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Compact Fluorescent Lamps Market Effects: Scoping Study Findings and Work Plan

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1. INTRODUCTION AND OVERVIEW OF THE MARKET EFFECTS APPROACH

The electric Investor-Owned Utilities (IOUs) in the State of California—Pacific Gas and Electric (PG&E or PGE), San Diego Gas & Electric (SDG&E or SDGE), and Southern California Edison (SCE)—have been running energy efficiency programs under the supervision of the California Public Utilities Commission (CPUC), with the most recent iteration of these programs rolled out in 2006 for a three-year program cycle, ending in 2008. These programs represent a significant effort to increase the reliability of energy delivery and to control costs for State ratepayers. Additionally, the programs represent an equally intense effort to manage the environmental impacts of energy consumption in California. IOUs, while required by the State to run programs, are able to recoup direct costs of these programs and impacts on future revenues resulting from the programs, subject to meeting milestones and achievement goals set by the State. These costs, submitted to the State by IOUs on behalf of the IOU shareholders, are referred to as "earnings claims."

1.1. Background

The California IOU programs are some of the longest-running efforts in the country, particularly for compact fluorescent lamps (CFLs). Most of the state's IOUs began implementing small-scale pilot programs in the late 1980s, with full-scale programs up and running by 1992. The California IOU efficiency programs are also some of the country's largest. In 2006, all the California IOUs reported energy savings representing over 1% of electric sales, some of the highest in the U.S. In 2006-2007, the IOUs rebated over 53 million CFLs through the Upstream Lighting Program.[1]

The California IOU efficiency programs have adopted a blend of traditional resource acquisition strategies (such as direct financial incentives and direct installations for end-use customers), more creative resource acquisition strategies (such as manufacturer buy-down/retailer point-of-sale "buy-downs"), and market transformation strategies (such as consumer education, technical assistance, training, and cooperative advertising). The CFL programs, for example, have been intended to: work within existing market channels; increase the availability, diversity, and promotion of CFLs through supplier interventions; and increase consumer awareness, knowledge, acceptance, and purchases by affecting the supplier market and consumer marketing. The CFL programs have also supported the Program for Evaluation and Analysis of Residential Lighting (PEARL) and national ENERGY STAR lighting efforts in monitoring and improving product quality through funding quality assurance efforts and by promoting high-quality products, so lower quality products cannot compete. In addition, the CFL programs have coordinated with and leveraged the national ENERGY STAR program and other California local and statewide programs, such as Flex Your Power.

IOU efficiency programs' maturity, program size, and use of both resource acquisition and market transformation strategies may lead to substantial impacts, measured not just in terms of direct energy savings and peak demand reduction, but in terms of other progress indicators,

[1] Total CFLs based on utility quarterly reporting to the CPUC for the IOU programs that offer incentives to manufacturers to "buy down" the cost of CFLs.

including changes in awareness, attitudes, behaviors, product offerings, and incremental costs. These other impacts create short-term and potential long-term market structural and operational changes that may result in energy and demand savings. To the extent that these market changes are program-induced then indirect savings (savings not derived from program participation) are the program's market effects that are additional to the direct program impact savings.

While market effects for California IOU programs may exist, they are difficult to quantify and largely impact non-participants. As a result, they are typically not examined. In fact, the California Impact Evaluation Protocol is quite specific about not including market effects and non-participant spillover to avoid counting them towards utility earning claims:[2]

> Impact evaluations are limited to addressing the direct impacts of the program on participants and estimating participant spillover impacts.[3] These studies do not include documenting program influences on the operation of a market or the program's impacts on non-participants. Program-influenced changes on the way a market operates or on non-participants are addressed in the Market Effects Evaluation Protocol.

1.2. Overview of the CFL Market Effects Study

In a Decision in October 2007 (D.07-10-032), the California Public Utilities Commission (CPUC) directed their staff to explore during 2008-2009 the ability to credibly quantify and credit "non-participant spillover" market effects. The Market Effects Protocol provides the following definition of market effects:

> A change in the structure of a market or the behavior of participants in a market that is reflective of an increase in the adoption of energy-efficient products, services, or practices and is causally related to market interventions…" where a "market" is defined as "…the commercial activity (manufacturing, distributing, buying and selling) associated with products and services that affect energy usage.[4]

The Market Effects Protocol acknowledges that two types of market effects are recognized in the energy efficiency industry:

- Those that are occurring now as a result of how programs are changing markets, and
- Those that are forecasted to occur later (after the program has been discontinued) due to the changes established or put into motion by the program.[5]

The Protocol clearly states, however, that it was designed to measure only the first of these two categories—that is, current market effects.[6]

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2 California Evaluation Protocols, p. 36.

3 For a thorough evaluation, impact evaluations should estimate direct program savings and participant spillover savings. Whenever possible, these estimates need to be distinct estimates and not a combined estimate across the two. Current CPUC policy states that only direct program savings will be counted towards program and administrator goals and performance (i.e., excluding participant and non-participant spillover).

4 California Evaluation Protocols, pp. 143-145.

5 Ibid.

6 Note that because this analysis will not include market effects forecasted to occur later, total market effects may be greater than those estimated here.

The CPUC directed their staff to report their findings following the process evaluation and market impact studies of the 2006-2008 program cycle on the ability of current protocols to measure such "non-participant spillover" savings and to propose possible revisions to market effects protocols, utility savings goals, and/or performance incentive mechanisms for subsequent action by the CPUC. As part of the study effort, the CPUC is examining possible market effects in three areas: CFLs, residential new construction, and high-bay lighting. Working with the CPUC, the California Institute for Energy and Environment (CIEE) developed Study Plans for each of these market effect studies.

For the CFL Market Effects Study, the Residential Retrofit Impact Evaluation (Res Retrofit) Team was chosen by CIEE and the CPUC to investigate the cumulative effects of California's energy-efficiency programs on the CFL market. The study has three primary objectives:

- Understand the cumulative effects of California's energy-efficiency programs on the CFL market.
- Quantify 2006-2008 kWh and kW savings (if any) caused by the above potential market effects, and not claimed as direct or participant spillover savings.
- Support the CPUC's strategic planning efforts by clarifying whether savings from potential market effects can be quantified with sufficient reliability to be treated as resources.

The study is being performed as an addendum to the CPUC scope of work for the Residential Retrofit Impact Evaluation team. Extensive synergies exist between the data collection needed for the CFL market effects evaluation, which is designed to meet the requirements of the Market Effects Protocol and allow the measurement of the indirect/non-participant effects across utility programs affecting the CFL market, and the data collection efforts already underway for the Upstream Lighting Program impact evaluation, which is designed to meet the requirements of the Impact Evaluation Protocol for measurement of direct savings. These synergies include: interviews with retailers and manufacturers; in-store visits; and consumer intercept surveys. The data needs of the CFL market effects study, however, go beyond those of the Upstream Lighting Program evaluation: it requires the exploration of additional topics, increased sample sizes, and far more comprehensive collection and analysis of additional CFL sales data. While the two projects are being performed simultaneously, their planning, analysis, and reporting are being separately maintained.

