/yr.</p> <p>CO reduction: 1.5 tons/yr.</p> <p>PM10 reduction: 0.41tons/yr. (based on tier 1)</p> <p>MATERIALS: An increase in the condensing or evaporator coil size will increase demand for aluminum, though the increase will be insignificant in comparison to total aluminum demand in California. Improved compressors or addition of thermostatic expansion valves would require insignificant amounts of aluminum, copper, and/or steel.</p> <p>Expansion of coil size will also increase demand for refrigerant. High efficiency fans use less material than previous fan designs or the same amount. Many units being sold in California already meet the proposed efficiency requirements. No significant effects on the environment will occur.</p>

<sup>12</sup> Source of data: *Analysis of Standards Options for Very Large Air-Cooled Unitary Air Conditioners*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
9	Portable Room Air Cleaners (these proposed standards will not be adopted in the current rulemaking, but will be considered for adoption in 2005). <sup>13</sup>	No Current Standard	The new standard is based on clean air delivery rate based on volume of air times the decay rate.  Modifications: Use of high efficiency fans, or motors, and change of filter systems.	Number of new units sold in California annually: 310,000.  Coincident demand factor: 50%.  Energy savings per individual unit: 69 kWh/yr.  Energy savings for this whole class of appliance: 21.4 GWh/yr.  Peak demand savings: 0.98 MW.	EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:  NO <sub>x</sub> reduction: 4.06 tons/yr.  CO reduction: 2.46 tons/yr.  PM10 reduction: 0.64 tons/yr.  MATERIALS: High efficiency fans or motors or changes in filter type or materials will have no significant effects on the environment will occur.

<sup>13</sup> Source of data: *Analysis of Standards Options for Portable Room Air Cleaners*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
10	Unit Heaters and Duct Furnaces <sup>14</sup>	The current standard is based on minimal thermal efficiency and maximum watts during standby.	Proposed standard adds a design requirement for power venting or automatic flue damper effective January 1, 2006.  Modifications: Adding automatic damper controls.	Number of new units sold in California annually: 10,800.  Energy savings per individual unit: 190 therms/yr.  Energy savings for this class of appliance: 2.1 million therms/yr.	EMISSIONS reductions in California:  NO <sub>x</sub> reduction: 0.09 tons/yr.  CO reduction 0.029 tons/yr.  PM10 reduction: 0.005 tons/yr.  MATERIALS: Minimal amounts of steel, bimetal damper controls or electronic sensor with spring controls will be added. For all materials the amounts will be insignificant when compared to California's total use. No negative environmental effects will occur.

<sup>14</sup> Source of data: *Analysis of Standards Options for Unit Heaters and Duct Furnaces*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
11	Residential pool Pumps <sup>15</sup>	No Current Standard	<p>The proposed standard is a design standard to include maximum service factor, banning of capacitor start – induction run type motors, and require two-speed capability and controls.</p> <p>Modifications: Redesign of controls and use of more efficient pumps.</p>	<p>Number of new units sold in California 143,000</p> <p>Coincident demand factor: 40% for both.</p> <p>Energy savings per individual unit: 1,040 kWh/yr.</p> <p>Energy savings for this whole class of appliance: 148.7 GWh/yr taken together.</p> <p>Peak demand savings: 6.8 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 28.25 tons/yr taken together.</p> <p>CO reduction: 17.1 tons/yr taken together.</p> <p>PM10 reduction: 4.46 tons/yr.</p> <p>MATERIALS: Redesigning of motor types will not add any significant amount of materials. No negative environmental effects will occur.</p>

<sup>15</sup> Source of data: Analysis of Standards Options for Residential Pool Pumps, Motors, and Controls

