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Lighting Efficiency Standards

DRAFT ENVIRONMENTAL IMPACT REPORT

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Arnold Schwarzenegger, *Governor*

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AB 1109	Huffman Lighting and Hazardous Waste Bill, Ch. 534, Statutes of 2007
APCDs	Air Pollution Control Districts
AQMDs	Air Quality Management Districts
CARB	California Air Resources Board
CalOSHA	California Occupation Safety and Health Standards Administration
CEQA	California Environmental Quality Act (Pub. Resource Code, § 21000 et seq.)
CEQA Guidelines	California Code of Regulations, §15000 et seq.
Commission	California Energy Commission
CDFG	California Department of Fish and Game
CAAQS	California ambient air quality standards
CCAA	California Clean Air Act
CO	Carbon monoxide
CO2	Carbon dioxide
CFLs	Compact fluorescent lamps
CUPAs	Certified Unified Program Agencies
Cal. Code Regs.,	California Code of Regulations
Docket # 07-AAER-3	Appliance Efficiency Regulations 2008 Rulemaking Proceedings on Regulations, Title 20, §§ 1601-1608
DOT	Federal Department of Transportation
DTSC	Department of Toxics Substance Control
DEIR	Draft Environmental Impact Report
EISA 2007	Federal Energy Independence and Security Act of 2007
EIR	Environmental Impact Report
Energy Star	U.S. EPA voluntary program for labeling efficient appliances
FEMA	Federal Emergency Management Agency
GWh/yr	GigaWatt hours (One million kilowatt-hours) per year
GHG	Greenhouse gas
LED	Light emitting diode
Mg/kg	Milligrams per kilogram
Mg/l	Milligrams per liter
M003	Mercury-containing light bulbs
NEMA	National Electrical Manufacture Association
NOP	Notice of Preparation (required under CEQA)
NPDES	National Pollutant Discharge Elimination System
NAAQS	National Ambient Air Quality Standard
NO2	Nitrogen dioxide
NOx	Oxides of nitrogen

OSHA	Federal Occupational Safety and Health Administration
PM–10	Particulate matter of 10 microns and smaller in size
PM–2.5	Particulate matter of 2.5 microns and smaller in size
PELs	Permissible Exposure Limits
PG&E	Pacific Gas and Electric Company
RCRA	Resource Conservation and Recovery Act
ROGs	Reactive organic gases
RWQCBs	Regional Water Quality Control Boards
§	Section
SO2	Sulfur dioxide
Staff	Commission's Staff
SWRCB	State Water Resources Control Board
TAC	Toxic air contaminant
TCLP	Toxicity Characteristic Leaching Procedure
TTLC	Total Threshold Limit Concentration
USEPA	United States Environmental Protection Agency
VOCs	Volatile organic compounds
W	Watt
WDRs	Waste Discharge Requirements
W.E.T.	Wet Extraction Test

CHAPTER 1:
Executive Summary

1.1 Summary Description of Proposed Action

The California Energy Commission (Energy Commission) proposes to adopt amendments to the appliance efficiency standards to accelerate the effective dates of the federal Tier I and Tier II lighting efficiency standards that became federal law in December 2007. (Federal Energy Independence and Security Act of 2007 (EISA 2007)) The California standards will advance the federal Tier 1 standards original 2012, 2013 and 2014 effective dates to effective dates of 2011, 2012 and 2013, respectively, and change the effective federal date of 2020 for the Tier 2 standards to the earlier California effective date of 2018. Once the federal lighting standards become effective at a national level, the California lighting standards for Tier I and II will no longer be effective and will no longer result in any potential environmental impacts. The Energy Commission is also proposing to adopt efficiency standards for portable lighting fixtures that increase the energy efficiency of the fixtures.

This proposed adoption is an activity undertaken by a public agency with the potential to result in direct or indirect physical changes in the environment. As such, it constitutes a "project" under the California Environmental Quality Act (CEQA) (Public Resources Code, § 21000 et seq.).

CEQA requires public agencies to identify and consider the potential environmental effects of their "projects" and when feasible to mitigate any related adverse environmental consequences.

The Energy Commission's staff (staff) believes it is highly probable that the proposed lighting standards, which require highly efficient lamps, will result in the increased use of compact fluorescent lamps (CFLs) and fluorescent lamp tubes that contain mercury. Therefore, the primary environmental impact is the increased use of and recycling or disposal of mercury-containing CFLs and fluorescent lamp tubes. Although 100 percent penetration in the use of CFLs and fluorescent lamps due to the proposed lighting standards is not likely, that assumption has been used for purpose of analyzing the worst case scenario for potential mercury contamination.

The project is defined as the Express Terms of Proposed Regulations, Amendments to Appliance Efficiency Regulations, California Code of Regulations, Title 20, Sections 1601 - 1608 (Docket # 07-AAER-3). The authority to achieve energy efficiency through improvements in lighting efficiency is defined in existing law (Pub.Resources Code,§ 25402(c)), which requires the Energy Commission to adopt standards that prescribe minimum efficiency levels for appliances. In addition, Public Resources Code § 25402.5.4 (added by Assembly Bill 1109, Huffman, Chapter. 534, Statutes of 2007) expressly requires the Energy Commission to adopt specified efficiency standards for lighting.

All of the documents associated with this rulemaking are available at http://www.energy.ca.gov/appliances/2008rulemaking/documents/index.html orby electronic mail from the Energy Commission's Buildings and Appliances Office (916) 654-4064, lfrankli@energy.state.ca.us.

1.2 Potential Environmental Impacts

Given current technology and reasonable estimates of product availability, the impact of the proposed lighting standards are likely to contribute to an increased use of CFLs, fluorescent lamp tubes, and other highly energy efficient lamps for general service lighting and portable lighting fixtures. Current use of CFLs has been estimated to be used for nine to 15 percent of all lamps used for general service lamps and portable lighting fixtures.

The California Department of Toxics Substance Control ("DTSC") is mandated to regulate "hazardous waste" and to develop means of keeping such material out of the non-hazardous solid waste stream. In a prior rulemaking DTSC defined fluorescent lamps (including both CFLs and tubes) as a M003 listed Universal Waste because DTSC found that any released mercury or mercury compounds contained in the lamps present a human health and environmental risk. All M003 listed Universal Waste must be managed pursuant to the Universal Waste regulations and sent to a qualified recycler to ensure that the mercury is kept out of the environment. It cannot be disposed in municipal landfills.

The high number of lamps that may be sold due to the proposed lighting standards, coupled with information that indicates 95 percent of the CFLs and fluorescent lamp tubes purchased today are being illegally disposed in municipal landfills, indicates that there is a potential environmental problem due to mercury released into the environment. Thus, the staff believes that there is a potential for significant environmental impacts due to the ***use*** and ***illegal*** disposal of M003 waste directly resulting from the adoption of the proposed lighting standards.

1.3 Recommended Mitigation Measures

In the rulemaking in which DTSC classified fluorescent lamps as a Universal Waste, DTSC also made a finding in its CEQA analysis that the required management of M003 waste under the Universal Waste regulations would not result in a significant environmental impact on:

- Air Quality
- Biological Resources
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Transportation and Traffic

Because no new, relevant facts or analyses have emerged since DTSC made its findings concerning the environmental impacts of fluorescent lamps as a M003 Universal Waste, the staff makes the same findings. Staff determined that a Less-Than-Significant impact on the environment will result from the proposed lighting standards, if the management measures required by the Universal Waste regulations are required and carried out.

The staff also finds that this mitigation is within the responsibility and jurisdiction of DTSC and has been adopted by DTSC.

1.4 Finding of Significance

The staff finds that the project's potential impacts on Air Quality, Biological Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, and Transportation and Traffic, will be Potentially Significant unless mercury emissions are mitigated by implementing DTSC's Universal Waste regulations for the M003 listed waste.

1.5 Public Involvement and Areas of Concern

This section will be included after the public comment period for the DEIR.

1.6 Alternatives Considered

The analysis presented in this DEIR examined the only technically feasible and federally non-preemptive alternative, which is the No Project Alternative. California is preempted under federal law to adopt efficiency standards for lamps, such as CFLs or incandescent lamps, if the standards are different than the federal standards. However, California is not preempted from adopting the federal standards with earlier effective dates than what is established in federal law. The staff has determined that adopting the federal Tier I and Tier II lighting standards at earlier effective dates will result in the increased use of CFLs and fluorescent lamp tubes and will provide California with a large energy savings.

The No Project Alternative would result in losing of this large energy savings and reducing peak electrical demand, allowing California to avoid building additional powerplants and incurring their criteria pollutant emissions. The No Project Alternative would mean that 3,640 GWh/yr of energy would not be saved and an additional 957,498 metric tons of CO_2 emissions and 2,331 metric tons of criteria air pollutants (NOx, SOx, CO, PM-10, PM 2.5) would be emitted into the atmosphere as compared to the proposed lighting standards.

Furthermore, under the No Project Alternative the potential for adverse environmental impacts, from mercury contamination, still exists because the federal Tier I and Tier II lighting standards will be effective (only one and two years respectively, after California's proposed lighting standards would become effective) regardless of any action by California.

1.7 Conclusion

The staff finds that all potentially significant impacts concerning Air Quality, Biological Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, and Transportation and Traffic would be reduced to Less-Than-Significant levels by implementing the Universal Waste regulations for the M003 listed waste and that no impacts would be significant and unavoidable. However, currently, the recycling capacity for end-of-life CFLs and fluorescent lamp tubes has not been maximized, and most lamps are being illegally managed and disposed of in municipal landfills. To resolve this issue, the Legislature enacted Assembly Bill 1109, which required DTSC convene a Task Force to consider and make recommendations by September 1, 2008 to address the problems of illegal disposal.

The staff therefore, has determined that the proposed lighting standards will result in a potential significant impact concerning Air Quality, Biological Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, and Transportation and Traffic, unless the mitigation measures required in the Universal Waste regulations for the management of the listed M003 waste (mercury-containing CFLs and fluorescent lamp tubes), are implemented and enforced the proposed lighting standards etc. The staff also finds that such mitigation measures are within the responsibility and legal jurisdiction of DTSC and have been (or can and should be) adopted by DTSC.

CHAPTER 2:
Introduction

2.1 Purpose of the Environmental Impact Report

The California Energy Commission staff (staff) has prepared this draft environmental impact report (DEIR) to disclose the potential environmental effects of the proposed adoption of lighting standards that may result in the required use of highly energy efficiency general purpose lamps. This DEIR was prepared in compliance with the California Environmental Quality Act (CEQA) of 1970 (as amended through Public Resources Code § 21000 et seq.) and the CEQA Guidelines (California Code of Regulations Section 15000 et seq.). An EIR is a full disclosure, public information document in which the significant environmental impacts of a project are evaluated, feasible measures to mitigate significant impacts are identified, and alternatives to the project that can reduce or avoid significant environmental effects are considered.

An EIR is an informational document used in the planning and decision-making process by the lead agency and responsible agencies. The lead agency is the public agency with primary responsibility over the project. In the case of the proposed lighting standards, the lead agency is the Energy Commission, which is responsible for overall project approval.

The purpose of an EIR is not to recommend either approval or denial of a project. CEQA requires decision makers to balance the benefits of a project against its unavoidable environmental effects in deciding whether to carry out a project. The Energy Commission will consider the DEIR, comments received on the DEIR, and responses to those comments before making a decision. "Findings of Significance" are prepared to disclose if environmental effects are identified as "Significant and Unavoidable Impacts."

The Energy Commission may still approve the project if it determines changes to the lighting standards, if made, could avoid or substantially lessen the significant effects on the environment identified in the final EIR and makes a finding that those changes or alterations are within the responsibility and jurisdiction of another public agency and such changes have been, or can and should be, adopted by that other agency.[1] A project with significant unavoidable impacts can still be approved, but the Energy Commission would be required to prepare a Statement of Overriding Considerations, pursuant to CEQA Guidelines § 15093, explaining the social, economic, or other benefits of the project that outweigh the significant environmental impacts.

[1] CEQA: Guidelines §15091(a); Pub. Resources Code § 21081(a) and CEQA: Guidelines §15093.

2.2 Scope of the Environmental Impact Report

According to § 15143 of the CEQA Guidelines, the Energy Commission may limit the EIR's discussion of environmental effects to specific issues where significant effects on the environment may occur. The staff used several information sources to determine which issue areas would result in potentially significant or significant effects on the environment. This information included a review of other CEQA documents prepared by the staff for previous adoptions of efficiency standards for state-regulated general service incandescent lamps (Cal. Code Regs. Tit. 20, § 1602 (k)) and by the California Department of Toxic Substances Control in its Final Regulations: Mercury Waste Classification and Management (Reference Number: R-02-04, Office of Administrative Law Reference Number: 02-1231-01S; http://www.dtsc.ca.gov/LawsRegsPolicies/Regs/Mercury_regs.cfm), and public comments and comments received on the notice of preparation (NOP). A NOP was sent to the State Clearinghouse and circulated to affected state agencies on June 27, 2008, for a 30-day review period.

Review of comments on the NOP and preliminary analysis by the staff indicates that the proposed lighting standards have the potential to result in significant adverse effects on the environment in specific issue areas. These include:

- Air Quality
- Biological Resources
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Transportation and Traffic
- Greenhouse Gas Emissions

Consequently, the scope of this DEIR focuses on these issue areas.

2.3 Effects Found Not To Be Significant

This section contains a discussion of the environmental effects found not to be significant pursuant to the CEQA Guidelines § 15128, which provides that "[a]n EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR."

Based on the NOP, public comments on the NOP, and preliminary analysis, the project would have Less-Than-Significant impacts on the following environmental issue areas:

- Aesthetics
- Agricultural Resources
- Cultural Resources

- Geology and Soils
- Land Use and Planning,
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Utilities and Services

The proposed lighting standards are the adoption of appliance efficiency standards to accelerate the effective dates of the federal Tier I and Tier II lighting efficiency standards that became federal law in December 2007. (Federal Energy Independence and Security Act of 2007) (EISA 2007)) The California standards will change the federal effective dates of January 2012, January 2013 and January 2014 to January 2011, January 2012 and January 2013, respectively, in California for the federal Tier I standards and change the federal effective date of January 2020 to an earlier effective date of January 2018 in California for the federal Tier II standards. The Energy Commission is also proposing to adopt efficiency standards for portable lighting fixtures that will increase the energy efficiency of these fixtures by requiring the use of more efficient lamps. (*Note*: When this report refers to the proposed "lighting efficiency standards," that reference includes the proposed Energy Commission's efficiency standards for the accelerated effective dates for the federal Tier I and II lighting standards and the efficiency standards for the portable lighting fixtures)

The staff will consider the potential environmental impacts due to accelerating the effective date of the federal lighting efficiency standards and the requirements to increase the energy efficiency of portable lighting fixtures. The proposed lighting standards would apply to all occupancies, including residential, commercial, industrial, and institutional buildings, in all areas of the state. If the proposed lighting standards are adopted, the staff believes there will be an increase in use of CFLs and fluorescent lamp tubes that are known to contain levels of elemental mercury. Some newly constructed buildings would be required to meet the proposed lighting standards and those projects could involve environmental review pursuant to CEQA. However, because adoption of the proposed lighting standards would not in and of itself result in approval of any specific construction project, this DEIR does not evaluate any impacts of construction, modification to structures, or site-specific impacts.