The CFL Market Effects Team began this study in March, 2008. As required by the Market Effects Protocol, the team's first undertaking was a Scoping Study that was designed to: help us gain a better understanding of the evolution of the California and U.S. CFL markets; characterize California's current CFL program offerings; provide integrated market and program theories for California's CFL programs; review CFL market effects studies conducted in other regions of North America; and gain a better understanding of the data sets available for our evaluation of possible CFL market effects in California. In undertaking this work, the CFL Market Effects Team is not presupposing any particular result: that is, the team is neutral on whether there are going to be market effects and, if there are, whether they will be positive, negative, or some combination thereof.

This report presents the Scoping Study approaches and results, as well as a work plan for analyzing CFL market effects in California. The remainder of this document is organized as follows:

- Section 2 discusses the Scoping Study approach and findings;
- Section 3 presents the team's recommended market effects evaluation approach;
- Section 4 discusses evaluation coordination efforts;
- Section 5 presents the timeline for the remainder of the CFL market effects study; and
- Section 6 presents the budget for the remainder of the CFL market effects study.

1.3. Scoping Study and Work Plan Key Findings and Recommendations

- Over 90% of the CFLs distributed through California programs (including non-IOU programs) in 2006–2007 were distributed through the IOUs' Upstream Lighting Program (ULPs).
- Little market and program theory for 2006-08 ULPs had been developed prior to this study;[7] ULP program theory and a logic model have been developed as part of this effort.
- A combination of point-of-sale (POS)[8] data and U.S. Environmental Protection Agency (EPA) ENERGY STAR® (ES) partner data will be the starting point for the analysis of current CFL sales patterns in California and elsewhere.
- A number of primary data collection activities will be used in conjunction with, and to triangulate with, the POS-ES data set: namely, a shelf stocking study, customer surveys (telephone and in-person), in-home lighting audits, and upstream market actor interviews.
- A comparison state approach will be the primary methodology employed to estimate baseline CFL sales; regression analysis will also be employed as a secondary methodology.

[7] Theory and logic models were, however, developed in the late 1990s for lighting programs that were precursors to the 2006-08 programs. These will be used as a point of departure for the current study.

[8] POS data are actual sales data collected at the time of sale by participating retailers. Nelsen and Activant are the two largest providers of POS data.

2. SCOPING STUDY

The California Institute for Energy and Environment (CIEE), in a CFL Market Effects Study Plan (Study Plan), carefully and thoroughly documented the steps necessary for the CFL Market Effects study.[9] The Study Plan, nonetheless, also raised a number of questions and left a number of options available for the CFL Market Effects Team.

To address the questions raised by the Study Plan and explore the analysis approaches discussed therein, as well as to provide a foundation for the CFL Market Effects evaluation and meet the Market Effects Protocol requirements, the CFL Market Effects Team initiated its evaluation by performing a scoping study. The primary goals of the scoping study were, specifically, to:

- Analyze the evolution of the CFL market in California and elsewhere in the United States.
- Characterize California's current CFL programs.
- Develop integrated market and program theories for the California ULPs.[10]
- Detail the market indicators to be studied.
- Review CFL market effects studies from other states.
- Assess the data sets available for the California CFL Market Effects evaluation.

The remainder of this section presents the Scoping Study analysis and results.

The results of the Scoping Study have been used to develop the recommended work plan for the remainder of the California CFL Market Effects evaluation. The recommended work plan is discussed in detail in Section 3.

2.1. Characterization of California's CFL Programs

2.1.1. History, Background, and Evolution of IOU Programs

The California IOUs' 2006–2008 ULP is the culmination of approximately ten years of IOU interventions into the state's lighting markets. In 1997, the CPUC declared that the purpose of energy-efficiency programs should be to transform markets for energy-efficient goods and services, so individual customers and suppliers in the future competitive market will make more rational choices. California's IOUs developed statewide designs for the major 1999 energy-efficiency programs to be consistent with market transformation objectives. One such statewide market transformation program was the California Residential Lighting and Appliance Program (CRLAP), which was designed to address barriers to the adoption of energy-efficient appliances and lighting products. The program primarily focused its activities at influencing the supply-side

[9] Prahl, Ralph, "CFL Market Effects Study: Final Study Plan," Prepared for the CIEE Market Effects Team, January 16, 2008.

[10] Note the original Study Plan also suggested that theory and logic models be developed for additional lighting programs (e.g., non-retail), but because the overwhelming majority of program bulbs are distributed through the ULPs only one model was developed.

of the market to increase production, stocking, promotion, and sales of energy-efficient appliances and lighting products.

During the program's first year, downstream activities that had been conducted in prior years were continued, but the program's emphasis was shifted toward generating upstream market effects. The program offered manufacturer incentives, retailer salesperson incentives and training, co-operative advertising, and in-store merchandising support. For example, in 2000, over 3,000 salespeople were trained in more than 600 retail locations throughout California. Also in 2000, trained contractors visited over 1,100 retailers to assist in product merchandising, and a total of $1.8 million was spent on co-operative retailer advertising.

In 2001, CRLAP's emphasis shifted from its longer-term market transformation-oriented goals toward achieving more immediate energy and peak demand savings. This shift in policy was instigated by the California energy crisis, which intensified in the summer of 2001 with anticipated and real shortages of energy supply occurring during peak hours. The utilities ultimately rebated over seven million CFLs in 2001 in response to the state's energy policy shift. Upstream market actor support, such as salesperson training, was sharply reduced.

The 2002 program was designed to build on the successes of CRLAP by leveraging the existing retailer and manufacturer partnerships and continuing to increase the supply of ENERGY STAR lighting products into the marketplace through the use of discounts. The 2002 program did not include an emphasis on supplier support functions, such as co-operative advertising and salesperson training. Instead, the 2002 program relied on retailers and manufacturers to advertise the discount using their own point-of-purchase promotions.

The utilities offered both a manufacturer buy-down and a point-of-sale retailer discount. Retailers were eligible to participate in the large statewide retailer component of the program if they had retail outlets in all three utilities' service territories and if they could comply with the reporting requirements (i.e., the ability to track rebated sales electronically). Smaller and/or independent retailers were eligible to participate in the program via the manufacturer buy-down component. The utilities essentially relied on manufacturers to solicit participating retailers for the buy-down program component. This program design element was successful in encouraging many independent chain and single-location retailers to participate, without expending significant marketing resources to make these retailers aware of the program.

A feature of the 2002 program that was unique compared to prior utility lighting programs was the introduction of hard-to-reach targets, which were intended to expand the effects of the program to trade allies and consumer segments that had not historically participated. The CPUC required utilities to reserve 15% of their incentive budget for retailers located outside the major urban areas and 10% percent for grocery and drug stores.

The 2002 program budget totaled $9.4 million, with $7.7 million earmarked towards product incentives. The program ultimately rebated over 3.5 million CFL products, mostly CF bulbs. The 2003 Residential Lighting Program was largely a continuation of the 2002 program year.