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
12	Portable Electric Spas <sup>16</sup>	No Current Standard	<p>The proposed new standard include maximum standby power loss – definition in standard.</p> <p>Modifications: Redesign of controls and use of more efficient pumps.</p>	<p>Number of new units sold in California 48,000.</p> <p>Coincident demand factor: 40% for both.</p> <p>Energy savings per individual unit: 500 kWh/yr.</p> <p>Energy savings for this whole class of appliance: 24 GWh/yr taken together.</p> <p>Peak demand savings: 1.1 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 4.56 tons/yr taken together</p> <p>CO reduction: 2.76 tons/yr taken together</p> <p>PM10 reduction: 0.72 tons/yr taken together</p> <p>MATERIALS: Redesigning of motor types will not add any significant amount of materials. No negative environmental effects will occur.</p>

<sup>16</sup>Source of data: *Analysis of Standards Options for Portable Electric Spas*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
13	Dishwasher pre-rinse spray values <sup>17</sup>	No Current Standard	<p>Maximum water flow rate of less than 1.6 gallons per minute.</p> <p>Modifications: Redesign of orifice.</p>	<p>Number of new units sold in California is 18,000 (includes 13,500 serviced by gas water heaters and 4,500 serviced by electric water heaters).</p> <p>Coincident demand factor: 70%.</p> <p>Energy savings per individual unit: 336 therms/yr and 7,625 kwh/yr.</p> <p>Energy savings for this whole class of appliance: 4.5 million therms and 34 GWh/yr.</p> <p>Peak demand savings: 2.7 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 6.52 tons/yr.</p> <p>CO reduction 3.95 tons/yr.</p> <p>PM10 reduction: 1.03 tons/yr.</p> <p>California emission reductions due to reduced natural gas use:</p> <p>NO<sub>x</sub> reduction: 0.168 tons/yr.</p> <p>CO reduction 0.05 tons/yr.</p> <p>PM10 reduction: 0.061 tons/yr.</p> <p>MATERIALS: No change in the materials – redesigning of equipment only.</p>

<sup>17</sup> Source of data: *Analysis of Standards Options for Pre-Rinse Spray*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
14	Commercial hot food holding cabinets <sup>18</sup>	No Current Standard there is a reporting requirement.	The new standard is based on a maximum idle energy rate, in watts.  Modifications: Add insulation.	Number of new units sold in California annually: 3,300.  Coincident demand factor: 70%.  Energy savings per individual unit: 454 kWh/yr.  Energy savings for this whole class of appliance: 1.5 GWh/yr.  Peak demand savings: 0.12 MW.	EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:  NOx reduction: 0.28 tons/yr.  CO reduction: 0.17 tons/yr.  PM10 reduction: 0.04tons/yr.  MATERIALS: Added insulation can use current technologies. An insignificant amount of insulation will be added in comparison to California's current use. No negative environmental effects will occur

<sup>18</sup> Source of data: *Analysis of Standards Options for Commercial Hot Food Holding Cabinets*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
15	State regulated general service incandescent lamps <sup>19</sup>	No Current Standard	Proposed new standard is for maximum power use, which varies by lamp type. The standard is two tiered.  Modifications: Redesign lamps no necessary material changes.	Number of new units sold in California annually: 74,000,000.  Coincident demand factor: 100%.  Energy savings per individual unit: 1.07 kWh/yr under tier 1 and 6.0 kWh/yr under tier 2.  Energy savings for this class of appliance: 79 GWh/yr under tier 1 and 444 GWh/yr under tier 2.  Peak demand savings: 9 MW under tier 1 and 51 MW under tier 2.	EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:  NO <sub>x</sub> reduction: 15 tons/yr.  CO reduction: 9.1 tons/yr.  PM10 reduction: 2.37 tons/yr. (based on tier 1 savings)  MATERIALS: No change in materials.