Because implementation of the proposed lighting standards would not have any site-specific impacts, and its effects are limited to increasing the production, use, and disposal of an existing lighting product and reducing the amount of electricity consumed within the State of California, it would not: cause any change in the visual environment; result in conversion of farmland to nonagricultural use; disturb archeological or historic resources; result in significant geologic or soil impacts; conflict with land use plans or habitat conservation plans; alter subsurface mineral resources; increase ambient noise levels; result in population increase or demand for additional housing; require new or physically altered government facilities; increase use of parks or recreational facilities;

result in substantial demand for new public services or an increase in utilities and services. Implementation of the proposed lighting standards are not anticipated to result in any significant environmental effects in these environmental issue areas, and they are not evaluated further in this DEIR.

2.4 Lead and Responsible Agencies

As defined in CEQA Guidelines § 15367, the lead agency is the public agency that has the principal responsibility for carrying out or approving the project. Other state or local public agencies that may or will use the EIR to carry out their discretionary approval power over the project are Responsible Agencies, as defined by CEQA § 21069 and CEQA Guidelines § 15381.

The Energy Commission is the lead agency with primary authority for approval of the project. The staff has not identified any other public agency as a "Responsible Agency" as defined in CEQA Guidelines § 15381 because no other public agency has legal jurisdiction to adopt or enforce the states' appliance efficiency regulations. No other public agencies have "*discretionary approval power*" over the adoption and enforcement of the state's Appliance Efficiency Regulations.

The staff has not identified any public agency as a "Trustee Agency" as defined in CEQA Guidelines § 15386. However, the California Department of Fish and Game has been identified as an affected agency due to potential environmental impacts of mercury contamination of the surface water.

Additional state agencies (listed below) have been identified as affected state agencies due to the potential environmental impacts caused by the increase use of CFLs and fluorescent lamp tubes that are known to contain certain levels of elemental mercury.

2.4.1 Lead Agency

- California Energy Commission (project approval)

2.4.2 Affected State Agencies

- California Department of Toxic Substances Control
- California Integrated Waste Management Board
- California Department of Fish and Game
- California Department of Health Services, Water Quality Division
- California Air Resources Board
- California Department of Water Resources
- California State Water Resources Control Board

2.5 Public Review Process

Consistent with the requirements of CEQA, a good faith effort has been made during the preparation of this DEIR to contact affected agencies, organizations, and individuals who may have an interest in the project. As described above, this effort included the circulation of the NOP on June 27, 2008.The staff had early consultation with relevant agencies, Department of Toxic Substances and the Integrated Waste Management Board, in preparation of this DEIR. The staff has filed a Notice of Completion (NOC) with the Governor's Office of Planning and Research, State Clearinghouse, indicating that this DEIR has been completed and is available for review and comment by the public. This DEIR is being circulated for a 45-day public review period, beginning August 15, 2008 and ending October 6, 2008, during which time written comments will be received at the following address:

California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5504
Docket No. 07-AAER-03-A

Contact:
Peter Strait at (916) 651-9375
E-mail: Pstrait@energy.state.ca.us

The proposed lighting standards can be found at http://www.energy.ca.gov/appliances/2008rulemaking/notices/index.html.

News media should direct inquiries to Susanne Garfield, Assistant Executive Director, at (916) 654-4989, or by e-mail at mediaoffice@energy.state.ca.us.

A public hearing on this DEIR will be held in Sacramento, on September 17, 2008, during the review period, to receive oral comments on the document.

Public notices of availability of the DEIR have been published in the *Los Angeles Times*, *San Francisco Chronicle*, and the *Sacramento Bee* newspapers.

2.6 Terminology Used In the Environmental Impact Report

This DEIR includes the following terminology to denote the significance of environmental impacts of the project:

- **Less-Than-Significant Impact:** A Less-Than-Significant impact is one that would not result in a substantial and adverse change in the environment. This impact level does not require mitigation.

- **Potentially Significant Impact:** A potentially significant impact is one that, if it were to occur, would be considered a significant impact; however, the occurrence of the impact cannot be definitely determined. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact and would require mitigation.

- **Significant Impact:** A significant impact is one that causes "a substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by the project." Feasible mitigation measures or alternatives to the project must be considered to reduce the magnitude of significant impacts to less-than-significant levels.

- **Significant and Unavoidable Impact:** A significant and unavoidable impact is one that would result in a substantial adverse effect on the environment that cannot be feasibly mitigated to a Less-Than-Significant level. The Energy Commission may still approve the project if it determines changes to the lighting efficiency standards if made could avoid or substantially lessen the significant effects on the environment identified in the final EIR and makes a finding that those changes or alterations are within the responsibility and jurisdiction of another public agency and such changes have been, or can and should be, adopted by that other agency.[2] A project with significant unavoidable impacts if approved requires the Energy Commission to prepare a Statement of Overriding Considerations, pursuant to CEQA Guidelines § 15093, explaining the social, economic, or other benefits of the project that outweigh the significant environmental impacts.

- **Threshold of Significance:** A threshold of significance is a criterion that defines at what level an impact is considered significant. A criterion is defined based on examples found in CEQA or the CEQA Guidelines, scientific and factual data relative to the lead agency jurisdiction, views of the public in affected areas, the policy/regulatory environment of affected jurisdictions, and other factors.

2.7 Technical Studies and Reports Used In the Environmental Impact Report

The studies and reports used to support the DEIR analysis are included in the appendices and are available for review during regular business hours at:

California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5504
Docket No. 07-AAER-03-A

[2] CEQA: Guidelines §15091(a); Pub. Resources Code § 21081(a) and CEQA: Guidelines §15093.

CHAPTER 3:
Project Description

The Energy Commission is proposing to adopt appliance efficiency standards to accelerate the effective dates of the federal Tier I and Tier II lighting efficiency standards that became federal law in December 2007. (Federal Energy Independence and Security Act of 2007 (EISA 2007)) The proposed standards will change the effective federal dates of January 2012, January 2013 and January 2014 to January 2011, January 2012 and January 2013, respectively, in California for the federal Tier I standards and change the effective federal date of January 2020 to an earlier effective date of January 2018 in California for the federal Tier II standards. The Energy Commission is also proposing to adopt efficiency standards for portable lighting fixtures that will increase the energy efficiency of the fixtures.

This proposed adoption is a discretionary decision undertaken by a public agency and has the potential to result in direct or indirect physical changes in the environment. As such, it constitutes a "project" under the CEQA (Cal. Pub. Res. Code § 21065).

3.1 Location and Setting

The proposed adoption of lighting standards is a statewide regulatory change. The project area is the State of California. A wide variety of businesses (for example, retail stores, hospitals, and industrial facilities), government entities, and individual households statewide are likely to use, handle, and dispose of or recycle an increased number of mercury containing CFLs and fluorescent lamp tubes.

3.2 Project Background

The proposed minimum efficiency standards for high efficiency general purpose lighting for the proposed lighting standards will have a positive effect in California by reducing the growth of energy demand and avoiding the need for additional powerplants for electricity generation. The proposed lighting standards are estimated to result in annual energy savings in electricity of 3,640 GWh per year. Those savings will also result in reducing emissions of criteria air pollutants by 2,331 metric tons per year (reduction in ozone, CO, NO_2, SO_2, PM10, PM2.5, and lead) as well as 957,498 metric tons of CO_2 by reducing the need to burn fossil fuel in powerplants. These values assume 100 percent penetration in the market of CFLs and fluorescent lamp tubes.

Adoption of this project is anticipated to increase CFL and fluorescent lamp tube usage, which will result in an increase in the volume of M003 listed Universal Waste. This, in turn, has the potential increase the levels of mercury released into the environment.

Using the "worst case" assumption that the proposed lighting standards would result in 100 percent market shift to fluorescent lamps with no market increases in LED

or metal halide lamps, the amount of mercury added is estimated to total about 0.05 metric tons of mercury per year.

3.3 Current Status of Lighting in California

The following section describes the current use of incandescent and fluorescent lamp usage and provides a summary of the percent of market each lamp type represents. This section also describes the material composition of each type of commercially available lamp. Numerical data will be used to set a reference point to compare the potential effects of accelerating federal lighting standards.

The staff has found that the use of CFLs in California is increasing. CFLs currently make up about ten percent of the lamps sold, and their market share is projected to increase. Although 100 percent penetration in the use of CFLs and fluorescent lamps due to the proposed lighting standards is not likely, that assumption has been used for the purposed of analyzing the worst case scenario for potential mercury impacts.

3.3.1 Specifications and Comparisons of Incandescent and Compact Fluorescent Lamps

3.3.1.1 Operational Assumptions

Even though lamps are generally labeled and selected for purchase by the public based on wattage, the real basis for the selection of a particular lamp is the brightness of the light that the lamp delivers. Therefore, to define equivalency between incandescent and fluorescent lamps the comparison that should be used are in units of lumens.[3] Table 1 provides a comparison of wattage based on light output for incandescent bulbs and CFLs. Note that the wattages listed for incandescent are based on the requirements set in the 2006 rulemaking for lamp performance.

Comparison of Wattages Between Incandescent Bulbs and CFLs with Comparable Light Output

Lumen Range	Incandescent Wattage	Compact Fluorescent Wattage (Average)	Wattage Difference
1490-2600	100	23-30 (28)	72
1050-1489	75	18-25 (21)	54
750-1049	60	13-15 (16)	44
310-749	40	9-13 (11)	29

[3] A lumen is a unit of measurement of the amount of brightness that comes from a light source. One lumen is approximately the amount of light from a wax candle passing through a one square foot hole in a wall with the candle one foot away from the hole.

Life expectancy is another operational value that consumers consider when purchasing lamps. Life expectancy of an incandescent lamp ranges between 700 to 1500 hours before the lamp fails. CFLs have a much longer range of life expectancy. Using the available data staff has determined that a reasonable life expectancy for CFLs is between 4,000 and 10,000 hours. Energy Star[4] labeled CFLs are rated at 8,000 hours of operation. Staff estimates consumers will get roughly 8 years of service from a CFL under normal use conditions compared to1 year average life for incandescent bulbs. For the purposes of this DEIR all values calculated are based on 1,000 hours of operation for incandescent and 8,000 hours for CFLs.

3.3.1.2 Lamp Composition

The material composition of fluorescent and incandescent lamps varies among manufacturers. While most solid components are relatively consistent, there are variations in the mixture of gases used. All lamps contain a variety of materials such as lead, tungsten, glass, plastic, tin, phosphorous, copper, and other materials.

These materials fall into two categories: materials, such as glass, lead and phosphorus, are common in both types of lamps, while other components, including tungsten or plastic, occur in just one type of lamp but are either considered benign or occur in extremely small amounts. Mercury, which is added to CFLs and fluorescent lamp tubes and is an essential operational component, is a significant component of concern in this DEIR. Current manufacturing procedures have reduced the amount of mercury to an average of 0.005 grams per CFL lamp.[5] An analysis of each of the other materials in CFLs compared to California current consumption rate of the material shows that the amount of increase would be less than one percent, despite being based on the worst case assumption that 100 percent of the general and portable lamps market would be transformed to using only CFLs due to this action.

3.3.1.3 Populations/Annual Sales

The historic sales of lamps for general and portable light fixtures are listed in Table 4. The historical trend over the last seven years indicates CFLs are gaining in popularity. This gain is due in large part to several factors. First, the price of CFLs are now a quarter or less than the original marketed price in the 1980's. Second, many utilities subsidize the price of CFLs. Third, along with subsidizing the costs, utilities and public interest groups have committed resources and efforts to educate the public on the benefits of CFLs. Finally, the quality and variety of CFLs have improved to a level where consumers have become more accepting of these lamps. All of the major private utilities in California, including San Diego Gas and Electric, Southern California Edison and Pacific Gas and Electric (PG&E) have incentive programs supporting the use of CFLs. An example is PG&E's current pilot program that is investing $600,000 in energy

[4] Energy Star is a federal voluntary program within the U.S. Environmental Protection Agency that promotes the use of energy efficient appliances by specified labeling and testing requirements.

[5] General Electric, Lamp Material Information Sheet, June 2007, pp2.

incentives through 2008. PG&E intends to implement a full scale program that will be active through 2011. It can be assumed that the current trend of consumers toward "green" awareness in combination with consumer's efforts to reduce utility bills will support continued growth in sales of energy efficient lighting. For the purposes of this analysis the current trends in increased sales of CFLs will not be used to discount the impact of the proposed action. This analysis will assume that the action will cause a 100 percent penetration of compact fluorescents.

Table 3
2001 to 2007 Estimated Sales of CFLS vs. Incandescent lamps in California (millions)

Year	Sales of CFL	Sales of Incandescent
2001	6.629	N.A.
2002	4.956	N.A.
2003	6.313	N.A.
2004	8.974	N.A.
2005	9.766	N.A.
2006	10.553	N.A.
2007	11.403	74.000

N.A. Not available
Annual sales information from the National Electrical Manufacturing Association (NEMA) data on CFL shipments for residential usage was recently released for the years 2001- 2005.[6]

3.3.1.4 Cost Impact

The proposed lighting standards are designed to be cost effective and have either a positive or neutral cost impact.

3.3.2 Current Waste Streams

The proposed lighting standards are expected to reduce the current waste stream of end-of-life lamps. This is based on the findings that CFLs and fluorescent lamps have a life expectancy of roughly 8 times that of the more commonly used incandescent lamps. As the use of CFLs and fluorescent lamps increase there will be a large reduction in waste due to the disposal of incandescent lamps in municipal landfills. Assuming a 100 percent use of CFLs and fluorescent lamps, there will be a 75 percent annual reduction in end-of-life lamp waste. With full implementation of the Universal Waste regulations, as discussed in Chapter IV, this percent roughly translate to the elimination of 4 tons of incandescent lamps being disposed in municipal landfills for each ton of CFL and fluorescent lamps being recycled.

As discussed above, CFL and fluorescent lamps contain mercury. Using the assumptions and data collected, the annual increase in the amount of mercury

[6] Special Statistical Bulletin for the Lamp Section. NEMA. 8/31/06

consumed by Californians for use in CFL and fluorescent lamps due to the proposed lighting standards will total approximately .05 metric tons per year. This will increase the total amount of mercury consumed in California by approximately 0.19 percent for those years that the California standards are effective prior to the federal Tier I and Tier II standards effective dates. This is based on the U.S. Geologic Survey's *2006 Minerals Yearbook, Mercury*[7], which states that the annual average consumption of mercury in the United States is around 200 metric tons. Using a population ratio of California to the United States (based on 2006) the amount of mercury used in California would total 24 metric tons per year.[8] Once the federal lighting standards become effective, the California lighting standards if adopted will no longer be effective and will no longer result in any potential environmental impacts.