The 2004–2005 program was also a continuation of the 2002 and 2003 programs, with some minor changes. In 2004, the Residential Lighting and Home Energy Efficiency Rebate (HEER) Programs were combined to form the Statewide Single-Family Energy Efficiency Rebate (SFEER) Program to streamline internal operations for the utilities. However, from an

implementation standpoint, the program's upstream lighting component was substantially the same as in 2002 and 2003. Program budgets were nearly doubled during this period due to the state's return to integrated resource planning, with procurement funding added to the public goods charge pool.

The 2004–2005 program shifted its tier focus for lighting incentives from wattage ranges to lumen ranges, with higher incentives for bulbs with higher lumen output (and for fixtures that accommodated higher-lumen bulbs) to address the issue that CFLs, with the same wattage as incandescent bulbs, do not necessarily emit the same light levels (where as lumens are a more accurate reflection of brightness). The Program's lumen standards were based on recommendations from ENERGY STAR as to equivalent incandescent light output. The tiers generally followed the same wattage ranges as prior Program years, but better reflected equivalent incandescent light levels. The change in tiers was made behind the scenes in agreements between the IOUs and manufacturers; it was not apparent to consumers.

The buy-down mechanism comprised the vast majority of the Program's lighting incentives, which were paid directly to lighting manufacturers. Grocery stores were responsible for more than 40% of total manufacturer buy-down dollars for lighting during 2004–2005. Point-of-sale (POS) incentives accounted for only a small percentage of 2004–2005 Program incentives. Only 8% of the low-wattage CFLs incentives were POS incentives, and all of these were from a single retailer. While POS incentives represented approximately half of Program incentives for specialty CFL incentives, POS incentives represented about 20% of the fixture and torchiere incentives. The vast majority of POS incentives moved through general merchandise/big box stores.

The 2004–2005 Program had hard-to-reach goals similar to the 2002 program, with a focus on non-urban lighting retailers and drug and grocery stores. No hard-to-reach goals were set for the 2006-2008 programs, as the CPUC ended the tracking of program participation by hard-to-reach customer and market segments.

The 2006–2008 ULP continues the prior years' market-based strategies, offering both the buy-down and point-of-sale options to the state's energy-efficient lighting product suppliers. As in 2004–2005, the vast majority of program sales have been through manufacturer buy-down. The 2006–2008 program has been heavily influenced by the state's increased attention on global warming, specifically by the passage of Assembly Bill 32, the California Global Warming Solutions Act of 2006. The CPUC dramatically increased the energy savings targets for the state's IOUs, and the ULP was tapped to meet a large fraction of these goals through unprecedented numbers of CFL program incentives. During the first two years of the program, over 50 million CFL products were incentivized by the program.

Table 1 (next page) provides an overview of the program's evolution over the last decade:

- **Context:** As shown in Table 1, the regulatory context shifted several times over the last decade, causing major changes in program design and focus. The California energy crisis of 2000 and 2001 caused the program to abandon much of its non-incentive market strategies. Later, the state's aggressive efforts to combat global warming resulted in a dramatic increase in budget.
- **Financial Incentives:** The dollars provided to customers who purchased CFLs has shifted over time, mostly in response to the changing context. The early incarnation of the program eschewed customer rebates, while, during the energy crisis, the program rebated over 7 million CFLs. Over the last two years, the program paid out over 50 million incentives as part of the state's strategy to reduce carbon emissions.
- **Upstream Market Actor Support:**[11] In the early years, the program was predominantly focused on non-incentive market support, such as salesperson training. The state's energy crisis led to a dramatic scaling back of these activities. Later programs required participating market actors to provide in-store promotional materials and advertising.
- **Downstream Marketing:** Throughout the program's lifetime, the IOUs have used traditional methods to raise program awareness levels among its residential customers, using bill inserts and the like. In response to the energy crisis, the state, in partnership with the IOUs, launched a very prominent advertising campaign called Flex Your Power, consisting of high-profile television, print, and radio advertisements that appealed to the state's residents to conserve energy. In 2002 and beyond, the campaign was scaled back and more closely tied to other IOU energy-efficiency programs, such as the ULP, and encouraging residents to adopt energy-efficient measures, such as ENERGY STAR programmable thermostats and CFLs.
- **Market Actor Participation:** Much of the program's early focus was on recruiting market actors to produce, stock, prominently display, and promote energy-efficient lighting products. Over time, the program shifted its focus from big box chains to less traditional retail channels, such as grocery, drug, and discount stores.
- **Lighting Products:** Products promoted by the program evolved in response to changing market conditions. Once ENERGY STAR® specifications were in place for CFLs, the program exclusively promoted ENERGY STAR® products. As the market took off for spiral CFLs, the program encouraged suppliers to carry specialty CFLs and LEDs.

For each of the elements described in Table 1, the CFL Market Effects Team will provide more detail in the final report for this project.

[11] Market actors refer to manufacturers, retailers, end-use customers, and others that influence the sale of CFLs. Key market actors of interest vary by subject area and topic.

Table 1. Overview of Major IOU Lighting Program Activities (1999–2007)

Strategy/ Delivery		Program Year(s) 1999	2000	2001	2002-2003[12]	2004-2005	2006-2007
Context		Initiation of California market transformation programs	Full-scale implementation of market transformation program	California energy crisis; shift towards immediate energy savings	Resource acquisition, but program still market-based	Added procurement funding	CPUC dramatically expands California IOUs' energy savings targets to meet the state's Energy Action Plan
Financial Incentives	Consumer rebates, manufacturer buy-downs: number of units	600,000	100,000	7.5 million	7.5 million	15 million	53 million
Net Energy and Demand Savings (ex post)[13]		NA	NA	NA	NA	422 GWh; 31 MW	2,012 GWh; 256 MW[14]
Upstream Market Support	Salesperson training	Start-up	Significant	None			
	Merchandising support, field visits	Start-up	Significant	Participating suppliers required to do most of the in-store advertising; limited program support			
	Co-op advertising	None	Significant				
Down-stream Marketing	Utility	Traditional methods such as bill inserts, information on Web site, limited radio, print and TV advertisements					
	Other Statewide entities	None	None	Aggressive Flex Your Power Mass Market Campaign in response to energy crisis	Sustained Flex Your Power Mass Market Campaign		

[12] The CFL Market Effects Team assumed the budget/unit accomplishments for PY2003 were equivalent to PY2002, since the program was not evaluated in 2003.

[13] Energy and demand savings information for CFL programs implemented prior to 2002 were never officially reported. However, the CFL Market Effects Team will contact the IOUs to determine whether these data are available. If so, the team will include savings estimates for program years 1999 to 2003 in an updated version of this table in the November 2008 Interim Report.

[14] Data from PG&E, SCE, and SDG&E Q4 2007 Upstream Lighting Program reports.