<sup>19</sup> Source of data: *Analysis of Standards Options for General Service Incandescent Lamps*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
16	State regulated general service incandescent reflector lamps <sup>20, 21</sup>	No Current Standard	<p>The proposed new standards will set a minimum average efficacy which varies by lamp wattage and which is based on lumens per watt.</p> <p>Modifications: Redesign lamps no necessary material changes.</p>	<p>Number of new units sold in California annually: estimated at 10,100,000 for the residential sector and 8,800,000 for the commercial sector.</p> <p>Coincident demand factor: for residential is 40% and commercial is 100%.</p> <p>Energy savings per individual unit: 11 kWh/yr in residential use and 47.8 kWh/yr for commercial.</p> <p>Energy savings for this class of appliance: 81 GWh/yr in residential and 158 GWh/yr for commercial.</p> <p>Peak demand savings: 3.7 MW for residential and 18 MW for commercial.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 101 tons/yr.</p> <p>CO reduction: 60.8 tons/yr.</p> <p>PM10 reduction: 15.7 tons/yr.</p> <p>MATERIALS: No change in the amount of materials.</p>

<sup>20</sup> Source of data: *Analysis of Standards Options for BR, ER, and R20 Incandescent Lamps*

<sup>21</sup> Statewide energy savings do not include current sales that already meet the proposed standard.

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
17	Traffic Signal Modules for pedestrians <sup>22</sup>	No Current Standard	Maximum energy use limiting total wattage.  Modifications: Change to LED lighting.	Number of new units installed in California annually: 30,000.  Coincident demand factor: 50%.  Energy savings per individual unit: 465 kWh/yr.  Energy savings for this class of appliance: 14 GWh/yr.  Peak demand savings: 0.80 MW.	EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:  NO <sub>x</sub> reduction: 2.65 tons/yr.  CO reduction: 0.41 tons/yr.  PM10 reduction: 1.6 tons/yr.  MATERIALS: A insignificant change of materials will occur in switching from incandescent or fluorescent to LED lighting.

<sup>22</sup> Source of data: *Traffic Signal Modules for Pedestrians*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
18	Luminaires <sup>23</sup> for metal halide lamps <sup>24</sup>	No Current Standard	<p>Proposed standard is to change to pulse-start lamp and ballasts and electronic pulse-start and minimal efficiency.</p> <p>The first tier is January 1, 2006 and the second tier is January 1, 2008.</p> <p>Modifications: Replace probe starters with pulse starters.</p>	<p>Number of new units sold in California annually: 363,000.</p> <p>Coincident demand factor: 100%.</p> <p>Energy savings per individual unit: 526 kWh/yr.</p> <p>Energy savings for this whole class of appliance: 149 GWh/yr.</p> <p>Peak demand savings: 17 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NO<sub>x</sub> reduction: 36.3 tons/yr.</p> <p>CO reduction: 21.9 tons/yr.</p> <p>PM10 reduction: 5.7 tons/yr.</p> <p>MATERIALS: A insignificant change of materials will occur in switching from probe to pulse start metal halide lamps.</p>

<sup>23</sup> Statewide energy savings do not include current sales that already meet the proposed standard. Percentage varies with equipment type

<sup>24</sup> Source of data: *Analysis of Standards Options for Metal Halide Lamps and*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
19	Under cabinet fluorescent luminaires ballasts <sup>25</sup>	No Current Standard	Proposing a minimal ballast efficacy factor depending on lamp length and number of lamps.  Modifications: Use T-8 lamps and electronic ballasts in replacement of T-12 and magnetic ballasts.	Number of new units sold in California annually: 280,000.  Coincident demand factor: 70%.  Energy savings per individual unit: 16 kWh/yr.  Energy savings for this whole class of appliance: 3.59 GWh/yr.  Peak demand savings: 0.4 MW.	EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:  NO <sub>x</sub> reduction: 0.85 tons/yr  CO reduction: 0.51 tons/yr  PM10 reduction: 0.13 tons/yr  MATERIALS: An overall reduction in materials will result from this standard. No negative environmental effects will occur.