As discussed in this DEIR and specifically in Chapter IV, lamps with intentionally added mercury are a Universal Waste regardless of the mercury content in the lamp. Furthermore, despite existing Universal Waste regulations fluorescent lamps are not being properly managed and recycled, since most lamps are being illegally disposed of in municipal landfills.

3.4 Project Objectives

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 efficiency standards for appliances, lighting and buildings.[9] The Energy Commission adopted its first appliance efficiency standards in 1976 and has periodically revised them since then.

Accelerating the effective date of the federal Tier I and Tier II lighting standards and increasing the efficiency for portable lighting fixtures is necessary as California must find ways to address growing energy demand, especially peak load, and to diversify the state's energy portfolio.

Energy needed for lighting represents a significant percent of the total energy produced in California. This is a result of two factors: the direct energy use of lighting, and the heat generated when lighting is being used. This heat must be removed from conditioned air by air conditioning systems, which constitute a major use of energy in California. While a large portion of the expected load from portable lighting fixtures and general purpose lighting will occur during off-peak periods, the opportunity to reduce total energy use and have an impact on lowering energy demand must be considered.

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[7] United StatesGeologic Survey, Mercury Statistics and Information, 2006 Minerals Yearbook, http://minerals.usgs.gov/minerals/pubs/commodity/mercury/myb1-2006-mercu.pdf, accessed on July 27, 2008.

[8] California's population is estimated to be 12 percent of the United States total based on 2006 census data population totals. United States Census Bureau, State & County Quick Facts, 2006; http://quickfacts.census.gov/gfd/states/06000.html, accessed on July 27, 2008.

[9] Public Resources Code § 25402, et seq.

3.5 Project Description

3.5.1 Project Overview

The Energy Commission intends to accelerate the effective dates of recently enacted federal Tier I and Tier II lighting efficiency standards. The proposed lighting standard for the federal Tier I standards (effective January 2012, 2013 and 2014 nationally) would become effective January 2011, 2012 and 2013 respectively in California and would require general service lamps to use 30 percent less energy than current general service lamps. The proposed lighting standard for federal Tier II standards (effective nationally January 2020) would become effective in 2018 in California and would require general service lamps to use 60 percent less energy than current general service lamps. The project also includes an increase in efficiency for portable lighting fixtures.

In accelerating the effective date of the federal lighting standards and increasing the efficiency for portable lighting fixtures, the Energy Commission must consider the potential environmental impacts of such action. The primary environmental impact of concern is the increased use of CFLs and fluorescent lamp tubes, which contain elemental mercury.

It is estimated that accelerating the federal lighting standards and increasing the efficiency for portable lighting fixtures will save the state of California as much as 3,640 GWh/year and reduce greenhouse gas emissions by up to 957,498 metric tons per year. Those savings will translate into reduction of criteria air pollutants by 2,331 metric tons (ozone, CO, NO_2, SO_2, PM-10, PM-2.5, and lead).

3.5.2 Proposed Lighting Efficiency Standards:

The following Tier I and Tier II proposed lighting standards for State-Regulated General Service Lamps will prohibit the use of GU-24 sockets for incandescent lamps and require the following efficiencies:

State-Regulated General Service Incandescent Lamps
Federal Tier I Adoption

Rated Lumen Range	Maximum Rated Wattage	Minimum Rated Life Time	Proposed California Effective Date[10]	Federal Effective Date
1490-2600	72	1,000	Jan. 1, 2011	Jan. 1, 2012
1050-1489	53	1,000	Jan. 1, 2012	Jan. 1, 2013
750-1049	43	1,000	Jan. 1, 2013	Jan. 1, 2014
310-749	29	1,000	Jan. 1, 2013	Jan. 1, 2014

State-Regulated General Service Lamps
Federal Tier II Adoption

Lumen Range	Minimum Lamp Efficacy	Minimum Rated Life Time	Proposed California Effective Date[2]	Federal Effective Date
All	45 lumens per watt	1,000	Jan. 1, 2018	Jan. 1, 2020

Portable Lighting Fixtures

- Be equipped with a dedicated fluorescent lamp socket;
- Be a light emitting diode (LED) luminaire, or a portable luminaire with an LED light engine;
- Be equipped with on GU-24 sockets for use with only high efficiency lamps.
- Pre-packaged and sold with high efficacy compact fluorescent lamps based on current Energy Star efficiency levels, or with high efficacy LED lamps.
- If equipped with single-ended, non-screw based halogen lamp sockets (line or low voltage), must include a dimmer control or high low control and be rated for a maximum of 100 watts.

[10] The proposed early adoption by the Energy Commission of the federal EISA 2007 Tier I and Tier II efficiency standards is a discretionary decision that triggers CEQA compliance. (See Pub. Resources Code § 21065(a) and Cal. Code Regs., tit. 14 § 15357)

CHAPTER 4:
CFLs and Fluorescent Lamp Tubes Designated As a Universal Hazardous Waste

4.1 End-Of-Life Mercury-Containing CFLs and Fluorescent Lamp Tubes Must Be Managed as a Universal Waste in California.

The Department of Toxic Substances Control (DTSC) is the state agency in California that has the statutory authority to regulate hazardous waste by providing the highest level of safety and to protect public health and the environment from toxic harm. Under this authority DTSC made a finding that mercury is a toxic heavy metal that has been in use for hundreds of years because of its useful physical and chemical properties.[11] The toxicity of organic and inorganic mercury compounds led to their use as fungicides and pesticides.[12] As a result of its long-term and widespread use, mercury has been continuously released into the environment so that varying levels of mercury contamination are found throughout California in air, soil, and water.[13]

DTSC has found that mercury contamination is a serious concern because of toxicity, mobility in the environment, and ability to bioaccumulate, particularly in aquatic organisms.[14] Of significant concern is mercury's neurological and developmental toxicity to humans, who can be exposed to elemental mercury and/or mercury compounds in the environment through inhalation (breathing mercury vapors), dermal contact (for example, skin touching elemental mercury or contaminated soil), or ingestion (for example, eating mercury contaminated fish).[15]

As a result of DTSC's findings on the impacts of mercury contamination in California, DTSC designated, in regulation, all mercury-containing lamps as listed M003 Universal Wastes and concluded that such designation would result in less mercury being released to the state's environment.[16] The Universal Wastes regulations require that certain hazardous wastes (for example, mercury-containing lamps) that are widely generated be managed under standards that are appropriate for the hazards of the wastes and the types of entities that generate them.[17] For mercury-containing lamps, a

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[11] Initial Study for Mercury Waste Classification and Management Regulations, DTSC (Reference No. R-02-04); at pg. 2, see http://www.dtsc.ca.gov/LawsRegsPolicies/Regs/upload/HWM_CEQA_Mercury_InitialStudy.pdf

[12] Ibid. pg 3.

[13] Ibid.

[14] Ibid.

[15] Ibid.

[16] Ibid. pgs. 11, 12, and Final Regulations: Mercury Waste Classification and Management DTSC Reference Number: R-02-04 OAL Reference Number: 02-1231-01S, Effective Date: 03/15/03. >http://www.dtsc.ca.gov/LawsRegsPolicies/Regs/Mercury_regs.cfm >; also CA Code of Reg. tit 22 § 66261.50.

[17] See Cal. Code Reg. title 22, § 66273.1 *et seq.*.

M003 listed waste; the Universal Waste regulations require recycling.[18] The CEQA analysis, scientific documentation[19] and rulemaking file prepared by DTSC to support the designation of mercury containing lamps as a listed M003 Universal Waste is incorporated by reference in the draft EIR.

4.2 Mercury-Containing CFLs and Fluorescent Lamp Tubes are Being Illegally Disposed in California.

At the time mercury-containing lamps were designated as a listed M003 Universal Wastes, DTSC made a finding that only 20 percent of the spent fluorescent lamps generated in the state were properly recycled, with the remaining 80 percent disposed of in municipal landfills.[20] DTSC additionally made a finding that evidence in the record showed that there existed sufficient recycling capacity to fully manage the newly listed M003 Universal Waste.[21]

Although finding that California had sufficient recycling capacity for spent CFLs and fluorescent lamp tubes, this recycling capacity has not been utilized to date and most lamps continue to be illegally disposed of in municipal landfills. To address this issue, the Legislature enacted AB 1109 (Stats, 2007, Ch. 534), which requires DTSC to convene a Task Force to consider and make recommendations by September 1, 2008 on:[22]

(1) The most effective, cost-efficient, and convenient method for the consumer to provide for the proper collection and recycling of any end-of-life general purpose lights generated in this state.

(2) Methods to educate consumers about the proper management and collection opportunities for end-of-life general purpose lights.

(3) Designations on the general purpose light and light packaging regarding the proper recycling of the light and compliance of the light.

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[18] Ibid.

[19] Final Mercury Report, DTSC, August 2002. > http://www.dtsc.ca.gov/TechnologyDevelopment/upload/HWM_REP_Mercury_Final.pdf<

[20] Initial Study for Mercury Waste Classification, DTSC, pg. 11.

[21] Final Statement of Reasons; Mercury Waste Classification and Management; DTSC Reference No: R-02-04Notice File Number: Z02-0806-09; Response to Comment T-28; 45 Day Notice Comment Summaries and Responses; 12/31/02, Pg. 97.

[22] See <http://www.dtsc.ca.gov/HazardousWaste/UniversalWaste/Lighting.cfm>

CHAPTER 5:
Affected Environment, Thresholds of Significance, Environmental Impacts and Mitigating Measures.

Sections 5.1 through 5.6 of this DEIR discuss existing environmental and regulatory settings, analysis including potential impacts associated with implementation of the project, mitigation measures to reduce the level of impact, and residual impacts (the remaining impacts after implementation of any proposed mitigation measures). Issues evaluated in these sections consist of environmental topics originally identified for review in the notice of preparation (NOP) prepared for the proposed lighting standards. The NOP is included as Appendix A. The information cited in this Chapter that is based on documents prepared by DTSC are adopted by reference for this DEIR.

5.1 Air Quality and Toxic Air Contaminants

This section describes the regulatory framework under which emissions are controlled that affect air quality and toxic air contaminants in the State of California. This section also contains an analysis of potential air quality and toxic air contaminants impacts associated with the adoption of the proposed lighting standards.

5.1.1 Environmental Setting

A wide variety of businesses, including retail stores, hospitals, industrial facilities, offices buildings, hotels and motels, and individual and multifamily housing units, use many different technologies for providing lighting, including highly efficient lamps. CFLs and fluorescent lamp tubes are widely used lamps that contain mercury. The staff is expecting an increase in the use of these lamps due to the adoption of the proposed lighting standards.

CFLs and fluorescent lamp tubes are highly efficient and use significantly less energy than common incandescent bulbs, thus reducing California's need to build additional powerplants that burn fossil fuels for electrical generation. However, there is a potential for mercury release to the environment during the use and end-of-life management of both CFLs and fluorescent lamp tubes. Some of the end-of-life management of these lamps takes place through permitted recycling facilities; however, most of the CFLs and fluorescent lamp tubes used in households are presently disposed of in municipal landfills.

5.1.2 Regulatory Setting

Statewide air quality issues for California are overseen by the California Air Resources Board (CARB). CARB implements the federal air quality requirements and establishes health-based ambient air quality standards appropriate for California. Currently, standards have been established for nine criteria pollutants, including ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter (PM-10, PM-2.5), sulfates, lead, hydrogen sulfide, and visibility-reducing particles.

Air quality is also regulated at the regional or local level by Air Quality Management District's (AQMDs) or Air Pollution Control Districts (APCDs). While mercury emissions are not included as a statewide criteria pollutant, it is considered a toxic air contaminant. Air quality standards for regulation of mercury are focused on incineration, power generation, industrial process, and internal combustion vehicle emissions. These emission standards vary according to local conditions and processes. For indoor or accidental exposure standards, CARB and the local air districts generally rely upon the California Occupational Safety and Health Standards Administration (CalOSHA) Permissible Exposure Limits (PEL) for worker exposure to airborne contaminants, including mercury. These requirements are found in California Code of Regulations, title 8, § 5155. The PEL for mercury (metallic and inorganic compounds) is 0.025 mg/cubic meter of air.[23]

End-of-life mercury containing lamps must be managed properly and cannot be disposed of in the trash. These lamps are listed as a M003 Universal Waste and must be managed pursuant to California Universal Waste regulations.[24] The Universal Waste regulations specify that end-of-life mercury containing lamps must be managed pursuant to the regulations and recycled by licensed universal waste handlers. These mercury-containing universal waste handlers are located in urban, commercial, and/or industrialized areas throughout the state and at out-of-state facilities.

5.1.3 Analysis of Potential Impacts

The project is the proposed adoption of lighting standards that the staff believes will increase the use and disposal of CFLs and fluorescent lamp tubes in California. There are two potential impacts related to air quality that may result from the adoption of the proposed lighting standards. A positive benefit will occur by the reduction of criteria pollutant emissions associated with the avoidance of additional powerplants and the resulting reduction in fossil fuel use during electrical generation. An adverse air quality impact may occur from the potential volatilization of any liquid mercury released from the lamps during their use, due to accidental breakage, during the management and transportation to the recycling facilities, during the recycling process due to spills or releases, or through illegal disposal.

5.1.3.1 Thresholds of Significance

Thresholds of Significance for air quality is a criterion to define what level of an impact from a project would be considered significant. For purposes of this CEQA analysis, the following thresholds of significance were used to determine whether implementing the proposed lighting standards would result in a significant impact related to air quality:

- conflict with or obstruct implementation of the applicable air quality plan,

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[23] Initial Study for Mercury Waste Classification, DTSC, pg. 36.

[24] Cal. Code Reg. title 22, § 66273.1 *et seq.*.

- cause a violation of any air quality standard or substantially contribute to an existing or projected air quality violation,

- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment status under an applicable federal or state ambient air quality standard, or

- expose sensitive receptors to substantial pollutant (including toxic mercury) concentrations.

5.1.3.2 Impact Analysis

There are no emissions of criteria air pollutants including ozone, CO, NO_2, SO_2, PM-10, PM-2.5, VOCs, ROGs or lead, associated with the use of CFL's or fluorescent lamp tubes. There are no production or manufacturer emissions associated with CFL's or fluorescent lamp tubes because these products are not currently produced in California or the states of Washington, Oregon, Nevada or Arizona.

The increased use of highly efficient lamps is expected to cause a positive air quality benefit by a reduction in criteria air pollutants due to the avoidance of additional powerplants and the resulting decrease in the use of fossil fuel for electrical power generation. It is estimated that the overall reduction of criteria pollutants emitted by powerplants will be 2,331 metric tons per year.