Strategy/ Delivery	Program Year(s) 1999	2000	2001	2002-2003[12]	2004-2005	2006-2007
Market Actor Participation	Less than 10 – mostly big box stores, exclusively manufacturer buydown		Approx. 40 – mostly big box stores and retailer point-of-sale incentives, but with more small hardware and independent stores	More than 75 – explicit focus on non-traditional retail channels such as drug, grocery and discount; decreasing focus on big box stores – almost exclusively manufacturer buy-down		
Lighting Products	Early generation CFLs, fixtures and torchieres	Added focus on sub-CFLs	Exclusively ENERGY STAR lighting products		Focus on lumen equivalents and specialty CFLs	
Total Program Budget	$30 million	$33 million	$36 million	$19 million	$35 million	$100 million[15]

[15] The program budget for 2006-07 has been estimated based on the ratio of the total budget to the number of incentives from the prior program cycle; this ratio was then applied to the 2006-2008 number of incentives.

The CFL Market Effects Team will integrate our historical knowledge of the program with the program theory and logic model included in this plan, which reflects only the 2006–2008 program design. The early California IOUs' ULPs were guided by in-depth program theory and logic models, which were updated as the market and program evolved.

2.1.2. Characterization of Current Programs

To comprehensively characterize California's current CFL programs, the CFL Market Effects Team sought to investigate and document *all* CFL programs in the state, including retail[16] and non-retail programs, residential and non-residential programs, and programs implemented by both IOUs and non-IOU entities. It is important to investigate all CFL programs because each program could potentially contribute to the overall CFL sales volume in the state. In addition, all of these programs may result in the introduction of CFLs to new users, changes in buyer and supplier knowledge, or price effects. These are all examples of program induced-market effects that may have led to incremental sales of CFLs over time.

The team endeavored to understand each program and its likelihood of contributing to market effects by documenting and summarizing each of these program characteristics:

- Program administrator;
- Program description;
- Primary program goals/objectives;
- Whether the sponsoring utility claims savings from CFLs distributed through the program;
- First year of the program's implementation;
- Customer sectors addressed/target market;
- Program marketing plan;
- Trade allies involved;
- Cumulative and annual quantities of CFLs distributed;
- CFL acquisition and distribution channels;
- Potential market effects induced by the programs;
- Market barriers; and
- Existence of a market theory, program theory, and/or logic model for the program.

[16] The term "retail programs" used in this study refers to programs through which the CFLs are distributed through retail channels. Programs through which CFLs are given away free-of-charge or are installed directly into end-use customer premises are included in the "non-retail program" category.

For the IOUs, the CFL Market Effects Team obtained much of this information by reviewing the utilities' program implementation plans as well as their most recent E3 calculators and annual reports.

Information contained in these documents was supplemented through interviews with the key IOU sector and program managers who were most familiar with those programs that had the highest potential for market effects. Through these interviews, we learned about program details not provided in the formal program documentation, such as the purchasing strategies for CFLs and, in some cases, more explicit statements about the programs' goals and achievements. During the interviews, the CFL Market Effects Team also discussed potential program market effects, and market and program theories with the IOU managers. (A detailed discussion of the market and program theories is presented in the next section of this report).

Characterizations of the programs of non-investor-owned utilities[17] are much more difficult to develop because, unlike the IOUs, California's non-investor-owned utilities are not required to make detailed inputs (or outputs) for program cost-effectiveness analyses available to the public. Furthermore, while there are four major investor-owned utilities in California (only three of which sell electricity), there are over 50 publicly-owned load-serving entities and small investor-owned utilities in the state. With the exception of the Los Angeles Department of Water and Power (LADWP) and the Sacramento Municipal Utility District (SMUD), these utilities all serve relatively small populations and loads.[18] Thus, not only are the programs offered by California's non-investor-owned utilities challenging to characterize, but most are not likely to (individually) distribute significant quantities of CFLs (relative to the total CFLs distributed by the IOUs).

The CFL Market Effects Team has, therefore, focused the majority of our non-IOU research on programs offered by LADWP and SMUD. At these utilities, interviewers contacted lighting program managers directly and asked them to provide information to assist in characterizing their programs. The interviews revealed that close to 2.5 million CFLs were distributed through SMUD's Residential Lighting Program over the 2006–2007 period. LADWP, by contrast, is just embarking on a major CFL campaign in 2008 and expects to deliver 2.3 million CFLs through direct-to-door deliveries. For the other publicly-owned load-serving entities (and small IOUs), we have documented the size of their customer base and non-coincident peak demands,[19] and whether they offer programs through which CFLs are distributed.

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[17] For the purposes of this report, non-investor owned utilities include publicly-owned utilities, rural electric cooperatives, and Native American utilities, as well as the three investor-owned utilities (Bear Valley Electric Service, Mountain Utilities, and PacifiCorp) that serve relatively small customer bases in California.

[18] Only LADWP and SMUD serve over 500,000 customers; most of the others serve fewer than 100,000 customers. Furthermore, only LADWP and SMUD serve non-coincident peak loads of greater than 1,000 MW. (See: http://www.energy.ca.gov/electricity/annual_peak_loads.html).

[19] The California Energy Commission has defined utilities according to following sizes of their non-coincident peak loads: jumbo are over 10,000 MW; large are 1,000 to 10,000 MW; mid-sized are 200 to 1,000 MW; compact are 50 to 200 MW; sub-compact are 10 to 50 MW; and mini-compact are less than 10 MW. This study will not attempt to quantify CFL distributions for compact, sub-compact, or mini-compact utilities.

CFLs are also distributed by low-income weatherization programs offered by both the IOUs and the non-IOUs. As with the non-IOU programs in general, IOU and non-IOU low-income programs are not required to report detailed cost-effectiveness input (or output) information (although some do provide counts of CFL distributions through annual reports). CFL distributions through low-income programs are therefore generally challenging to quantify. Where we have been able to obtain this information, the numbers of CFLs distributed through low-income programs are included in our overall tally. For the IOUs, the number of CFLs given out through low-income programs is typically 120,000 or less per year, and for the non-IOUs, the numbers are typically in the tens of thousands (at most).

As shown in Table 2, the lighting program characterization results show that the vast majority (over 90%) of the 59 million CFLs distributed in California in 2006 and 2007 were distributed through the IOUs' ULPs.[20] Given their overwhelming dominance in 2006-07 CFL distributions, the ULPs are expected to have the highest potential for market effects of all program types. The non-IOU 2006-07 CFL distributions, over 5.5% of the total, represent the second largest category. Most of these CFLs (approximately 72%), were distributed by SMUD. A complete listing of the IOU lighting programs and their detailed characteristics is presented in Appendix A.

Table 2. CFL Sales by Lighting Program (2006-2007)

Program Category	Number of CFLs Distributed (2006-2007)	Percent of Total
IOU-ULP	53,383,945	90.14%
IOU-Other	915,137	1.55%
IOU-LGP	302,884	0.51%
IOU-3P	1,001,961	1.69%
IOU-LI	271,476	0.46%
Non-IOU	3,344,781	5.65%
Total	**59,220,184**	**100.00%**

Key

IOU-ULP: Upstream lighting programs that are designed and implemented by California's investor-owned utilities (IOUs).