<sup>25</sup> Source of data: *Analysis of Standards Options for Under Cabinet Fluorescent Fixtures Attached to Office Furniture*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
20	Televisions <sup>26</sup>	No Current Standard	<p>Proposed new standard will set maximum allowed standby loss.</p> <p>Modifications: Design options which meet this requirement already exist. Manufactures designs that do not currently meet the requirement will have to re-design their products.</p>	<p>Number of new units sold in California annually: 2,500,000.</p> <p>Coincident demand factor 40%.</p> <p>Energy savings per individual unit: 27 kWh/yr.</p> <p>Energy savings for this whole class of appliance: 67.5 GWh/yr.</p> <p>Peak demand savings: 3.8 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NOx reduction: 12.8 tons/yr.</p> <p>CO reduction: 7.7 tons/yr.</p> <p>PM10 reduction: 2.0 tons/yr.</p> <p>MATERIALS Redesign will result in no material impact. No negative environmental effect will occur.</p>

<sup>26</sup> Source of data: *Analysis of Standards Options for Consumer Electronics Standby Losses*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
21	DVD players and DVD recorders <sup>27</sup>	No Current Standard	<p>Proposed new standard will set maximum allowed standby loss.</p> <p>Modifications: Design options which meet this requirement already exist. Manufactures designs that do not currently meet the requirement will have to re-design their products.</p>	<p>Number of new units sold in California annually: 1,500,000.</p> <p>Coincident demand factor: 40%.</p> <p>Energy savings per individual unit: 8 kWh/yr.</p> <p>Energy savings for this whole class of appliance: 12 GWh/yr.</p> <p>Peak demand savings: 0.5 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NOx reduction: 2.2 tons/yr.</p> <p>CO reduction: 1.4 tons/yr.</p> <p>PM10 reduction: 0.36 tons/yr.</p> <p>MATERIALS: Redesign will result in no material impact. No negative environmental effect will occur.</p>

<sup>27</sup> Source of data: *Analysis of Standards Options for Consumer Electronics Standby Losses*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
22	Integrated Receivers - Decoders (these proposed standards will not be adopted in the current rulemaking, but will be considered for adoption in 2005) <sup>28</sup>	No Current Standard	Proposed new standard will set maximum allowed standby loss.  Modifications: Design options which meet this requirement already exist. Manufactures designs that do not currently meet the requirement will have to re-design their products.	Number of new units sold in California annually: 3,100,000.  Coincident demand factor: 40%.  Energy savings per individual unit: 31 kWh/yr.  Energy savings for this whole class of appliance: 96 GWh/yr.  Peak demand savings: 4.4 MW.	EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:  NOx reduction: 18.6 tons/yr.  CO reduction: 11 tons/yr.  PM10 reduction: 2.8 tons/yr.  MATERIALS: Redesign will result in no material impact. No negative environmental effect will occur.

<sup>28</sup> Source of data: *Analysis of Standards Options for Consumer Electronics Standby Losses*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
23	Digital Television Adapters <sup>29</sup>	No Current Standard	<p>Proposed new standards will set maximum allowed standby loss and active mode power consumption.</p> <p>Modification: design options which meet this requirement already exist. Manufactures designs that do not currently meet the requirement will have to re-design their products.</p>	<p>Number of new units sold in California annually: 15,640.</p> <p>Coincident demand factor: 40%.</p> <p>Energy savings per individual unit: 72 kWh/yr.</p> <p>Energy savings for this whole class of appliance: 1.1 GWh/yr.</p> <p>Peak demand savings: 0.05 MW</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NOx reduction: 0.213 tons/yr</p> <p>CO reduction: 0.12 tons/yr</p> <p>PM10 reduction: 0.030 tons/yr</p> <p>MATERIALS: Redesign will result in no material impact. No negative environmental effect will occur.</p>