5.1.3.2.1 Mitigation Measures

No mitigation measures are necessary because there is an air quality benefit in the reduction of criteria air pollutants as a result of the proposed lighting standards.

5.1.3.3 Toxic Air Contaminants

DTSC made a finding that the main air quality impact associated with the management of mercury containing lamps, which are a M003 listed Universal Waste, is from the potential for volatilization of liquid mercury released from lamps during removal of the mercury during recycling or through spills or releases during management or transportation of the waste.[25]

5.1.3.3.1 Impact Analysis

DTSC made a finding that any potential air quality impacts with the required management of the M003 Universal Waste would have a less-than-significant impact because, the general universal waste management requirements include the following mercury-specific management controls in the regulations:[26]

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[25] Initial Study for Mercury Waste Classification, DTSC, pg. 36.

[26] Ibid. pg. 37.

- *"Any mercury-containing wastes that show evidence of leakage, spillage, or damage must be contained in closed, structurally sound, compatible containers. This requirement will prevent volatilization of mercury from leaking, broken, and damaged wastes.*

- *Mercury-containing wastes must be accumulated in closed, non-leaking containers and packed in materials to prevent breakage during storage, handling, and transportation. This requirement will prevent volatilization of stored mercury during handling and transport.*

- *Removal or onsite draining of mercury from switches, instruments, or products must be done by trained employees, in a manner designed to prevent breakage. This requirement ensures that employees are trained to properly manage the wastes so that mercury volatilization or exposure during removal or draining will be minimized.*

- *Removal of mercury can only occur in areas that are well ventilated and monitored to ensure compliance with applicable OSHA and CalOSHA exposure levels for mercury. This requirement ensures that universal waste handlers and employees are not exposed to mercury vapors in excess of established health standards.*

- *Spills must be cleaned-up immediately and released mercury placed in airtight containers. This requirement ensures that mercury spills and releases are not exposed for long periods of time, thereby minimizing the potential for increased volatilization of the exposed mercury with time.*

- *Mercury or mercury residue from spill cleanup must be managed according to full hazardous waste requirements, including manifests and registered transporters, if the waste meets the criteria for hazardous waste under the established hazardous waste classification system. This requirement provides the incentive for handlers to prevent spills since management of spill residue according to full hazardous waste requirements will be more costly and time-consuming than management of waste under universal waste requirements. Spill prevention and reduction means less mercury is exposed to air and potentially volatilized.*

- *No more than 35 kilograms (less than 6 pints) of elemental mercury can be accumulated at any one time. This requirement limits the volume of mercury that could potentially be spilled at any one time, thereby limiting the amount of mercury available for volatilization in the event of a spill."*

DTSC also made a finding that some spills and breakage of mercury-containing waste during generation, handling, or transportation of the waste can be expected. However, given the waste management controls established in regulations,[27] and the economic incentives to not spill or release mercury haphazardly, a less-than-significant

[27] Cal. Code Reg. title 22, § 66273.1 *et seq.*.

impact on air quality is expected from the management and recycling requirements for the M003 waste.[28]

DTSC also made the following findings.[29]

> *"a. Conflict with or obstruct implementation of the applicable air quality plan.*
>
> *[The Universal Waste] . . . regulations require that mercury wastes be appropriately contained; that any mercury from broken product housing be transferred immediately to air-tight containers; . . . and that any spills be cleaned-up and managed according to full hazardous waste requirements as necessary. These requirements will ensure compliance and consistency with applicable air quality plans or standards for mercury (e.g., the CalOSHA PEL).*
>
> *b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.*
>
> *[The Universal Waste] . . . regulations require that mercury wastes be appropriately contained; that any mercury from broken product housing be transferred immediately to air-tight containers; that removal of mercury switches and gauge draining be done in monitored, well-ventilated areas; and that any spills be immediately cleaned up and managed according to full hazardous waste requirements as necessary. These requirements will help ensure that air quality standards for mercury (e.g., the CalOSHA PEL) are not violated and that management of mercury under the . . . [Universal Waste] regulations will not contribute to any existing or projected air quality violation.*
>
> *c. Result in 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 which exceed quantitative thresholds for ozone precursors).*
>
> *While mercury is a toxic air contaminant, it is not one of the nine criteria pollutants. Therefore, implementation of the Universal Waste regulations and any mercury releases occurring from wastes managed according to the regulations, will not impact air quality criteria pollutant concentrations in the state.*
>
> *d. Expose sensitive receptors to substantial pollutant concentrations.*
>
> *Sensitive receptors are generally defined as sensitive human populations, such as children, seniors, sick, or infirm persons. Individual households or businesses that generate and handle mercury-containing wastes may include sensitive receptors. The [The Universal Waste] . . . regulations would not significantly change the management*

[28] Initial Study for Mercury Waste Classification, DTSC, pg 38.

[29] Ibid. pgs. 38, 39.

standards that apply to households; households are already exempt from many hazardous waste management requirements. The waste management requirements established in the . . . [Universal Waste] regulations for other handlers (including training, containment, and spill cleanup requirements) will help ensure that sensitive receptors are not exposed to substantial concentrations of mercury as a result of the management of mercury wastes in accordance with the regulations.

e. Create objectionable odors affecting a substantial number of people.

The mercury wastes identified for management under the [The Universal Waste] . . . regulations are not known to emit objectionable odors, and treatment of the waste that might cause an odor (such as chemical treatment) is not allowed under the . . . [Universal Waste] regulations. Therefore, no objectionable odors will be created or generated."

5.1.3.3.2 Mitigation Measures

DTSC made a finding that the required management of M003 waste under the Universal Waste regulations would result in a Less-Than-Significant Impact on Air Quality and Toxic Air Contaminants.[30]

Because no new, relevant facts or analyses have come to light since DTSC's environmental analysis and findings made for air quality and toxic air contaminants, concerning the use and end-of-life management of fluorescent lamps, the staff makes these same findings. In so doing the staff finds that a Less-Than-Significant Impact on Air Quality and Toxic Air Contaminants will result since the management required under the Universal Waste regulations for listed M003 waste will be required for the potential increased use of CFLs and fluorescent lamp tubes, resulting from the proposed lighting standards.

5.1.4 Findings of Significance

The staff finds that the project's potential impact on air quality will be Potentially Significant unless mercury emissions are mitigated through the implementation of the Universal Waste regulations for the M003 listed waste.

5.1.5 Significant and Unavoidable Impacts

The staff finds that all potentially significant Air Quality and Toxic Air Contaminant Impacts would be reduced to a Less-Than-Significant levels with the implementation of Universal Waste regulations for the M003 listed waste and that no air quality impacts would be significant and unavoidable. However, as discussed in Chapter IV, the recycling capacity for CFLs and fluorescent lamp tubes has not been fully utilized to this date, and most lamps are being illegally managed and disposed of in municipal landfills. To resolve this issue, the Legislature enacted AB 1109 (Stats, 2007, Ch. 534), which

[30] Ibid., pg. 39.

required among other things for DTSC to convene a Task Force to consider and make recommendations by September 1, 2008 to address this problem.

As a result of the issues discussed in Chapter IV, the staff finds that the proposed lighting standards will result in a potentially significant air quality impact unless the mitigation measures required in the Universal Waste regulations, for the management of the listed M003 waste (mercury-containing CFLs and fluorescent lamp tubes), are implemented and enforced.

5.2 Biological Resources

This section describes the regulatory framework under which emissions affecting Biological Resources are controlled in the State of California.

5.2.1 Environmental Setting

A wide variety of businesses, including retail stores, hospitals, industrial facilities, offices buildings, hotels and motels, and individual and multifamily housing units, use many different technologies for providing lighting, including highly efficient lamps that contain mercury. CFL's and fluorescent lamp tubes are widely used lamps that contain mercury. The staff is expecting an increase in the use of these lamps due to the adoption of the proposed lighting standards.

CFLs and fluorescent lamp tubes are highly efficient and use significantly less energy than common incandescent lamps, thus reducing California's need to build additional powerplants that burn fossil fuels for electrical generation. However, there is a potential for mercury release to the environment during the use and end-of-life management of both CFLs and fluorescent lamp tubes. Some of the end-of-life management of these lamps takes place through permitted recycling facilities; however, most of the household generated CFLs and fluorescent lamp tubes presently are disposed of in municipal landfills.

5.2.2 Regulatory Setting

Protection of wildlife habitat and designated threatened and endangered species is overseen by the California Department of Fish and Game (CDFG) and the United States Fish and Wildlife Service (in federal jurisdictions). Local agencies may also establish and enforce policies, ordinances, or plans for wildlife protection, preservation, or habitat conservation.

Discharges of pollutants to surface and ground waters and discharges to land that may impact water resources are regulated by the State Water Resources Control Board and nine Regional Water Quality Control Boards. Discharges of dredge and fill materials and construction impacts to waters of the United States, including federal wetlands, are regulated by the United States Army Corps of Engineers, according to § 404 of the Federal Clean Water Act.

5.2.3 Analysis of Potential Impacts

5.2.3.1 Thresholds of Significance

Thresholds of Significance for Biological Resources is a criterion to define at what level an impact from the project would be considered significant. For purposes of this CEQA analysis, the following applicable thresholds of significance are being used to determine whether implementing the proposed lighting standards would result in a significant impact related to California's Biological Resources. A significant impact is one that would:

- *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;*

- *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;*

- *Have a substantial adverse effect on federally protected wetlands as defined by § 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;*

- *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;*

- *Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and*

- *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

5.2.3.2 Impact Analysis

The impacts analyzed in this section are based on findings by DTSC that listed M003 wastes, which include CFLs and fluorescent lamp tubes, contain elemental mercury and for that reason must be managed under the Universal Waste regulations.[31] In its analysis, DTSC made a finding that the form of mercury most toxic to biological resources is methyl-mercury, which may form from the methylation of elemental mercury in aquatic or water saturated soil environments.[32] DTSC adopted the following

[31] Ibid., pg. 40.

[32] Ibid. pg. 40.

discharge prohibitions and controls that they found would ensure that any impacts from implementation of the Universal Waste regulations would be Less-Than-Significant for managing the end-of-life M003 waste.[33] DTSC adopted these requirements as part of the Universal Waste regulations to prevent releases of elemental mercury to air, soil, or water that might impact biological resources or indirectly lead to production of methyl-mercury.[34]

- *"While the . . . [Universal Waste]regulations do not mandate or require construction of new facilities, it is possible that new waste accumulation facilities might be built or existing facilities might expand in response to promulgation of the . . . [Universal Waste] regulations. In these cases, facility siting and construction activities would be subject to local land use, zoning, business, building, and environmental review requirements. In addition,*
  the . . . [Universal Waste] regulations requires accumulation of mercury-containing universal wastes received from other handlers to: be in compliance with all applicable hazardous materials requirements; comply with existing facility location, seismic, and precipitation design standards; be located in areas zoned for commercial or industrial uses; and be located in areas that do not pose site specific land use hazards or contain sensitive habitat areas. Construction discharges would also be subject to all applicable requirements imposed by state and federal agencies, including construction activities and discharges that might impact wildlife or habitat.

- *Discharges to water and land are prohibited under the . . . [Universal Waste] regulations. This discharge prohibition ensures that mercury is not released to water or saturated soil environments during routine management of mercury wastes as universal wastes. This requirement should prevent the potential for methylation of elemental mercury and creation of highly toxic and bioaccumulative methyl-mercury.*

- *Wastes must be managed in a manner that prevents releases to the environment. This performance standard helps ensure that mercury is not released from wastes managed according to the . . . universal waste requirements.*

- *Any spills or releases must be immediately cleaned-up and managed appropriately. This requirement ensures that any impacts from non-routine or accidental spills of mercury from universal wastes are time-limited and minimal, so that any release of mercury to the environment is de minimis.*

- *Wastes must be stored in closed, structurally sound containers and packed to prevent breakage of wastes during storage, handling, or transport. The waste containment and closed container requirements included in the regulations help ensure that mercury is not released to the environment and that the mercury wastes do not generate air emissions that would impact biological resources or wildlife.*

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[33] Ibid. pgs. 40-41.

[34] Ibid. pg. 40.

- *No more than 35 kilograms (less than 6 pints) of elemental mercury can be accumulated at any one time. This requirement limits the volume of mercury that could potentially be spilled at any one time, thereby limiting the amount of mercury available for release (or methylation) in the event of a spill."*

Staff finds that the proposed lighting standards do not require or mandate construction of new recycling facilities or infrastructure. Any new construction undertaken in response to the project would be subject to local land use, zoning, building, construction, and State and federal environmental requirements. In particular, any new construction would be subject to discharge prohibitions and controls established by State and federal agencies implementing the provisions of the federal Clean Water Act, including National Pollutant Discharge Elimination System (NPDES) discharge and stormwater permits, and § 404 permits regulating construction dredge and fill activities.[35]

DTSC made findings concerning spills and breakage of mercury-containing waste during generation, handling, or transportation of M003 waste. Those findings were that the waste management controls in the Universal Waste regulations and the economic incentive to not spill or release mercury would result in a Less-Than-Significant Impact on Biological Resources from implementation of the Universal Waste regulations.[36]

DTSC also made the following findings:[37]

"(1) an increase in M005 listed waste may require the accumulation of this waste received from other handlers, however, these handlers must be in compliance with all applicable hazardous materials requirements; comply with existing facility location and precipitation design standards; be located in areas zoned for commercial or industrial uses; and be located in areas that do not pose site specific land use hazards or contain sensitive habitat areas.

(2) In the event of an accidental release of mercury, any spill cleanup activities would be time-limited and small in scale due to the spill cleanup requirements in regulations. Therefore, there would be no substantial adverse impact on species, habitat, natural communities, federally protected wetlands, or migratory corridors from implementation of the . . .[Universal Waste] regulations. In addition, implementation of the . . . [Universal Waste] regulations would not conflict or impede any local policies, ordinances, or adopted conservation plans."

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[35] Ibid.

[36] Ibid. pg. 41.

[37] Ibid. pg. 42-43.

5.2.4 Mitigation Measures

DTSC made a finding that the required management of M003 waste under the Universal Waste regulations would result in a Less-Than-Significant Impact on the Biological Resources in California.[38]

Because no new, relevant facts or analyses have come to light since DTSC's environmental analysis and findings made for Biological Resources concerning the use and end-of-life management of fluorescent lamps, the staff makes the same findings. In so doing, staff finds that a Less-Than-Significant Impact on the Biological Resources will result since the management required under the Universal Waste regulations for listed M003 waste are required for the potential increased use of CFLs and fluorescent lamp tubes, resulting from the proposed lighting standards.

5.2.5 Findings of Significance

The staff finds that the project's potential impact on the Biological Resources in California will be Potentially Significant unless mercury emissions are mitigated through the implementation of the Universal Waste regulations for the M003 listed waste.