IOU-Other: Programs designed and implemented by California's investor-owned utilities that do not fall into any of the other IOU program categories.

IOU-LGP: Programs offered by California's investor-owned utilities that are designed and implemented by local government organizations.

IOU-3P: Programs offered by California's investor-owned utilities that are designed and implemented by third-party organizations.

IOU-LI: Low-income programs offered by California's investor-owned utilities.

Non-IOU: Publicly-owned, load-serving entities. Note that this includes IOUs serving small California populations (Bear Valley Electric Service, Mountain Utilities, and PacifiCorp).

[20] Note that the E3 calculators for a number of non-residential IOU programs identify "lighting" savings but do not specify the particular lighting measures through which these savings were achieved. The CFL Market Effects Team is continuing discussions with IOU program managers to determine whether, and to what extent, these savings were achieved through CFLs. If the IOUs are able to provide additional detail about these "lighting" savings, we sill provide updated values for 2006-07 CFL distributions in the August 1, 2008 Final Scoping Study memorandum to the CPUC.

2.2. Integrated Market and Program Theories

This section describes the background research and development of a program theory and logic models for the CFL market and CFL programs in California. As stated in the California Evaluation Protocols,[21] the required protocols for Market Effects Scoping Studies require the development of a market theory as well as individual program theories and logic models, and the integration of the Market and Program theories and logic models.[22] This section articulates the market and program theories and presents an integrated model for planning and organizing the overall market effects research agenda..

The initial draft market and program theory and logic models presented here are the result of a review of relevant literature including regulatory filings, interviews with utility program staff, and discussions with national experts. Because the Upstream programs administered by the three IOUs accounted for over 90% of all incentivized CFL sales, only one program logic model was developed, representing all upstream programs

2.2.1. Previous Logic Model Development

Little work has been done to date in California to develop logic models and program theories for the 2006-08 ULPs.[23] Generally, regulatory filings and Program Implementation Plans (PIPs) briefly mention logic models and program theories, but do not contain sufficient detail to be useful. Several utilities are conducting process evaluations of their ULPs, but results are not yet available. A notable exception is Southern California Edison, which commissioned a study to develop a logic model for their Residential Energy Efficiency Incentive Program (REEIP). This monograph provides a detailed overview of the lighting and non-lighting components of the program, and includes potential indicators and success criteria.[24]

Nationally, little CFL market level logic model (in contrast to program focused) work has been done. A notable exception is the Northwest Energy Efficiency Alliance (NEEA), which has conducted Market Progress Evaluations of their lighting market interventions since 1999. A summary evaluation is currently in progress, and will contain an updated logic model and measured performance indicators assessing the state of market transformation in the Pacific Northwest.

2.2.2. Program Manager Interviews

The CFL Market Effects Team conducted interviews with utility program managers at two of the three California IOUs (one is pending). Generally, utility staff sees these programs through the prism of resource acquisition, and are only now beginning to consider the market transformational aspect of the programs. As a result, they could

[21] California Energy Efficiency Evaluation Protocols, TecMarket Works Team, April 2006
[22] Ibid., pp. 150-151
[23] Theory and logic models were, however, developed in the late 1990s for lighting programs that were precursors to the 2006-08 programs. These will be used as a point of departure for the current study.
[24] SCE Program Staff; Caroline Chen, Consultant and M&E Project Manager; and Katherine Randazzo, KVD Research Consulting, "Residential Energy Efficiency Incentive Program)REEIP): Program Logic Diagram, Program Theory, Potential Indicators and Success Criteria." Southern California Edison, February 2008.

provide little empirical information on market penetration, non-program market effects, national trends or international competition.

Generally, the most active manufacturers in utility programs are the small to mid-sized manufacturers whose only products are CFLs. Large manufacturers do participate, but at low levels. About 15-20 manufacturers participate in the programs, and among large manufacturers Philips is notable exception.

Nearly all of the upstream program is run through manufacturers, who are responsible for recruiting, or at least contracting with, retailers. IOUs coordinate the upstream programs to present a "statewide" face to the public, similar agreements with manufacturers, and the same general level of incentive in their respective service areas. Each utility, however, has flexibility to design specific program components. The result is that there may be differences in participating manufacturers and retail chains, models and wattages available, target markets and incentive structures, especially for specialty bulbs.

Program impacts are clearly budget driven: PG&E and SCE may have the same number of residential accounts, but the performance of the programs is primarily driven by the budget allocated to each program.

Program implementation strategies are becoming more directed and now may target zip codes or other geographic units and specific non-participating market channels. For example, the currently targeted retail channels include small grocery chains and other retail establishments that either have not historically carried CFLs, or have carried only non-ENERGY STAR CFLs.

There seems to be some skepticism regarding the "Wal-Mart effect," although it should be noted that Wal-Mart has a limited presence in California. Wal-Mart carries CFLs, but utility staff suggests that the price of these units fluctuate: they are low when CFLs are periodically discounted, but are priced comparably to non-incentivized program bulbs when they are not.[25]

There is little systematic interaction and sharing of information with other utilities and organizations nationally, other than attendance at conferences such as the ENERGY STAR Partners conference. Other utilities do contact California utilities for information about the upstream programs.

The IOUs are already thinking about next-generation lighting technologies and are working with manufacturers participating in the current programs to make available both dimmable CFLs and CFLs with higher lumen output, as well as to hasten the development of LEDs. The IOUs all claim that substantial potential for additional energy savings remain in lighting.

[25] This claim has not been verified

2.2.3. CFL Market Theory and Logic Model

Although there are some mandatory code requirements for CFL installation in the new construction sector, the CFL market in California is primarily driven by voluntary installation of CFLs. CFLs that are branded as ENERGY STAR compliant are heavily incentivized by utility programs. The major outlets for CFLs have tended to be "big box" retailers, although smaller chains and grocery stores are increasingly carrying them. Non-ENERGY STAR CFLs also have a market presence, as a competing product in some retail outlets, and as a flagship product in outlets such as IKEA.

Current market theory focuses on decreasing consumer barriers to adoption by addressing the perceived lack of information, performance uncertainty and high first-costs. Supply and availability for CFLs are driven by the overall demand for product, competition among manufacturers and retailers, and competing demands in the national and international markets. Utility programs and incentives address some of these barriers.

Figure 1, on the following page, represents the CFL market in California in the absence of the 2006-08 IOU CFL programs.