<sup>29</sup> Source of data: *Analysis of Standards Options for Consumer Electronics Standby Losses*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
24	External Power Supplies <sup>30</sup>	No Current Standard	<p>Proposed new standards will set maximum allowed standby loss and active mode power consumption.</p> <p>Modification: Design options which meet this requirement already exist. Manufactures designs that do not currently meet the requirement will have to re-design their products.</p>	<p>Number of new units sold in California annually: 12,700,000.</p> <p>Coincident demand factor: 50%.</p> <p>Energy savings per individual unit: 3.76 kWh/yr for first tier and 4.44 kWh/yr for second tier.</p> <p>Energy savings for this whole class of appliance: 44.9 GWh/yr for first tier and 53 GWh/yr for second tier.</p> <p>Peak demand savings: 2.6 MW for first tier and 3.0 for second tier.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NOx reduction: 9.07 tons/yr.</p> <p>CO reduction: 5.43 tons/yr.</p> <p>PM10 reduction: 1.4 tons/yr.</p> <p>MATERIALS: Redesign will result in no material impact. No negative environmental effect will occur.</p>

<sup>30</sup> Source of data: *Analysis of Standards Options for Single-Voltage External AC to DC Power Supplies*

	<b>Appliance Type</b>	<b>Existing Standard</b>	<b>Proposed Standard or Description of Changes</b>	<b>Estimated Energy Effects</b>	<b>Potential Environmental Issues</b>
25	Compact Audio Players <sup>31</sup>	No Current Standard	<p>Proposed new standards will set maximum allowed standby loss and active mode power consumption.</p> <p>Modification: Design options which meet this requirement already exist. Manufactures designs that do not currently meet the requirement will have to re-design their products.</p>	<p>Number of new units sold in California annually: 1,100,000.</p> <p>Coincident demand factor: 50%.</p> <p>Energy savings per individual unit: 51 kWh/yr.</p> <p>Energy savings for this whole class of appliance: 56.1 GWh/yr.</p> <p>Peak demand savings: 3.2 MW.</p>	<p>EMISSIONS: Emissions reductions potential in western states due to reduced electricity demand:</p> <p>NOx reduction: 10.78 tons/yr.</p> <p>CO reduction: 6.5 tons/yr.</p> <p>PM10 reduction: 1.7 tons/yr.</p> <p>MATERIALS: Redesign will result in no material impact. No negative environmental effect will occur.</p>

<b>TOTAL CUMULATIVE EFFECT OF APPLIANCE STANDARDS</b>	<p>Annual energy savings:</p> <p>1074 GWh/yr for first tier and 1457 Gwh/yr for second tier total</p> <p>Total peak demand reduction: 82 MW for first tier and 126 MW for second tier</p> <p>Natural gas savings: 6.6 million therms</p>	<p>EMISSIONS: Potential reduction in western states due to reduced electricity demand plus reduction in California of natural gas use. (tons per year):</p> <ul style="list-style-type: none"> <li>• NOx 280 tons</li> <li>• CO 165 tons</li> <li>• PM10 44 tons</li> </ul>
---	--	---

<sup>31</sup> Source of data: *Analysis of Standards Options for Consumer Electronics Standby Losses*

# Appendix B – References and Support Documentation

## I. References

*California Energy Commission Initial Statement of Reasons Regulations for Proposed Amendments to California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4: Appliance Efficiency Regulations and California Code of Regulations, Title 24: Part 6, Subchapter 2: Building Standards*, California Energy Commission, Sacramento, CA, September 10, 2004, Docket No. 04-AAER-1, available at:  
[http://www.energy.ca.gov/appliances/documents/2004-09-14\\_ISOR.PDF](http://www.energy.ca.gov/appliances/documents/2004-09-14_ISOR.PDF)

*Express Terms of Proposed Regulations (“45-Day Language”) – Amendments to Appliance Efficiency Regulations, California Code of Regulations, Title 20, Sections 1601 - 1608* September 10, 2004, Docket No. 04-AAER-1, available at:  
[http://www.energy.ca.gov/appliances/documents/2004-09-14\\_EXPRESS\\_TERMS.PDF](http://www.energy.ca.gov/appliances/documents/2004-09-14_EXPRESS_TERMS.PDF)