5.2.6 Significant and Unavoidable Impacts

The staff finds that all potentially significant Biological Resource impacts would be reduced to a Less-Than-Significant Levels with the implementation of Universal Waste regulations for the M003 listed waste, and that no Biological Resource impacts would be significant and unavoidable. However, as discussed in Chapter IV, the recycling capacity for CFLs and fluorescent lamp tubes has not been fully utilized to this date, and most lamps are being illegally managed and disposed of in municipal landfills. To resolve this issue, the Legislature enacted AB 1109 (Stats, 2007, Ch. 534), which required among other things for DTSC to convene a Task Force to consider and make recommendations by September 1, 2008 to address this problem.

As a result of the issues discussed in Chapter IV, the staff finds that the proposed lighting standards will result in a potentially significant impact on Biological Resources unless the mitigation measures required in the Universal Waste regulations, for the management of the listed M003 waste (mercury-containing CFLs and fluorescent lamp tubes), are implemented and enforced.

5.3 Hazards and Hazardous Materials

This section describes impacts due to Hazards and Hazardous material in California and the regulatory framework under which emissions are controlled.

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[38] Ibid., pg.43.

5.3.1 Environmental Setting

A wide variety of businesses, including retail stores, hospitals, industrial facilities, offices buildings, hotel and motels, and individual and multifamily housing units, use many different technologies for providing lighting, including highly efficient lamps. CFLs and fluorescent lamp tubes are widely used lamps that contain mercury. The staff is expecting an increase in the use of these lamps due to the adoption of the proposed lighting standards.

CFLs and fluorescent lamp tubes are highly efficient and use significantly less energy than common incandescent bulbs, thus reducing California's need to build additional powerplants that burn fossil fuels for electrical generation. However, there is a potential for mercury release to the environment during the use and end-of-life management of both CFLs and fluorescent lamp tubes. Some of the end-of-life management of these lamps takes place through permitted recycling facilities; however, most of the CFLs and fluorescent lamp tubes used in households are presently disposed of in municipal landfills.

5.3.2 Regulatory Setting

Hazardous wastes that contain mercury (except lamps) are currently subject to full hazardous waste requirements, including generator accumulation time limits, identification numbers, and transport with a manifest and registered hazardous waste hauler.[39] The current hazardous waste regulatory level for mercury is 0.2 mg/L using the TCLP[40] or California waste extraction test (WET), or 20 mg/kg using the TTLC. Regulatory oversight of hazardous waste programs is provided at the state level by DTSC. The U. S. Environmental Protection Agency (EPA) has also delegated authority to DTSC for implementation of the provisions of RCRA governing hazardous waste management. Oversight of hazardous waste generators is also provided by local agencies known as Certified Unified Program Agencies (CUPAs).

Lamps that contain intentionally-added mercury, such as CFLs and fluorescent lamp tubes, are a hazardous waste when discarded.[41] These lamps are listed as a M003 Universal Waste and are subject to management as a Universal Waste.[42] The applicability of the Universal Waste regulations to lamps typically apply to persons managing: (1) lamps that exhibit a characteristic of a hazardous waste (Cal. Code Regs. tit. 22, § 66273.9), and (2) mercury–added lamps (Cal. Code Regs., tit. 22, §§ 66273.9, 66261.50). Lamps that are not applicable as a Universal Waste are those lamps that: (1) are not yet a waste, (2) that do not meet the listing as a M003 Universal Waste, and (3) are not destined for an authorized recycling facility but managed as a

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[39] Cal. Code Regs. Tit. 22 §§ 66250-69214.

[40] Cal. Code Regs. Tit. 22 §66261.24.

[41] Cal. Code Regs. Tit. 22, § 66261.50.

[42] Cal. Code Regs. Tit. 22, §66261.50, and §§66273.1- 66273.90.

hazardous waste.[43] Lamps become a waste on the date it is discarded, or when the handler decides to discard an unused lamp.[44]

The Universal Waste management requirements for CFLs and fluorescent lamp tubes requires the recycling of these lamps and provides the standards for handlers of small quantities (§66273.10 - §66273.210), large quantities (Cal. Code Regs., Tit. 22 §§ 66273.30 - 66273.41), requirements for transporters of the lamps (Cal. Code Regs.,Tit. 22 §§ 66273.50 - 66273.56), and standards for the recycling facilities (Cal. Code Regs., Tit. 22 §§ 66273.50 - 66273.56)

5.3.3 Analysis of Potential Impacts

5.3.3.1 Thresholds of Significance

A Threshold of Significance for Hazards and Hazardous Waste is a criterion to define at what level an impact from the project would be considered significant. For purposes of this CEQA analysis, the following applicable thresholds of significance were used to determine whether implementing the proposed lighting standards would result in a significant impact related to Hazards and Hazardous Materials. A significant impact is one that would:

- *Create a significant hazard to the public or the environment throughout the routine transport, use or disposal of hazardous materials.*
- *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.*
- *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school.*
- *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to public or the environment.*
- *Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.*

5.3.3.2 Impact Analysis

DTSC made a finding that mercury-containing wastes that are managed and listed under the Universal Waste regulations, such as CFLs and fluorescent lamp tubes, are well-characterized, low management risk wastes that are usually generated in small

[43] Cal. Code Regs. Tit. 22, §66273.5(b).

[44] Cal. Code Regs. Tit. 22, §66273.5(c).

volumes by many businesses and households, have elemental mercury as the constituent of concern, and are not readily available for release to the environment when properly managed.[45] DTSC made a finding that the risks associated with management of elemental mercury were relatively low because elemental mercury is a well-characterized metal that only exhibits the hazardous waste characteristic of toxicity, is not a reactive or ignitable substance, and does not exhibit other chemical characteristics that would lead to fire, explosion, deadly gas formation, or other hazardous upset.[46] DTSC further found that the physical, chemical, and toxic properties of elemental mercury were well known and that the management controls to prevent release and exposure were not complicated or difficult to implement.[47]

DTSC made a finding that CFLs and fluorescent lamp tubes when discarded were frequently managed as non-hazardous waste even though the products may contain anywhere from 5 mg to over 1 gram of mercury.[48] The basis for this finding was due to the concentration of mercury being "diluted" by the total mass of the waste being tested.[49] DTSC determined that it would adopt regulations listing these wastes as hazardous waste to ensure that the wastes will be managed as universal waste independent of the hazardous waste testing limitations in the California Code of Regulations, Title 22.[50] DTSC also found that listing this waste as a M003 Universal waste would ensure that the waste would be recycled in a way that would control and mitigate the potential for the release of mercury contained in the lamps. DTSC found that the Universal Waste management requirements are effectively more stringent than normal hazardous requirements in Title 22 because they remove the potential that a non-hazardous test result would enable the waste to be managed and disposed of as non-hazardous.[51] Thus, DTSC found that this M003 listing would ensure that the mercury-containing wastes would be managed appropriately.[52] In addition, DTSC found that both existing and new recycling facilities accumulating mercury-containing universal wastes received from other handlers are restricted to locations that are in compliance with all applicable hazardous materials requirements; comply with existing facility location and precipitation design standards; are in areas zoned for commercial or industrial uses; and do not pose site specific land use hazards or contain sensitive habitat areas.[53]

DTSC then made a finding that management of M003 waste under the Universal Waste regulations would not have an adverse impact on human health and safety or the environment.[54]

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[45] Initial Study for Mercury Waste Classification, DTSC, pg. 50.

[46] Ibid.

[47] Ibid.

[48] Ibid., pg. 49.

[49] Ibid.

[50] Ibid.

[51] Ibid.

[52] Ibid.

[53] Ibid. pg. 51

[54] Ibid, pg. 49

DTSC further made the following findings of No Significance.[55]

"a. Create a significant hazard to the public or the environment throughout the routine transport, use or disposal of hazardous materials."

DTSC made a finding that the Universal Waste regulations for the listed M003 waste included safe handling and transport of mercury-containing wastes that will be assured through waste containment, packing, labeling, and clean-up elements. The waste management controls established in the Universal Waste regulations include the following requirements:

- *"The wastes are required to be kept in closed containers that are in good condition, packed to prevent breakage, and labeled to identify the waste.*
- *Mercury clean-up systems must be available and any spills immediately cleaned-up and properly managed.*
- *Waste handlers must be trained in how to safely handle and the wastes, including emergency procedures.*
- *Waste accumulation is limited to one-year to prevent uncontrolled storage that may effectively become onsite disposal.*
- *The volume of elemental mercury drained from gauges and managed onsite at any one time is limited to 35 kilograms to prevent large-scale releases in the event of mismanagement or upset.*
- *Tracking of the wastes is provided through handler recordkeeping requirements for all shipments of waste and DOT hazardous materials shipping paper requirements.*
- *Final disposal or recycling of the wastes remains fully regulated under existing hazardous waste management requirements."*

Given the controls established in the Universal Waste regulations, DTSC found that the required management of the M003 waste would not create a significant hazard to the public or the environment during routine handling, storage, or transport of this waste.

"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."

DTSC made a finding that the management controls in the Universal Waste regulations for the listed M003 waste will prevent/minimize hazards caused by spills,

[55] Ibid., pgs. 51-53.

accidents, or damage to wastes that might cause a release of mercury to the environment. The Universal Waste regulations include requirements for accumulation site locations, waste management, and containment; having mercury clean-up systems on hand; immediate clean-up and management of any spills or releases; employee training in safe waste management, handling, and emergency response procedures; and elemental mercury storage volume limits. DTSC found that the requirements established in the Universal Waste regulations would ensure that the public and the environment are not significantly impacted by upset or accidental release of mercury from management of mercury containing universal wastes.

> *"c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school."*

DTSC made a finding that the required management of M003 waste under the Universal Waste regulations would not result in recycling facilities being located or required to be built in areas that would impact schools. DTSC did find that schools might be generators or handlers of the mercury containing wastes regulated under the Universal Wastes regulations. However, DTSC made a finding that the Universal Wastes regulations establish requirements to control emissions and ensure safe handling of the wastes, including requirements for management of the wastes in closed, airtight containers to prevent creation or escape of mercury vapors and for spill prevention and response requirements and would not create a significant hazard to the public or environment.

> *"d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to public or the environment."*

DTSC made a finding the required management of M003 waste under the Universal Waste regulations would not result in recycling facilities being located or required to be built in identified hazardous materials sites. DTSC did find that existing hazardous waste sites may also be generators or handlers of the mercury-containing wastes regulated under the Universal Wastes regulations. However, DTSC made a finding that the Universal Wastes regulations establish requirements to control emissions and ensure safe handling of the wastes so that generation or handling of mercury-containing universal wastes at existing hazardous waste sites would not create a significant hazard to the public or environment.

> *"e. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan."*

DTSC made a finding that the required management of M003 waste under the Universal Waste regulations would require that handlers ensure that employees are trained and familiar with emergency procedures. The regulations further require handlers to comply with hazardous materials management requirements and any other applicable local, State, and federal laws. DTSC also found that management under the

Universal Waste regulation would not involve specific, new recycling facilities. DTSC found that it would be speculative to attempt to analyze physical interference with emergency response or evacuation plans.

5.3.4 Mitigation Measures

DTSC made a finding that the required management of M003 waste under the Universal Waste regulations would result in a Less-Than-Significant Impact on Hazards and Hazardous Materials.[56]

Because no new, relevant facts or analyses have come to light since DTSC's environmental analysis and findings made for Hazards and Hazardous Materials concerning the use and end-of-life management of fluorescent lamps, the staff makes the same findings. In doing so, staff finds that a Less-Than-Significant Impact on Hazards and Hazardous Materials will result since the management required under the Universal Waste regulations for listed M003 waste will be required for the potential increased use of CFLs and fluorescent lamp tubes, resulting from the proposed lighting standards.

5.3.5 Findings of Significance

The staff finds that the project's potential impacts due to Hazards and Hazardous Materials will be Potentially Significant unless mercury containing lamps are mitigated through the implementation of the Universal Waste regulations for the M003 listed waste.

5.3.6 Significant and Unavoidable Impacts

The staff finds that all potentially significant impacts concerning Hazards and Hazardous Materials would be reduced to a Less-Than-Significant level with the implementation of Universal Waste regulations for the M003 listed waste, and that no Hazards and Hazardous Material impacts would be significant and unavoidable. However, as discussed in Chapter IV the recycling capacity for CFLs and fluorescent lamp tubes has not been fully utilized to this date and most lamps are being illegally managed and disposed of in municipal landfills. To resolve this issue, the Legislature enacted AB 1109 (Stats, 2007, Ch. 534), which required among other things for DTSC to convene a Task Force to consider and make recommendations by September 1, 2008 to address this problem.

As a result of the issues discussed in Chapter IV, the staff finds that the proposed lighting standards will result in a potentially significant impact concerning Hazards and Hazardous Materials unless the mitigation measures required in the Universal Waste regulations, for the management of the listed M003 waste, including mercury-containing CFLs and fluorescent lamp tubes, are implemented and enforced.

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[56] Ibid., pg. 53.

5.4 Hydrology and Water Quality

5.4.1 Environmental Setting

A wide variety of businesses, including retail stores, hospitals, industrial facilities, offices buildings, hotel and motels, and individual and multifamily housing units, use many different technologies for providing lighting, including highly efficient lamps. CFLs and fluorescent lamp tubes are widely used lamps that contain mercury. The staff is expecting an increase in the use of these lamps due to the adoption of the proposed lighting standards.

CFLs and fluorescent lamp tubes are highly efficient and use significantly less energy than common incandescent bulbs, thus reducing California's need to build additional powerplants that burn fossil fuels for electrical generation. However, there is a potential for mercury release to the environment during the use and end-of-life management of both CFLs and fluorescent lamp tubes. Some of the end-of-life management of these lamps takes place through permitted recycling facilities; however, most of the CFLs and fluorescent lamp tubes used in households are presently disposed of in municipal landfills.

5.4.2 Regulatory Setting

Water quality in California is regulated by the State Water Resources Control Board (SWRCB) and by nine Regional Water Quality Control Boards (RWQCBs). The SWRCB establishes statewide water quality standards and objectives for both surface and ground water. Each of the nine RWQCBs establishes additional requirements for water quality within their jurisdictions based on local conditions and beneficial uses of waters. In addition, the RWQCBs issue National Pollutant Discharge Elimination System (NPDES) permits and Waste Discharge Requirements (WDRs) for discharges to land and water as necessary to ensure compliance with federal and state water quality laws and regulations.