Figure 1. CFL Market Model

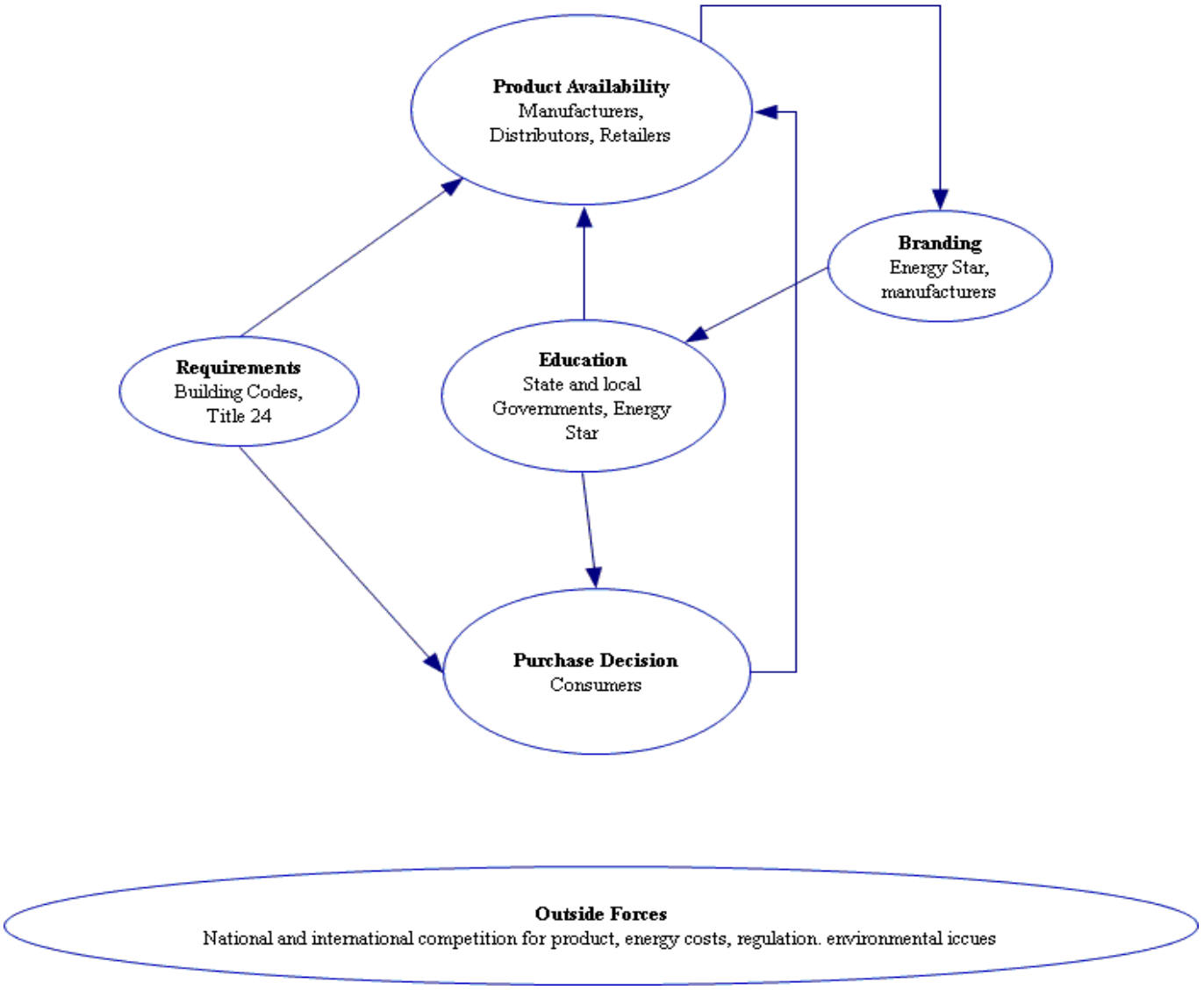


Table 3, on the following page, summarizes the market drivers and barriers for manufacturers/distributors, retailer and consumers

Table 3. Major Drivers and Barriers

Market Actor	Market Driver	Market Barrier
Manufacturers/Distributers	• Consumer demand • Economies of scale • Market position • Product availability • Profit motive* • Technological breakthroughs	• Current practice–performance uncertainty • Retailer purchasing decisions • Information costs • Profit motive[26]
Retailers	• Consumer demand • Product availability • Market position	• Current practice • Information costs • Performance uncertainty
Consumers	• Operating cost savings • Early adoption • Environmental ethic	• Information costs • Performance uncertainty • High first costs

2.2.4. Program Theory and Logic Model

The program theory for upstream lighting is reflected in the logic model presented in Figure 2. By coordinating program design, encouraging customer and retailer participation through direct outreach, and by encouraging manufacturer participation though incentives, the programs seek to increase the demand for CFLs, increase the volume and decrease the cost of the product, reduce performance uncertainty, and encourage the adoption and availability of new products (with improved energy efficiencies and/or additional functionality).

The cost and availability are the result of increasing economies of scale, adoption of product as "common practice" and increasing market presence in non-program settings.

Figure 2 provides a graphic representation of the program theory. With an eye toward developing a truly useful logic model, this diagram was designed to be as simple as possible while at the same time capturing all of the basic elements of the theory and the linkages among these elements. The elements of the logic model are:

- ***Activities*** that the program undertakes. In this case they are coordination among the utilities, program design activities, and outreach, including incentives.
- ***Outputs*** that the program produces. These are primarily outreach materials, including store displays, events, advertising, and direct outreach.
- ***Outcomes*** that result:
    - In the ***short-term*** we expect to see changes in awareness and knowledge, some price effects, and increasing product availability and diversity.
    - In the ***medium-term*** we expect to see the effects deepen to encompass a reduction of market barriers, increased product availability, increased

[26] Profit motive can be perceived as a potential market driver and barrier. For example, manufacturers that exclusively produce CFLs are driven by a profit motive, but larger manufacturers may perceive CFL sales as cannibalizing sales of other products.

price effects, reduced energy use and emissions, and increasing effects outside of the program.

- Finally, the ***long-term*** outcomes include fundamental changes in the way customers view CFLs, their ubiquitous availability in the market, and the beginning of a transition to the next lighting technology.

Table 4 describes the linkages among the elements and presents a list of progress indicators proposed to evaluate the elements and their linkages.