*Update of Appliance Efficiency Regulations: Draft Staff Report*, July, 2004. Docket No. 04-AAER-1, Publication No. 400-04-007D, available at:  
[http://www.energy.ca.gov/appliances/documents/2004-09-22\\_400-04-007D.PDF](http://www.energy.ca.gov/appliances/documents/2004-09-22_400-04-007D.PDF)

### Refrigerators and Freezers

*Analysis of Standards Options For Commercial Packaged Refrigerators, Freezers, Refrigerator-Freezers and Ice Maker*, April 28, 2004, prepared by the America Council for an Energy Efficient Economy as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development. Prepared for Gary B. Fernstrom, PG&E.  
[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Packaged\\_Refrigeration.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Packaged_Refrigeration.pdf)

*Analysis of Standards Options For Open Case Refrigerators and Freezers*, May 11, 2004, Prepared by Davis Energy Group as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development. Prepared for Gary B. Fernstrom, PG&E.  
[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Open\\_Case\\_Refrig.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Open_Case_Refrig.pdf)

*Analysis of Standards Options For Walk-in Coolers (Refrigerators) and Freezers*, May 10, 2004, Prepared by Davis Energy Group as part of Codes and Standards Enhancement initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.  
[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Walk-In\\_Cooler.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Walk-In_Cooler.pdf)

*Analysis of Standards Options For Water Dispensers*, April 28, 2004, Prepared by Davis Energy Group as part of Codes and Standards Enhancement initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Water\\_Dispenser\\_s.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Water_Dispenser_s.pdf)

*Analysis of Standards Options For Refrigerated Beverage Vending Machines*, May 5, 2004, Prepared by Davis Energy Group as part of Codes and Standards Enhancement initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Refrigerated\\_Vending.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Refrigerated_Vending.pdf)

#### Large Package Air-Source Air Conditioning

*Analysis of Standards Options For Very Large Air-Cooled Unitary Air Conditioners*, May 3, 2004, Prepared by American Council for an Energy Efficient Economy as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Very\\_Large\\_Commercl\\_AC.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Very_Large_Commercl_AC.pdf)

#### Room Air Cleaners

*Analysis of Standards Options For Portable Room Air Cleaners*, May 6, 2004, Prepared by Davis Energy Group as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Port\\_Room\\_Air\\_Cleaner.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Port_Room_Air_Cleaner.pdf)

#### Unit Heaters and Duct Furnaces

*Analysis of Standards Options For Unit Heaters and Duct Furnaces*, May 9, 2004, Prepared by Davis Energy Group and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Unit\\_Heater.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Unit_Heater.pdf)

#### Pool Pumps

*Analysis of Standards Options For Residential Pool Pumps, Motors, and Controls*, May 12, 2004, Prepared by Davis Energy Group as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Pool\\_Pump.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Pool_Pump.pdf)

#### Portable Electric Spas

*Analysis of Standards Options For Portable Electric Spas*, May 12, 2004, Prepared by Davis Energy Group and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Portable\\_Spa.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Portable_Spa.pdf)

#### Commercial Food Service

*Analysis of Standards Options For Pre-Rinse Spray Valves*, May 4, 2004, Prepared by Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Pre-Rinse\\_Spray\\_Valves.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Pre-Rinse_Spray_Valves.pdf)

*Analysis of Standards Options For Commercial Hot Food Holding Cabinets*, May 6, 2004, Prepared by Davis Energy Group and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Hot\\_Food\\_Holding\\_Cabs.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Hot_Food_Holding_Cabs.pdf)

#### Lamps

*Analysis of Standards Options For General Service Incandescent Lamps*, May 5, 2004, Prepared by ECOS Consulting, Davis Energy Group, and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Gen\\_Serv\\_Incand\\_Lamps.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Gen_Serv_Incand_Lamps.pdf)