5.4.3 Analysis of Potential Impacts

5.4.3.1 Thresholds of Significance

A Threshold of Significance for Hydrology and Water Quality is a criterion to define at what level an impact from the project would be considered significant. For purposes of this CEQA analysis, the following applicable thresholds of significance were used to determine whether implementing the proposed lighting standards would result in a significant impact related to hydrology and water quality resources. A significant impact is one that would:

- *Violate any water quality standards or waste discharge requirements;*

- *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficient 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);*

- *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;*

- *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 which would result in flooding on or off-site;*

- *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;*

- *Otherwise substantially degrade water quality;*

- *Place within a 100-flood hazard area structures which would impede or redirect flood flows;*

- *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; or*
- *Lead to inundation by seiche, tsunami or mudflow.*

5.4.3.2 Impact Analysis

Discharges to land, water, sewers, septic systems, or wastewater treatment plants are prohibited under the Universal Waste regulations adopted by DTSC for M003 waste, including CFLs and fluorescent lamp tubes. DTSC found that there would be no impact to Water Resources from routine management of these mercury wastes as Universal Waste.[57] In addition, DTSC made a finding that no surface water or groundwater resources are necessary to implement the Universal Waste regulations.[58] Finally, DTSC made a finding that the Universal Waste regulations would not require construction of new recycling facilities or infrastructure that would impact water quality, water resources or hydrologic conditions.[59]

DTSC made a finding that it was possible that new intermediate accumulation facilities may be built in response to promulgation of the Universal Waste regulations.[60]

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[57] Ibid., pg. 54.

[58] Ibid.

[59] Ibid.

[60] Ibid.

However, DTSC made a finding that any new construction undertaken in response to the Universal Waste regulations would be subject to local land use, zoning, building, and construction requirements.[61] Furthermore, DTSC found that new construction would also be subjected to local, State, and federal environmental requirements, including constraints on discharges that might impact water resources or hydrologic systems.[62] Because the Universal Waste regulations would be required to manage the mercury-containing waste from the project, accumulation of mercury-containing universal wastes received from other handlers must be in compliance with all applicable hazardous materials requirements; must comply with existing facility location and precipitation design standards; must be located in areas zoned for commercial or industrial uses; and must be located in areas that do not pose site specific land use hazards or contain sensitive habitat areas. [Included in the existing facility location standard is the requirement that facilities located in 100-year floodplains be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood or maximum tide.][63]

DTSC did find that impacts to water resources might occur in the event of a spill or uncontrolled release of elemental mercury.[64] However, DTSC found that the Universal Waste regulations would require that all wastes be managed in a way that prevents releases of mercury or other contaminants into the environment, and any spills or releases must be immediately cleaned-up, classified according to hazard, and managed appropriately.[65] DTSC further made a finding that the discharge prohibitions and spill containment and cleanup provisions established in the Universal Waste regulations would ensure that water quality and water resources are not significantly impacted from management of the mercury wastes under universal waste requirements.

In addition, DTSC made a finding that the waste containment and closed container requirements in the Universal Waste regulations would ensure that mercury wastes do not generate air emissions that could indirectly impact water quality and water resources via airborne deposition. Consequently, DTSC determined that implementation of the Universal Waste regulations will not have a significant impact on water resources, water quality, or hydrologic conditions in the state.

DTSC also made the following findings of No Significant Impacts:[66]

"a. *Violate any water quality standards or waste discharge requirements.*

The [Universal Waste*] regulations prohibit discharges to land, water, sewers, septic systems, or wastewater treatment plants. In addition, all wastes must be managed in a way that prevents releases of mercury or other contaminants into the environment*

[61] Ibid.

[62] Ibid.

[63] Ibid, pgs. 54-55.

[64] Ibid. pg. 55.

[65] Ibid.

[66] Ibid, pgs 55-57.

and any spills or releases must be immediately cleaned-up, classified according to hazard, and managed appropriately. Because discharges are prohibited and any possible spills must be immediately cleaned up, adoption and implementation of the [Universal Waste] *regulations is not expected to violate of any water quality standards or waste discharge requirements.*

b. *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficient 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).*

The [Universal Waste] *regulations do not require use of surface or groundwater resources beyond what is normally used by households or businesses. Therefore, groundwater supplies or recharge will not be substantially depleted or interfered with by adoption and implementation of the* [Universal Waste] *regulations.*

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;*

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 which would result in flooding on or off-site;*

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; and*

f. *Otherwise substantially degrade water quality.*

Construction of recycling facilities or infrastructure that would alter existing drainage patterns is not required or mandated by the [Universal Waste] *regulations. Any new construction undertaken in response to the* [Universal Waste] *regulations would be subject to local land use, zoning, building, construction, and environmental requirements, including any erosion control requirements. In addition, any potential spill cleanup activities associated with management of the wastes would be physically small in scale and time-limited, and therefore would not substantially alter existing drainage patterns.*

g. *Place within a 100-flood hazard area structures which would impede or redirect flood flows.*

The [Universal Waste] *regulations do not require construction of facilities or infrastructure. However, accumulation facilities accepting waste from other handlers may be constructed in response to the Universal Waste regulations. Under the*

[Universal Waste] *regulations, both existing and new accumulation facilities (accepting waste from other handlers) must comply with the existing hazardous waste storage facility requirement for facilities located within 100-year floodplains or high tide areas. These facilities must either be built to prevent washout of the waste in the event of a flood or high tide, or demonstrate that the waste can be moved safely before flood or tidewaters can reach the waste. In addition, construction of new universal waste accumulation facilities would be subject to local land use, zoning, building, construction, and environmental requirements, including floodplain or high tide construction requirements. While these requirements will vary statewide, most flood prone urban areas will have established floodplain or tidal area construction requirements to prevent and control impacts from flooding. In addition, most urban areas bordering 100-year floodplains must consider flood control measures or other development requirements in order to qualify for Federal Emergency Management Agency (FEMA) assistance and participation in the National Flood Insurance Program. Therefore, implementation of the Universal Waste regulations should not cause the placement of structures within 100-year floodplains that would impede flood flows.*

h. *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.*

The [Universal Waste] *regulations do not require construction of recycling facilities or infrastructure. As discussed above, new waste accumulation facilities may be constructed in response to the* [Universal Waste] *regulations. The Universal Waste regulations apply the existing hazardous waste storage facility location standards for facilities located within 100-year floodplains or high tide areas subject to 100-year flood or maximum high tide conditions. However, the existing facility requirements do not specifically address flood impacts due to levee or dam failures unrelated to 100-year flood or maximum high tide conditions.*

Under the [Universal Waste] *regulations, construction of new universal waste accumulation facilities would be subject to local land use, zoning, building, construction, and environmental requirements, including levee or dam failure considerations. While these requirements will vary statewide, most flood-prone urban areas have established floodplain or tidal area construction requirements to prevent and control impacts from flooding under any condition. Therefore, implementation of the* [Universal Waste] *regulations should not expose people or structures to risk due to flooding resulting from levee or dam failure.*

I. *Inundation by seiche, tsunami or mudflow.*

The [Universal Waste] *regulations do not require or mandate construction of recycling facilities or infrastructure or address site-specific considerations such as inundation by seiche, tsunami, or mudflow. While the Universal Waste regulations do apply existing hazardous waste storage facility location and precipitation*

requirements, the existing requirements do not include specific requirements related to inundation by seiches, tsunami, or mudflow.

Under the [Universal Waste] *regulations, existing facilities and construction of new universal waste accumulation facilities would be subject to local land use, zoning, building, construction, and environmental requirements. These local requirements will vary statewide according to local or regional weather conditions, geology, and geomorphology. For example, because seiches and tsunami are waves generated in lakes or oceans by large-scale land movements, such as seismic activity, only seismically active areas located near large water bodies are likely to enact requirements related to seiches or tsunami. In the same way, mountainous areas that experience high volume rainfall events are more likely to enact local requirements to address potential mudflows (such as hillslope drainage and stabilization requirements)."*

5.4.4 Mitigation Measures

DTSC made a finding that the required management of M003 waste under the Universal Waste regulations would result in a Less-Than-Significant Impact on Hydrology and Water Quality.[67]

Because no new, relevant facts or analyses have come to light since DTSC's environmental analysis and findings made for Hydrology and Water Quality concerning the use and end-of-life management of fluorescent lamps, the staff makes the same findings. In so doing staff finds that a Less-Than-Significant Impact on Hydrology and Water Quality will result since the management required under the Universal Waste regulations for listed M003 waste will be required for the potential increased use of CFLs and fluorescent lamp tubes, resulting from the project.

5.4.5 Findings of Significance

The staff hereby finds that the project's potential impacts due to Hydrology and Water Quality will be Potentially Significant unless mercury emissions are mitigated through the implementation of the Universal Waste regulations for the M003 listed waste.

5.4.6 Significant and Unavoidable Impacts

The staff finds that all potentially significant impacts concerning Hydrology and Water Quality would be reduced to a Less-Than-Significant level with the implementation of Universal Waste regulations for the M003 listed waste, and that no Hydrology and Water Quality impacts would be significant and unavoidable. However, as discussed in Chapter IV, the recycling capacity for CFLs and fluorescent lamp tubes has not been fully utilized to this date, and most lamps are being illegally managed and

[67] Ibid., pg. 58.

disposed of in municipal landfills. To resolve this issue, the Legislature enacted AB 1109 (Stats, 2007, Ch. 534), which required among other things DTSC to convene a Task Force to consider and make recommendations by September 1, 2008 to solve this problem.

As a result of the issues discussed in Chapter IV, the staff finds that the proposed lighting standards will result in a potentially significant impact concerning Hydrology and Water Quality resources unless the mitigation measures required in the Universal Waste regulations for the management of the listed M003 waste, including mercury-containing CFLs and fluorescent lamp tubes, are implemented and enforced.

5.5 Transportation and Traffic

5.5.1 Environmental Setting

A wide variety of businesses, including retail stores, hospitals, industrial facilities, offices buildings, hotel and motels, and individual and multifamily housing units, use many different technologies for providing lighting, including highly efficient lamps. CFLs and fluorescent lamp tubes are widely used lamps that contain mercury. The staff is expecting an increase in the use of these lamps due to the adoption of the proposed lighting standards.

CFLs and fluorescent lamp tubes are highly efficient and use significantly less energy than common incandescent bulbs, thus reducing California's need to build additional powerplants that burn fossil fuels for electrical generation. However, there is a potential for mercury release to the environment during the use and end-of-life management of both CFLs and fluorescent lamp tubes. Some of the end-of-life management of these lamps takes place through permitted recycling facilities; however, most of the CFLs and fluorescent lamp tubes used in households are presently disposed of in municipal landfills.

5.5.2 Regulatory Setting

End-of-life mercury containing CFLs and fluorescent lamp tubes are required to be managed as a hazardous waste or as a Universal Waste in California.

If the CFLs and fluorescent lamp tubes are managed as a hazardous waste the transportation is regulated in California by DTSC and the federal DOT (for transportation of specified hazardous materials and wastes in interstate or intrastate commerce). Under hazardous waste control laws, transportation of hazardous wastes requires use of a hazardous waste manifest and registered hazardous waste transporter unless otherwise excluded or exempted from these requirements, such as by the exemptions present in the Universal Waste regulations.[68] The purpose of the manifest is to provide a mechanism to track CFLs and fluorescent lamp tubes from generation of the

[68] Ibid. pg. 70.

hazardous waste to final disposal ("cradle to grave"). Use of a manifest and registered hazardous waste transporter is meant to ensure safe transport.

If the CFLs and fluorescent lamp tubes are managed as a Universal Waste, they can be transported without use of a hazardous waste manifest or registered hazardous waste hauler. However, the management conditions established in the Universal Waste regulations and application of the existing DOT requirements provide similar benefits and controls to the manifest and hauler requirements.[69]

5.5.3 Analysis of Potential Impacts

5.5.3.1 Thresholds of Significance

A Threshold of Significance for Transportation and Traffic is a criterion to define at what level an impact from the project would be considered significant. For purposes of this CEQA analysis, the following applicable thresholds of significance were used to determine whether implementing the proposed lighting standards would result in a significant impact related to Transportation and Traffic. A significant impact is one that would:

- *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).*
- *Exceed, either individually or cumulatively, a level of service standard established by the country congestion management agency for designated roads or highway.*
- *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).*
- *Result in inadequate emergency access;*
- *Result in inadequate parking capacity; and*
- *Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).*

5.5.3.2 Impact Analysis

Under general hazardous waste requirements in Title 22 waste requirements, hazardous waste must be transported using a hazardous waste manifest and registered transporter.[70] Implementation of the Universal Waste regulations for the project would

[69] Ibid.

[70] Cal. Code Regs. Tit. 22, § 66262.20 et seq, and 66263.10 et seq.

allow mercury-containing universal wastes to be transported without use of a hazardous waste manifest or registered hazardous waste hauler.[71] However, DTSC made a finding that management conditions established in the Universal Waste regulations and application of the existing DOT requirements provide similar benefits and controls to the manifest and hauler requirements.[72]

The Universal Waste regulations provide for the waste tracking and record keeping benefits usually associated with use of a hazardous waste manifest, as both large and small quantity handlers must keep records of each waste shipment sent and received.[73] The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document that gives the name and address of the originating waste handler, destination facility, or foreign entity; the type and quantity of waste; and the date the waste was sent or received.[74] Tracking of waste shipments can be accomplished through review of handler and destination facility records.[75]

In addition, DOT hazardous substances shipping paper requirements apply to shipments of mercury-containing waste that collectively contain 1 pound or more of elemental mercury.[76] DTSC made a finding that many universal waste handlers will only transport larger loads of accumulated wastes; many shipments of universal wastes containing elemental mercury would also be subject to the DOT transportation and shipping paper requirements.[77] DTSC further found that it would take approximately 7 teaspoons of elemental mercury to meet the DOT hazardous substance reportable quantity level of 1 pound for elemental mercury shipments to ensure that wastes are properly disposed or recycled.[78]

Title 22 hazardous waste management standards require the use of a registered hazardous waste transporter, which used to include periodic vehicle inspection and requirements for transport liability insurance.[79] However, the registered transporter program no longer requires periodic vehicle and container inspections because those standards were judged to be preempted by the federal DOT hazardous materials transport requirements and California now requires that all California drivers and vehicle owners carry liability insurance.[80] Because of federal preemption, DTSC made a finding that the main benefits of the hazardous waste transporter requirement are already being provided by other laws and requirements, and most shipments of mercury-containing universal wastes will be subject to DOT requirements, and all

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[71] Initial Study for Mercury Waste Classification, DTSC, pg.70.

[72] Ibid.

[73] Ibid.

[74] Ibid.

[75] Ibid.

[76] Ibid.

[77] Ibid.

[78] Ibid., Pgs. 70-71.

[79] Ibid., Pg. 71.

[80] Ibid.

California drivers are required to carry liability insurance.[81] DTSC made a finding that the Universal Waste regulations allowing transportation of mercury-containing universal wastes without use of a registered hazardous waste transporter will not have a significant effect because the main benefits of the registration requirement are being provided by other laws.[82]

DTSC also made the following findings.[83]

". . . [The management of M003 waste under the Universal Waste regulations does not require new recycling facilities] *and does not mandate new construction. Impacts a. through f. listed below are site specific and are really geared toward a project that causes direct physical changes at a particular location or a number of locations. Thus, analysis beyond that provided below would be speculative for this 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).