Figure 2. Upstream Lighting Program Logic Model

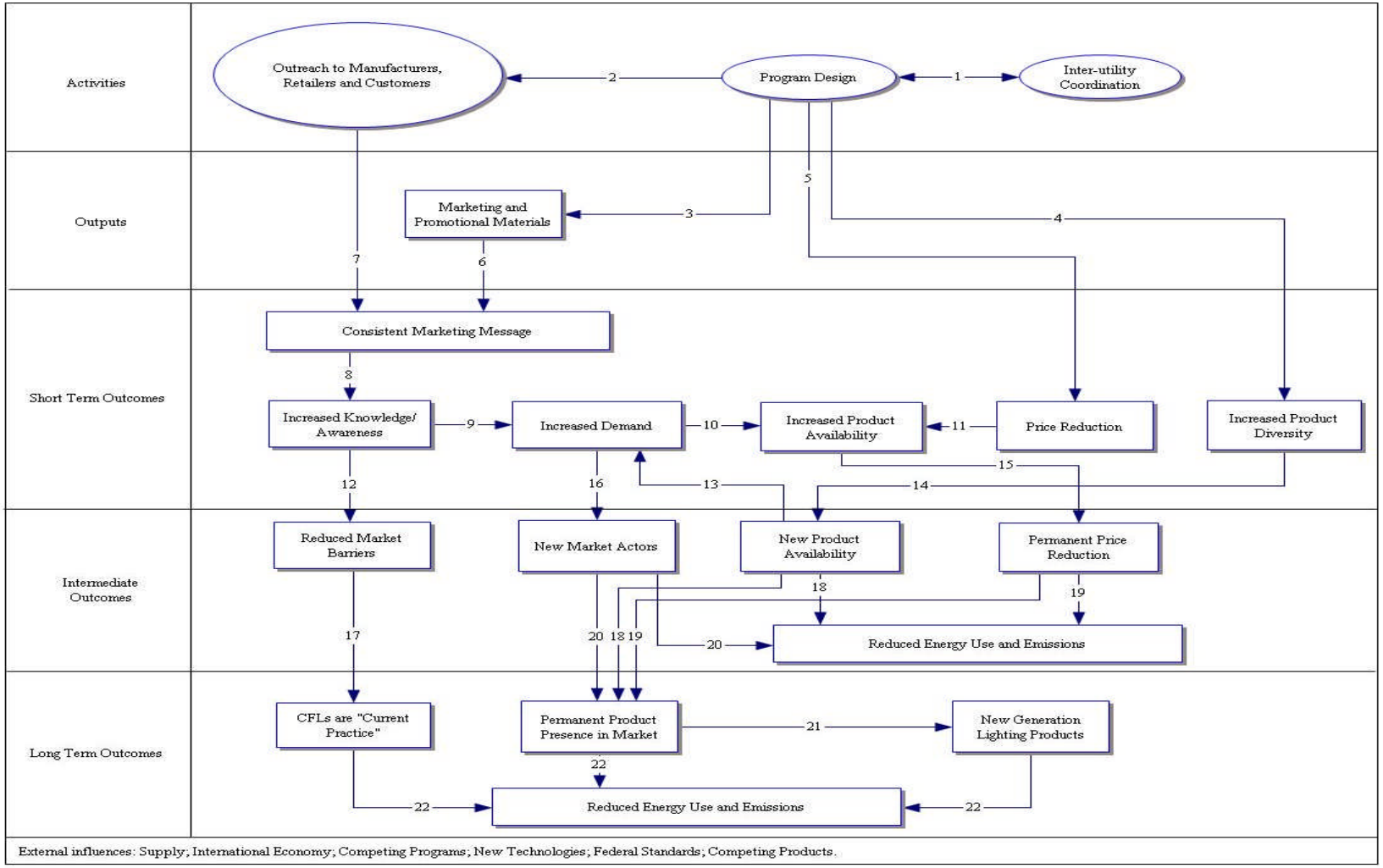


Table 4. Upstream Lighting Logic Model Links: Working Hypotheses and Indicators

Link	Working Hypotheses	Indicators
1	Inter-utility coordination ensures that the program is a consistent, state-wide activity and that utility efforts are coordinated	Meetings scheduled; work papers; agreements; program changes
2	Outreach to manufacturers encourages the availability of product and marketing to retailers; outreach to retailers ensures program participation and increases availability of market channels; outreach to customers addresses information barrier and raises awareness	Satisfaction with the program, the products, and the marketing materials; number of events, bill inserts, and promotional materials
3	Consistent program design leads to consistent development of outreach materials	Content of outreach materials; number of program announcements and promotions; availability of materials
4	Program design encourages increasing diversity of product	Measures added, modified or deleted; lumen output increases
5	Program incentives reduce the price of available measures	Comparison of price before, during and after sales events; comparison of price for participating and non-participating retailers and manufacturers
6	The development of marketing materials in a standardized way will lead to consistent marketing messages.	Lack of confusion among retailers and customers on marketing messages.
7	Standardized outreach to manufacturers, retailers and customers will lead to consistent marketing messages	Lack of confusion among retailers and customers on marketing messages
8	Consistent marketing message leads to increased information and awareness	Customer general knowledge of benefits of CFLs; customer awareness of products, availability and advantages
9	Increased knowledge and awareness leads to increased demand for product	Increasing customer satisfaction, increased sales of program and non-program products
10	Increased demand leads to increased product availability	Increasing sales during non-program periods; increased sales in nonparticipating retailers; new manufacturers entering the market
11	Price reduction due to direct program effects affect the price of non-program products	Product prices in nonparticipating retailers; product prices for non-participating products
12	Customer market barriers are decreased due to increased knowledge and awareness among retailers and customers.	First cost; performance uncertainty; knowledge and awareness
13	Increased customer demand for CFLs leads to new products and new product availability	New products, price reductions; new market actors
14	Program incentive structure leads to new products and new product availability	Increasing lumen quality; three-way and other specialty product availability
15	Increased availability lowers costs on a permanent basis	Non-participant retailer price differential decreased; non-participating product price differential approaches zero; no differences between event and non-event prices.
16	New actors enter the market	New manufacturers; product available in non-mass market outlets, specialty stores, etc.
17	CFLs become standard bulbs	Number of sockets increases; incandescents replaced with CFLs; older CFLs replaced with the same or better models; sales of incandescent bulbs decrease; reduced energy use and emissions

Link	Working Hypotheses	Indicators
18 19 20	New products, low prices and increased availability lead to CFLs being a commodity product like incandescents	Overall sales; reduced energy use and emissions
21	New technologies begin to penetrate the market and replace CFLs	LED bulb sales
22	Market saturation of CFLs and introduction of new technologies lead to long-term energy and environmental impacts	Reduced energy use; reduced emissions