*Analysis of Standards Options For BR, ER, and R20 Incandescent Lamps*, April 28, 2004, Prepared by American Council for an Energy Efficient Economy and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_BR\\_Lamps.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_BR_Lamps.pdf)

#### Luminaires

Traffic Signal Modules for Pedestrians, Personal communication with Virginia Lew; California Energy Commission

*Analysis of Standards Options For Metal Halide Lamps and Fixtures*, August 10, 2004, Prepared by the American Council for an Energy Efficient Economy and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Metal\\_Halide\\_Lamps.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Metal_Halide_Lamps.pdf)

*Analysis of Standards Options For Under Cabinet Fluorescent Fixtures Attached to Office Furniture*, May 5, 2004, Prepared by Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Under\\_Cabinet\\_Floresnt.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Under_Cabinet_Floresnt.pdf)

#### Consumer Electronic Standby Losses

*Analysis of Standards Options For Consumer Electronics Standby Losses*, May 3, 2004, Prepared by Davis Energy Group and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Consumer\\_Electronics.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Consumer_Electronics.pdf)

#### External Power Supplies

*Analysis of Standards Options For Single-Voltage External AC to DC Power Supplies*, May 3, 2004, Prepared by ECOS Consulting, Davis Energy Group, and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Power\\_Supplies.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Power_Supplies.pdf)

#### Ceiling Fans

*Analysis of Standards Options For Ceiling Fans*, May 9, 2004, Prepared by Davis Energy Group and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Ceiling\\_Fan.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Ceiling_Fan.pdf)

#### Whole House Fans

*Analysis of Standards Options For Whole House Fans*, April 28, 2004, Prepared by Davis Energy Group and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Whole\\_House\\_Fans.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Whole_House_Fans.pdf)

#### Exhaust Fans

*Analysis of Standards Options For Residential Exhaust Fans*, April 27, 2004, Prepared by Davis Energy Group and Energy Solutions as part of Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development Prepared for Gary B. Fernstrom PG&E.

[http://www.energy.ca.gov/appliances/documents/case\\_studies/CASE\\_Res\\_Exhaust\\_Fans.pdf](http://www.energy.ca.gov/appliances/documents/case_studies/CASE_Res_Exhaust_Fans.pdf)

## II. Support documentation for Appendix A

US government website:

[www.epa.gov/globalwarming/emissions/national/trends.html](http://www.epa.gov/globalwarming/emissions/national/trends.html).

US government website for Various Metals

<http://minerals.usgs.gov/minerals/pubs/commodity/metal/>

**Table 1. Emissions Factors for Calculating Reduced Emissions from Energy Savings**

Emissions Factors	NO <sub>x</sub>	CO	PM10
Natural Gas, California (lbs/MMBtu)	0.094	0.03	0.01
Electricity, western states (lbs/MWh)	0.383	0.23	0.06

## Appendix C – Glossary of Terms

### Appliance Standards

The California Appliance Energy Efficiency Standards as set forth in the California Code of Regulations, Title 20, Division 2, Chapter 4, Article 4, Sections 1601-1608, and referenced in the California Code of Regulations, Title 24, Part 6, Subchapter 2.

### Ballast Efficacy factor

The ratio of the relative light output to the power input of a fluorescent lamp ballast, as determined using the applicable test method.

### British Thermal Units (Btu)

One Btu equals the amount of heat needed to raise the temperature of one pound of water one degree Fahrenheit. Used for measuring heating and cooling equipment output.

### Btu/hr (Btu/h)

British thermal unit per hour.

### Coincident Demand Factor

The fraction of the population of devices (or component thereof) operating at any instant during a peak demand period of any particular day or season.

### Commercial Refrigerator, Refrigerator-Freezer or Freezer

A refrigerator, refrigerator-freezer, or freezer that is not a federally-regulated consumer product.