. . . [H]*azardous waste management standards allow hazardous waste to be accumulated for only 90, 180, or 270 days depending on volume of waste generated and distance to a hazardous waste disposal site. Under the* . . .[Universal Waste] *requirements, mercury containing universal wastes could be accumulated for up to one year. In general, most universal waste handlers will try to accumulate and ship larger volumes of waste to gain economies of scale. With a one year accumulation time limit for mercury containing universal wastes, handlers will have more time to accumulate larger volumes of waste and would not have to ship wastes as frequently to meet the hazardous waste accumulation time limits. Consequently, the number of universal waste shipments will likely decrease when compared to the number of shipments necessary under existing hazardous waste requirements. Therefore, the project would not cause an increase in traffic. With a one year accumulation time limit for mercury containing universal wastes, handlers will have more time to accumulate larger volumes of waste and would not have to ship wastes as frequently to meet the hazardous waste accumulation time limits. Consequently, the number of universal waste shipments is likely less when compared to the number of shipments necessary under existing hazardous waste requirements. Therefore, the management under the Universal Waste regulations would not cause an increase in traffic.*

b. Exceed, either individually or cumulatively, a level of service standard established by the country congestion management agency for designated roads or highway.

Because handlers will have more time to accumulate larger volumes of waste, they won't have to ship wastes as frequently to meet the hazardous waste accumulation

[81] Ibid.
[82] Ibid.
[83] Ibid.

time limits. Consequently, the number of universal waste shipments is likely less to the number of shipments necessary under existing hazardous waste requirements. Therefore, implementation of the . . . [Universal Waste*] regulations will not exceed the levels of service currently established for roads or highways.*

c. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

. . . [Management of M003 waste under the Universal Waste] *regulations do not address or include requirements applicable to road design features or incompatible vehicle use. However, DOT hazardous materials transport requirements may address incompatible vehicle uses in cases where materials are transported on intrastate roads in vehicles not approved for use on public highways.*

d. Result in inadequate emergency access;

e. Result in inadequate parking capacity; and

f. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

For the reasons discussed in the "Analysis of Potential Impacts" section . . . [in DTSC's initial study] *and in the analyses of impacts for a., b., and c. above, the . .* .[Universal Waste regulations] *would not cause impacts in the areas identified in d., e., and f."*

5.5.4 Mitigation Measures

DTSC made a finding that the required management of M003 waste under the Universal Waste regulations would result in a Less-Than-Significant Impact on Transportation and Traffic.[84]

Because no new, relevant facts or analyses have come to light since DTSC's environmental analysis and findings made for Transportation and Traffic concerning the end-of-life management of fluorescent lamps, the staff makes the same findings. The staff expects an increase of M003 waste; however, it does not believe the increase in shipments will be significant. In so doing finds that a Less-Than-Significant Impact on Transportation and Traffic will result since the management required under the Universal Waste regulations for listed M003 waste will be required for the potential increased use of CFLs and fluorescent lamp tubes, resulting from the project.

5.5.5 Findings of Significance

The staff hereby finds that the project's potential impacts on Transportation and Traffic will be Potentially Significant unless mercury emissions are mitigated through the implementation of the Universal Waste regulations for the M003 listed waste.

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[84] Ibid., Pg.. 73.

5.5.6 Significant and Unavoidable Impacts

The staff finds that the project will not result in significant and unavoidable impacts on Transportation and Traffic.

5.6 Greenhouse Gas Emissions

5.6.1 Environmental Setting

As early as 1896 Nobel Prize winning chemist, Svante Arrhenius, described the greenhouse effect, according to which the temperature of earth's lower atmosphere is determined by the concentration of CO_2. Earth's surface, after being warmed by sunlight, emits energy in the form of infrared radiation, which is absorbed by molecules in the atmosphere, particularly CO_2; the absorption of infrared radiation leads to heat.[85]

Using a simple physical model, Arrhenius estimated that if the level of CO_2 in the atmosphere doubled, the average global temperature would rise by 5-6 °C. That estimate made in 1896 is not very different from most modern attempts to calculate the temperature change due to increasing CO_2 levels. (*A Chemist Ahead of His Time.* The Guardian, David King February 3, 2005.)

The Intergovernmental Panel on Climate Change (IPCC), was established in 1988 to provide decision-makers and others interested in climate change with an objective source of information about climate change. The IPCC does not conduct any research nor does it monitor climate related data or parameters. Its role is to assess on a comprehensive, objective, open and transparent basis the latest scientific, technical and socio-economic literature produced worldwide relevant to the understanding of the risk of human-induced climate change, its observed and projected impacts, and options for adaptation and mitigation (IPCC Mandate, http://www.ipcc.ch/about/index.htm). Since 1988 the IPCC has published four comprehensive assessment reports on global warming, the latest being published in 2007. (http://www.ipcc.ch/ipccreports/assessments-reports.htm)

Human-caused emissions of greenhouse gases, primarily from the burning of fossil fuels, have disrupted the natural carbon balance. Since the beginning of the industrial era, atmospheric concentrations of CO_2 have climbed to their highest point in the last half-million years, rising from a bit under 300 ppm in 1900 to over 380 ppm today, and rising at about 2 ppm per year. (http://ag.ca.gov/globalwarming/facts.php)[86]

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[85] *A Chemist Ahead of His Time.* The Guardian, David King February 3, 2005.

[86] See Intergovernmental Panel on Climate Change, IPCC, Fourth Assessment Report, Working Group II: Impacts, Adaption and Vulnerability, Summary for Policymakers at http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-spm.pdf#page=10.)

The atmospheric concentrations of CO_2 and CH_4 in 2005 exceed by far the natural range over the last 650,000 years. Global increases in CO_2 concentrations are due primarily to fossil fuel use, with land-use change providing another significant but smaller contribution. It is very likely[87] that the observed increase in CH_4, (methane), concentration, a potent global warming gas, is predominantly due to agriculture and fossil fuel use.[88]

There is very high confidence, based on more evidence from a wider range of species, that recent warming is strongly affecting terrestrial biological systems, including such changes as earlier timing of spring events, such as leaf-unfolding, bird migration and egg-laying; and poleward and upward shifts in ranges in plant and animal species. Based on satellite observations since the early 1980s, there is high confidence that there has been a trend in many regions towards earlier 'greening' of vegetation in the spring linked to longer thermal growing seasons due to recent warming.[89]

There is high confidence, based on substantial new evidence, that observed changes in marine and freshwater biological systems are associated with rising water temperatures, as well as related changes in ice cover, salinity, oxygen levels and circulation. These include: shifts in ranges and changes in algal, plankton and fish abundance in high-latitude oceans; increases in algal and zooplankton abundance in high-latitude and high-altitude lakes; and range changes and earlier fish migrations in rivers. While there is increasing evidence of climate change impacts on coral reefs, separating the impacts of climate-related stresses from other stresses such as, overfishing and pollution, is difficult.[90]

Specific to California the state has determined that global warming would cause detrimental effects to some of the state's largest industries, including agriculture, winemaking, tourism, skiing, commercial and recreational fishing, forestry, and the adequacy of electrical power. The impacts of global warming are already being felt in California. The Sierra snowpack, an important source of water supply for the state, has shrunk 10 percent in the last 100 years. It is expected to continue to decrease by up to 25 percent by 2050. World-wide changes are causing sea levels to rise – about 8

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[87] Where uncertainty is assessed more quantitatively using expert judgment of the correctness of underlying data, models or analyses, then the following scale of confidence levels is used to express the assessed chance of a finding being correct: very high confidence at least 9 out of 10; high confidence about 8 out of 10; medium confidence about 5 out of 10; low confidence about 2 out of 10; and very low confidence less than 1 out of 10.
Where uncertainty in specific outcomes is assessed using expert judgment and statistical analysis of a body of evidence (e.g. observations or model results), then the following likelihood ranges are used to express the assessed probability of occurrence: virtually certain >99%; extremely likely >95%; very likely >90%; likely >66%; more likely than not > 50%; about as likely as not 33% to 66%; unlikely <33%; very unlikely <10%; extremely unlikely <5%; exceptionally unlikely <1%.

[88] Intergovernmental Panel on Climate Change, (IPCC), Fourth Assessment Report, Working Group I, Causes of Change, pg. 36 at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf.

[89] Fourth Assessment Report, Working Group II, Observed Changes of Climate and their Effects, pg. 33

[90] Ibid., pg. 33

inches of increase has been recorded at the Golden Gate Bridge over the past 100 years – threatening low coastal areas with inundation and serious damage from storms.[91] To address climate change, California has taken a leadership role by enacting multiple types of legislation, regulations and policies.

5.6.2 Regulatory Setting

The California Legislature has found that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." (Health and Safety Code § 38501(a)). As a result of this serious threat, a number of bills, including AB 32, were signed into law.

AB 32, the Global Warming Solutions Act of 2006, requires California to reduce its total greenhouse gas emissions to 1990 levels by 2020, which represents about a 25 percent reduction from current levels. In looking beyond 2020, Governor Schwarzenegger's 2005 Executive Order S-3-05 requires further reductions to 80 percent below 1990 levels by 2050. Achieving these reductions will be a challenging task, especially since California's population is expected to grow from about 38 million in 2007 to 60 million in 2050. (http://ag.ca.gov/globalwarming/)

The California Air Resources Board, (ARB) is tasked with developing regulations to implement AB 32. ARB must develop a plan to lower the state's greenhouse gas emissions to meet the 2020 limit. ARB's Draft Scoping Plan, proposes a comprehensive set of actions designed to reduce overall carbon emissions in California, improve California's environment, reduce California's dependence on oil, diversify California's energy sources, save energy, and enhance public health while creating new jobs and enhancing the growth in California's economy. (ARB's Draft Scoping Plan, http://www.arb.ca.gov/cc/scopingplan/document/draftscopingplan.pdf).

One of the key features of the ARB plan is energy efficiency. As stated by ARB in the Draft Scoping Plan, "significant progress can be made toward the 2020 goal relying on existing technologies and improving the efficiency of energy use. A number of the solutions are "off the shelf," and many – especially investments in energy conservation and efficiency – have proven economic benefits." (Draft Scoping Plan, pg. ES-1) The ARB estimates that energy efficiency measures can save 32,000 GWh of reduced electricity demand equaling 15.2 million metric tons of CO_2 equivalents by 2020. (Draft Scoping Plan, Table 6, pg. 23).

In AB 1109, the California Lighting Efficiency and Toxics Reduction Act, the Legislature found that energy consumption for lighting accounts for nearly 20 percent of the state's electricity demand. The energy efficiencies of existing lighting technologies vary significantly, transitioning to currently available, higher efficiency lighting technologies will substantially reduce energy consumption and pollution, including reducing greenhouse gas emissions, while lowering costs to consumers. (Public Resources code § 25402.5.4)

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[91] California Air Resources Board, Draft Scoping Plan, pg. 6

The Energy Commission's 2007 Integrated Energy Policy Report (IEPR) addresses climate change within the electricity, natural gas, and transportation sectors. For the electricity sector, it recommends pursuing all cost-effective energy efficiency measures.

Energy efficiency is one of the most cost effective ways to reduce GHG emissions. As evidenced by the prominent position energy efficiency plays in the ARB Draft Scoping Paper and the IEPR, reducing the amount of energy used in lighting will contribute to California's efforts to reduce GHG emissions. In addition to AB 32, the IEPR and AB 1109, Senate Bill 1037 (Kehoe, Statutes of 2005) and AB 2021 (Levine, Statutes of 2006) direct utilities to first meet their unmet resource needs through all available energy efficiency and demand response resources that are cost effective, reliable and feasible.

5.6.3 Analysis of Potential Impacts

5.6.3.1 Thresholds of Significance

A Threshold of Significance for Greenhouse Gas Emissions is a criterion to define at what level an impact from the project would be considered significant. For purposes of this CEQA analysis, the 2020 AB 32 mandates and the 2050 goals established by Executive Order 5-3-05 discussed above are consistent with what the science says is needed. It appears that the consensus that most support is about 80 percent reduction below 1990 levels by 2050. Thus, until these reduction levels are met the most supportive applicable thresholds of significance would be that any additional GHG emissions moves California further away from the 2020 and 2050 goals resulting in a significant impact to global warming.

5.6.3.2 Impact Analysis

The increased use of highly efficient lamps is expected to cause a positive impact by reducing Greenhouse Gas emissions due to the avoidance of additional powerplants and the resulting decrease in the use of fossil fuel for electrical power generation. The staff has estimated that the overall reduction of CO_2 by the decreased use of incandescent light bulbs will be approximately 957,498 metric tons per year. Because this will be positive impact since there will be a reduction of CO_2 emissions in California, no negative impacts are associated with this project.

The increased use of fluorescent lighting is one manner in which California can, *maximize energy efficiency* (ARB Draft Scoping Plan, pg. 21). Given California's GHG emissions are currently 25 percent above 1990 levels, any additional GHG emissions move the state further away from the 2020 and 2050 goals. Increasing the energy efficiency of the state's lighting portfolio, reduces the need for fossil fuel based power generation and the related emissions of GHGs. Therefore, in terms of climate change and GHG emissions, the accelerated lighting standards will have a positive impact on the environment by reducing power demand, as described in previous sections, and the

accompanying GHG emissions. This is especially so when the reduction in electricity demand reduces the amount of power coming from out of state coal fire powerplants, the highest emitting GHG source of power.

5.6.4 Mitigation Measures

No mitigation is needed because there will be a reduction of CO_2.

5.6.5 Findings of Significance

The staff hereby finds that the project's potential impacts on Greenhouse Gas Emissions will not be potentially significant, and will instead be beneficial by helping to obtain the state's mandated GHG reductions and goals.

5.6.6 Significant and Unavoidable Impacts

The staff finds that the project will not result in Significant or Unavoidable impacts on Greenhouse Gas Emissions.

CHAPTER 6:
Cumulative Effects

6.1 Introduction

CEQA Guidelines, § 15130 require that an EIR discuss cumulative impacts of a project and determine if the project's incremental effect is "cumulatively considerable." The definition of cumulatively considerable is provided in § 15065(a)(3):

> "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
>
> According to § 15130(b) of the CEQA Guidelines:
>
> "[t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact."

For purposes of this DEIR, the project would have a significant cumulative effect if:

- *The cumulative effects of related projects (past, current, and probable future projects) without the project are not significant and the project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact.*

- *The cumulative effects of related projects (past, current, and probable future projects) without the project are already significant and the project contributes measurably to the effect. The standards used herein to determine measurability are that either the impact must be noticeable or must exceed an established threshold of significance.*

- *The cumulative effects of related past environmental impacts added to project's incremental impacts results in a significant impact.*

Mitigation measures are to be developed, where feasible, that reduce the project's contribution to Cumulative Effects to a Less-Than-Significant level.

This DEIR has identified potentially significant and significant environmental impacts associated with implementation of the proposed lighting standards. These impacts are discussed in detail in Chapter 5.

6.2 Related Projects and Past Environmental Impacts

The analysis of cumulative environmental impacts associated with the proposed lighting standards addresses the potential incremental impacts of the project in combination with those of other past, present, and probable future projects. For the purposes of this analysis, the previous Energy Commission adopted Appliance efficiency Regulations for State-Regulated General Service Incandescent Lamps, which became effective on January 1, 2006 and January 1, 2008, is a related past project.[92]

The adoption of the related past project for State-Regulated General Service Incandescent Lamps increased the efficiency of lamps sold in California but only affected the efficiency of incandescent lamps and likely did not result in any increase in sales of CFLs or fluorescent lamps tubes. The CEQA analysis for this related past project resulted in a finding for a Negative Declaration. The efficiency standards of that past project reduced electrical demand in California which avoided additional powerplants resulting in reduction in the emissions of criteria air pollutants and greenhouse gas emissions due to the reduced fossil fuel burning, similar to and cumulative with the beneficial impacts of the current project.

6.3 Analysis of Cumulative Impacts

The following sections contain an analysis of the Cumulative Effects anticipated from the proposed lighting standards project implementation along with the related past project for State-Regulated General Service Incandescent Lamps. The analysis conforms with § 15130 of the CEQA Guidelines, which specifies that the "discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided of the effects attributable to the project alone."

6.3.1 Criteria Air Pollutants

Criteria air pollutants include ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, sulfates, hydrogen sulfide, particulate matter (PM 2.5), respirable particulate matter (PM10), and lead.

Because the proposed lighting standards would not emit any criteria air pollutants (and in fact would reduce criteria air pollutants) cumulative impacts would be Less-Than-Significant, and the proposed lighting standards contribution would not be cumulatively considerable.

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[92] Cal. Code Regs. tit 20, § 1605.3(k)(2).

6.3.2 Toxic Air Contaminants, Biological Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Transportation and Traffic.

The staff has determined that the proposed lighting standards would result in decreases in the emissions of criteria air pollutants emissions in California and, as a result, increase the positive air quality impact that resulted from the adoption of the past project for State-Regulated General Service Incandescent Lamps. Because the proposed lighting standards would not emit any criteria air pollutants (and in fact would reduce criteria air pollutant emissions) Cumulative Impacts would be Less-Than-Significant, and the proposed lighting standard's contribution would not be cumulatively considerable.

As discussed above, the adoption of the related past project for State-Regulated General Service Incandescent Lamps increased the efficiency of lamps sold in California resulting in minor efficiency changes to incandescent lamps being sold and did not have an effect of increasing sales of CFLs or fluorescent lamps tubes. Since incandescent bulbs are not a significant source of mercury, the CEQA analysis for this related past project did not need to address mercury impacts in the findings supporting the adoption of a Negative Declaration.

This DEIR has identified potentially significant and significant environmental impacts associated with mercury releases to the environment and identified mitigation measure that would lessen those impacts to less that significant for Toxic Air Contaminants, Biological Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Transportation and Traffic. Those impacts are discussed in detail in Chapter V.

Although the proposed lighting standards would emit mercury emissions that are potentially significant to the environment, because the related past project for State-Regulated General Service Incandescent Lamps likely did not have mercury emissions, there would be no cumulative impacts and the proposed lighting standard's contribution would not be cumulatively considerable.

6.3.3 Climate Change

As discussed in this DEIR both the related past project for State-Regulated General Service Incandescent Lamps and the lighting efficiency standards project will result in a reduction in fossil fuel used for electrical generation resulting in a reduction of greenhouse gas (GHG) emissions. Therefore, as discussed for criteria pollutants, the proposed lighting standards would have a positive Cumulative Impact of reduced GHG emissions. For that reason, climate change impacts associated with the project would be Less-Than-Significant, and the proposed lighting standards contribution to climate change would not be Cumulatively Considerable.

CHAPTER 7:
Other CEQA Sections

7.1 Growth Inducement

7.1.1 California Environmental Quality Act Guidelines

CEQA Guidelines § 15126(d) specifies that growth-inducing impacts of a project must be addressed in an EIR. A proposed project is growth-inducing if it could "foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Included in the definition are projects that would remove obstacles to population growth. Examples of growth-inducing actions include developing water, wastewater, fire, or other types of services in previously unserved areas, extending transportation routes into previously undeveloped areas, and establishing major new employment opportunities. The following is a summary of the direct and indirect growth-inducing impacts that could result with implementation of the project.

7.1.2 Growth-Inducing Impacts of The Project

The proposed lighting standards are the adoption of statewide lighting efficiency standards pertaining to the use of efficient lamps in buildings. The proposed lighting standards apply to all occupancies, including commercial, residential, and institutional building construction, rehabilitation, and replacement in all areas of the state. Because the proposed lighting standards are a statewide regulatory change, the project area includes the entire State of California. Therefore, this DEIR does not evaluate a specific project that involves direct construction or modification to structures.

There are no impacts that would cause builders to produce additional housing, or cause economic, or population growth. Many other factors (e.g., cost and availability of land, labor, other building materials, economic climate, land use designations) contribute to the rate of growth and construction in a given community, not lighting requirements. In addition, the proposed lighting standards are not expected to eliminate any obstacles to growth (as might result, for example, from a change in the general plan designation of zoning of real property), or to induce or accommodate growth (as might result, for example, from the construction of new water or wastewater infrastructure) because the lighting efficiency standards are required to be cost effective. Thus, there are not impacts for builders to produce additional housing, or cause economic, or population growth. Many other factors (e.g., cost and availability of land, labor, other building materials, economic climate, land use designations) contribute to the rate of growth and construction in a given community, not lighting requirements. In addition, the proposed lighting standards are not expected to eliminate any obstacles to growth (as might result, for example, from a change in the general plan designation of zoning of real property), or to induce or accommodate growth (as might result, for example, from

the construction of new water or wastewater infrastructure) because the lighting efficiency standards are required to be cost effective.[93]

Climate change in combination with substantial continued population growth in California will place huge demands on the electric generation system and increased temperatures will increase the need for air conditioning. These standards will mitigate these impacts by reducing electricity demand and reducing internal air conditioning loads in buildings. Without these mitigations, California's continuation of population growth will become increasingly difficult to cope with and sustain.

7.2 Significant Irreversible Environmental Changes

7.2.1 California Environmental Quality Act Guidelines

Public Resources Code § 21100 (b)(2) states that an EIR shall include a detailed statement setting forth "[i]n a separate section...[a]ny significant effect on the environment that would be irreversible if the project is implemented." Specifically, § 21100.1(a) requires that a discussion of significant irreversible environmental effects be included in an EIR prepared in connection with "[t]he adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency." Because the project is the adoption of statewide lighting standards by the Energy Commission that may result in the statewide increased use of CFLs and fluorescent lamp tubes, a discussion of significant irreversible environmental changes is provided in this section.

CEQA Guidelines § 15126.2(c) provides the following guidelines for analyzing the significant irreversible environmental changes of a project: Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible because a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvements which provide access to a previously inaccessible area) generally commit future generations to similar uses. Irreversible damage can also result from an environmental accident associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

7.2.2 Irreversible Environmental Changes of the Project

The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms.

Natural resources include minerals, energy, land, water, forests, and biota. Nonrenewable resources are those resources that cannot be replenished by natural means, including oil, natural gas, coal and iron ore. Renewable natural resources are

[93] Pub. Resources Code § 25402(c)(1).

those resources than can be replenished by natural means, including water, lumber, and soil.

As described in this DEIR, the use of CFLs and fluorescent lamp tubes may be increased in California. The materials used in the production of CFLs and fluorescent lamp tubes are natural resources such as bulb or tube glass; circuit board materials, such as copper or silicon, plastics, lead based solder, mercury, phosphors; and packaging materials such as cellulose or plastic. Because the mitigation measures required for end-of-life CFLs and fluorescent lamp tubes is recycling, most of the material will be recovered and reused. In addition, CFLs and fluorescent lamp tubes have a significantly longer average lifespan than incandescent lamps, and incandescent lamps are not required to be recycled and are disposed in municipal landfills. The displacement of incandescent lamps with CFLs and fluorescent lamp tubes will result in reduced use of those natural resources currently consumed in the production of incandescent lamps and specifically of those common to both types of lamps (such as, glass, copper and packaging materials).

Thus, the proposed lighting standards would not significantly increase the overall rate of use of any natural resource, or result in the substantial depletion of any nonrenewable natural resource. Therefore, the commitment of nonrenewable natural resources to an increase in production of CFLs and fluorescent lamp tubes would not be a Significant Irreversible Environmental Change. Furthermore, the enforcement of the Universal Waste regulations would preclude credible significant project impacts related to environmental accidents.

CHAPTER 8:
Alternatives

CEQA Guidelines § 15126.6[a] require evaluation of "a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects, and evaluate the comparative merits of the alternatives." The purpose of the alternatives analysis is to determine whether or not a variation of the project would reduce or eliminate significant project impacts within the basic framework of the objectives.

Thus, alternatives considered in an EIR should be feasible and should attain basic project objectives. As described in § 3.3, "Project Objectives," the objective of the proposed lighting standards is to require the use of efficient lighting in California.

8.1 Range of Alternatives Considered

The range of alternatives studied in the EIR is governed by the "rule of reason," requiring evaluation of only those alternatives "necessary to permit a reasoned choice" (CEQA Guidelines § 15126.6[f]). Further, an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (CEQA Guidelines §15126.6[f][3]). The analysis should focus on alternatives that are feasible, in that they may be accomplished in a successful manner within a reasonable period of time and that take economic, environmental, social, and technological factors and taken into account in considering alternatives. Alternatives that are remote or speculative need not be discussed. Furthermore, the alternatives analyzed for a project should focus on reducing or avoiding significant environmental impacts associated with the project as proposed.

CEQA Guidelines § 15126.6[e] require that, among other alternatives, a "no-project" alternative be evaluated in comparison to the project and that it "discuss the existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with the available infrastructure and community services." Accordingly, a No Project Alternative is analyzed in this DEIR.

The project being proposed is an early adoption of the federal Tier I and Tier II lighting efficiency standards of EISA 2007 and efficiency standards for portable lighting fixtures. EISA 2007 provides conditions and terms under which an early adoption of these standards is allowed. However, EISA 2007 does not allow for the adoption of any alternative regulations in lieu of the federal standards, or for the pursuit of any project in lieu of adopting or otherwise complying with the federal standards. As such, the pursuit of any project alternatives besides the No Project alternative is made infeasible by federal preemption. To elect to pursue a completely separate project outside the scope of EISA 2007 but with a similar goal of energy efficiency is, in effect, to choose the No Project alternative, as it would mean choosing not to adopt the federal standards early

and not to engage in any other activity or rulemaking that would fall within the general scope of either EISA 2007 or the proposed project. As such the discussion of the No Project alternative is felt to be the only option available in this case.

Descriptions of project alternatives are provided below. The advantages and disadvantages of each, compared to the project, are presented and an evaluation of each alternative's ability to meet the project's objective is included. Any significant environmental impacts created exclusively by an alternative are also identified. Finally, a summary of the impacts for each resource area, as compared to the project, is provided at the end of each discussion (i.e., less, greater, or similar).

A more detailed description of the baseline conditions, evaluation methodology, and results are included in Chapter 5 of this DEIR.

8.2 Summary of Environmental Impacts

The purpose of this section is to summarize the specific environmental constraints, as identified and discussed in Chapter 5, "Affected Environment, Thresholds of Significance, Environmental Impacts, and Mitigation Measures," of this DEIR. Potential environmental impacts: Air Quality, Biological Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Transportation and Traffic, and Greenhouse Gas Emissions. After implementation of the proposed mitigation measures, all of the impacts associated with the project would be reduced to Less-Than-Significant levels. The potential for the alternatives to avoid or reduce the project's significant impacts was considered in the analysis of alternatives.

8.3 Alternatives Considered But Not Analyzed in Detail

CEQA Guidelines § 15126.6(c) provides that an EIR "should also identify any alternatives that were considered by the lead agency but rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination."

The staff considered one alternative consisting of the promotion of LED lighting in lieu of the promotion of CFLs, but rejected from consideration this alternative because the technology, availability, and use of LED lighting in standard existing fixtures is still highly speculative. As an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" the staff has chosen not to consider this alternative at this time.

8.4 Alternatives Considered For Detailed Evaluation

The analysis presented below examines the only technically feasible and federally non-preemptive alternative, which is the No Project alternative.

8.4.1 No Project Alternative

If the Energy Commission did not adopt the federal Tier I and Tier II energy efficiency standards earlier than the federal effective date for lighting through the proposed lighting standards, California would forego savings in its yearly electricity consumption by as much as 3,640 GigaWatt-hours per year (GWh/yr).California would forgo emission reductions of criterion air pollutants and greenhouse gases from power generation both in California and across the western region of the United States (note that the electricity grid is inter-connected throughout the western region and reduction in energy use throughout this region directly impacts California).

8.4.1.A *Environmental Analysis*

8.4.1.1 Air Quality

Under the No Project alternative there will be no early requirement to use highly efficient lamps and no reduction in criteria air pollutant emissions through decreased fossil fuel use for electrical power generation. The potential impact of the No Project alternative will be to forgo a large reduction in energy power generation along with the associated reduction in criteria air pollutants.

8.4.1.2 Biological Resources

The projected impact to Biological Resources under the No Project alternative will result in no change to the current situation and thus no potentially significant impacts.

8.4.1.3 Hazards and Hazardous Materials

The projected impact to Hazards and Hazardous Materials under the No Project alternative will result in no change to the current situation. There would not be an increase in the use of CFLs or fluorescent lamp tubes and a potential increase in mercury contamination during the effective years of the standard prior to the federal standards going into effect. Under the Thresholds of Significance defined in § 5.3.3.1, this is a potentially significant impact for the proposed standards; however, staff has made a finding that this impact would be mitigated since the CFLs or fluorescent lamp tubes are managed under the Universal Waste regulations.

8.4.1.4 Hydrology and Water Quality

The projected impact to hydrology and water quality under the no project alternative will result in no change to the current situation and thus no potentially significant impacts.

8.4.1.5 Transportation and Traffic

The projected impact to transportation and traffic under the no project alternative will result in no change to the current situation and thus no potentially significant impacts.

8.4.1.6 Greenhouse Gas Emissions

Under the no project alternative there will be no increased use of highly efficient lamps and no reduced CO_2 emissions through decreased fossil fuel use for electrical power generation. The potential impact of the no project alternative will be to lose the estimated 957,498 metric ton per year reduction of greenhouse gas emissions.

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APPENDIX A

Notice of Preparation

APPENDIX B

DTSC's Studies and Rulemaking Files

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