### CO

Carbon Monoxide from combustion processes which is released fossil fuel in exhaust gases. The primary concern is its effect on local air quality, as contrasted with its potential health hazard due to direct inhalation.

### CO<sub>2</sub>

Carbon Dioxide a product of the fossil fuel combustion processes and contained in exhaust gases. Primary concern is its effect on global climate change.

### EER (Energy Efficiency Ratio)

The ratio of cooling capacity of an air conditioning unit in Btus per hour to the total electrical input in watts under specified test conditions. Compare to SEER.

### Federally Regulated Appliance

Appliances that are federally regulated commercial and industrial equipment, or a federally regulated consumer product.

#### Federally Regulated Commercial and Industrial Equipment

Commercial and industrial equipment for which there exists a test method and an energy efficiency standard prescribed under the EPCAct.

#### Federally Regulated Consumer Product

A consumer product for which there exist a test method and an energy conservation standard prescribed under NAECA

#### GPM

Gallons per minute

#### Gigawatt-hour (GWh)

One thousand megawatt-hours, one million kilowatt-hours, or one billion watt-hours of electrical energy.

#### Kilowatt (kW)

One thousand watts of electrical energy. A kilowatt is a measure of demand, or how many thousand watts are being drawn at any instant.

#### Kilowatt-hour (kWh)

One thousand watt-hours of energy.

#### LEC (see Light Emitting Capacitor)

#### LED (see Light Emitting Diode)

#### Light Emitting Capacitor (LEC)

A solid-state device that produces light when an electric current is passed through a phosphor-impregnated material.

#### Light Emitting Diode (LED)

A solid-state device that emits light when an electric current is applied to a semiconductor material.

#### LPW

The minimum average lamp efficacy related to the ration of lumens generated to watt input.

#### Megawatt (MW)

One million watts of power. A megawatt is a measure of demand or how many million watts are being draw at any instant (see also kilowatt).

#### Minimal Efficiency

The ratio of power output to power input expressed as a percent, as determined using the applicable test method.

MMBtu

One million Btus of energy.

NAECA

The National Appliance Energy Conservation Act, 42 U.S.C. Section 6291, et seq.

Non Federally Regulated Appliance

An appliance that is neither federally regulated commercial and industrial equipment nor a federally regulated consumer product.

NO<sub>x</sub>

Oxides of nitrogen, usually NO and NO<sub>2</sub>, that are chief components of air pollution and produced by the combustion of fossil fuels.

Ozone Depleting Substances

Means any substance that has been found by the United States Environmental Protection Agency to act as a catalyst in the breaking down of ozone, O<sub>3</sub>, into molecular oxygen, O<sub>2</sub>.

PM10

Solid particulate matter with a mean aerodynamic diameter of 10 microns in size or smaller. Usually considered pollutants, particulates are released from combustion processes in exhaust gases at fossil fuel plants and from mobile and other fugitive particle sources.

Standards

The California Building Energy Efficiency Standards as set forth in the California Code of Regulations, Title 24, Part 6 and Title 20.

T8 Lamp

Means a tubular fluorescent lamp 8/8-inch or 1 inch in diameter.

Therm

100,000 Btus.

Thermal Efficiency

A measure of the percentage of heat from the combustion of gas or oil that is transferred to the space being heated, or in the case of a boiler, to the hot water or steam, as determined using the applicable test method.

Traffic Signal

The unit that holds the red, yellow, and green traffic control lights and sometimes turns arrows as well.

#### Traffic Signal Module

An individual color (red, yellow, green or various colors of turn arrows) in a traffic signal.

#### Hot Water Dispenser

Add in definition of hot water dispenser which is- 1602(f) Hot Water Dispenser means a small electric water heater that has a measure storage volume no greater than one gallon.

#### Water Dispenser

A factory made assembly that mechanically cools and heats potable water and that dispenses the cooled or heated water by integral or remote means.