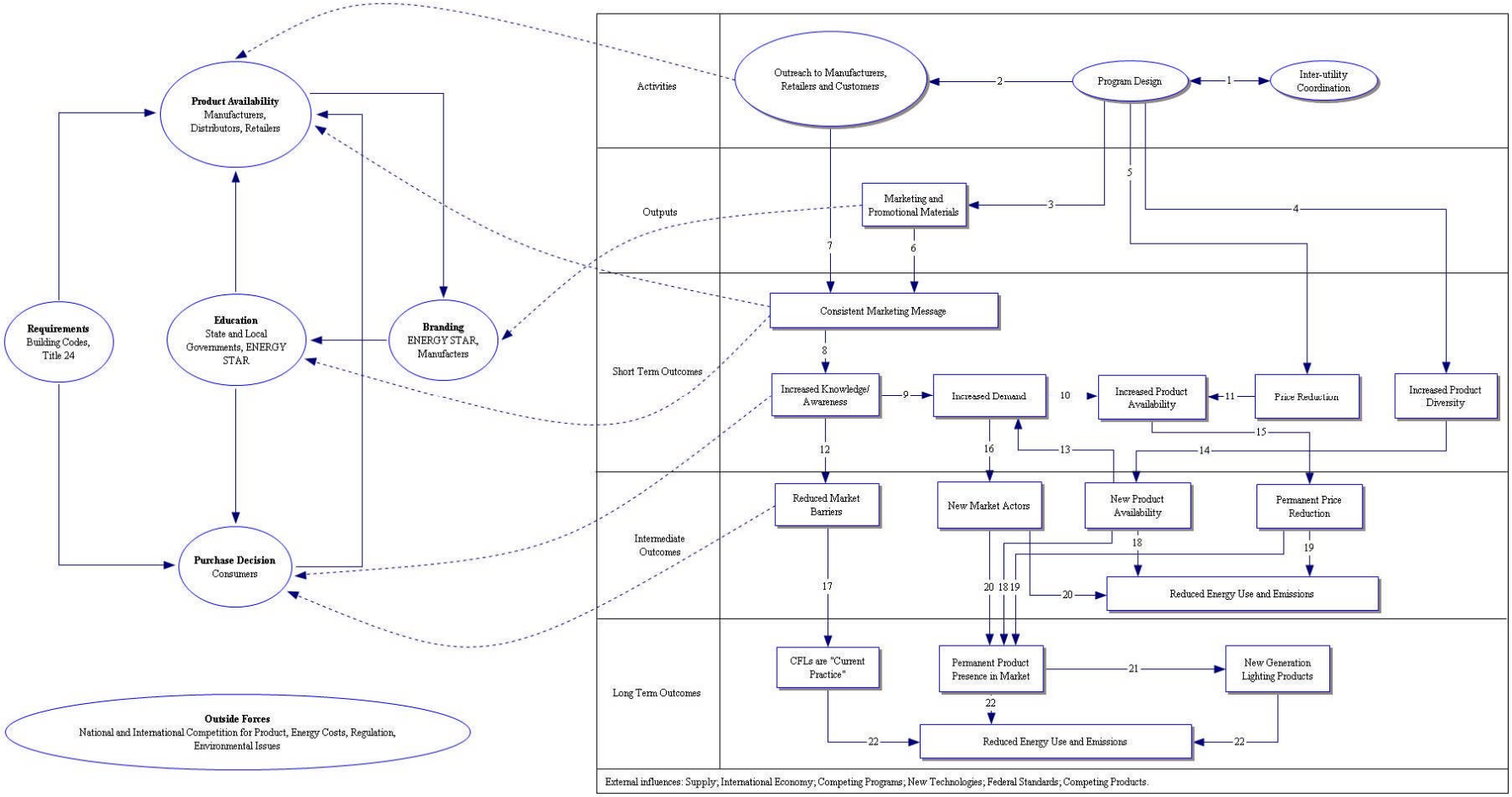
2.2.5. Integrated Market and Program Logic Model

Figure 3, on the following page, combines the preliminary[27] market logic model with the ULP logic model to show how the IOU program interacts with the overall market. The dotted lines show the alignment of the ULP to the market model. With the exception of the mandatory requirements (which are addressed by the IOU non-retail programs[28]), there appears to be good congruence.

[27] These models are still works in progress: as the project moves forward they will be updated/refined to incorporate greater detail and background for evaluation hypotheses. When undertaking these updates, the CFL Market Effects Team will take care to ensure the models do not become unduly complicated or difficult for the reader.

[28] As noted earlier, the ULPs account for over 95% of the California IOUs' CFL savings claims; non-retail programs were therefore not modeled.

Figure 3. CFL Market and IOU ULP Logic Model



2.2.6. Testable Hypotheses and Researchable Issues

To determine whether the market has been influenced—and if so, the extent to which it has been influenced—by the IOU ULPs, the CFL Market Effects Team has developed an initial list of issues and researchable issues shown below. This list is a work in progress and will be amended and expanded as necessary.

- Are new market actors entering the market and attributing their entry to the influence of the program?
- Are the costs of CFLs decreasing—or not increasing—during times when program incentives are not offered?
- Are consumers able to distinguish between program and non-program CFLs?
- How do CFL sales at participating retailers compare to sales at non-participating retailers?
- Do the costs of program and non-program CFLs track downward?
- To what extent is customer behavior guided by external influences such as ENERGY STAR outreach, energy and gas prices, and environmental issues?
- To what extent are manufacturers influenced by competing demands for CFLs, and to what extent have product costs shrunk due to economies of scale?
- Are new products and specialty CFL products entering the market due to IOU coordination and incentives?
- To what extent are non-incentivized CFLs being adopted by consumers?
- To what extent are products available in nonparticipating retail outlets?
- Where do adopters of incentivized CFLs get their information about CFLs in comparison to where do non-adopters get their information? How does this affect the decision or adopter versus other inputs to these decisions?
- To what extent have the IOU programs caused the changes identified in the above research?

2.3. Literature Review

As part of the scoping study, the CFL Market Effects Team conducted a review of the existing literature on market effects from CFL programs throughout North America. This task included the examination of the most recent, as well as historic, CFL market effects studies from Massachusetts, New York, Vermont, Wisconsin, Long Island, and British Colombia; forthcoming and older papers on market effects; older program evaluations that address CFLs; and numerous other documents.

As discussed above, the results of this review were used as a starting point for program theory and logic model development task by informing the team about the existing body

(or lack thereof) of CFL market effects program theories logic models. Results of the literature review were also extensively used to evaluate the methodologies, key metrics, data sources, and sustainability assessments used in recent CFL market effects studies conducted elsewhere for their relevance and applicability to California for the current study.

Our review of recent CFL market effects studies is summarized in Table 5, on the following pages.

Table 5. Summary of Recent Market Effects Studies

State	Title	Author	Publish Date	Surveys and Methodologies Employed	Key Metrics	Data Sources Used	Sustainability Assessment	Market Effects Identified (Yes/No; quantification)
MA	MPER for the 2006 MA ENERGY STAR Lighting Program	Nexus Market Research	July 2007	• Comparison state baseline analysis (Michigan) • Manufacturer and retailer interviews • In-store shelf space and stocking study • RDD consumer surveys • In-home lighting audits	• Awareness • Product quality • Satisfaction • Availability • Installation rate • Installation potential • Average price • Sales of CFLs vs. fixtures • Bulb types	• Annual program distributions • Onsite household visits • Manufacturer interviews • Consumer survey • Focus groups • Retailer stocking survey • CA Lamp Report	The market is sustainable but sales would be smaller and product development would slow down.	Yes. Direct program savings versus market effects savings not quantified.[29] Programs shown to be highly cost-effective without inclusion of market effects.
NY	New York Energy $mart℠ Products Pro-gram: Market Characterization, Market Assess-ment and Causal-ity Evaluation.	Summit Blue Consulting and Quantec	June 2007	• Comparison state analysis (program versus non-program states)		• Program distributions • CA Lamp Report • KEMA"s 2006 MPER for NEEA • NMR's 2005 MPER for MA • US Census and EIA data	No.	Yes, significant amount of non-participant spillover credited to program.
WI	Focus on Energy Public Benefits Evaluation: Comprehensive CFL Market Effects Study	PA Gov't Services and Glacier Consulting	July 2007	• Comparison state baseline analysis (Michigan) • WI sales estimate from census of sales data from program participating retailers • Statewide representative sample of non-participating retailers	• Sales by participating retailers • Sales by non participating retailers • # CFLs on shelf • Average price • Lamp type/wattage • Bulbs/pack	• Sales data collection from participating retailers in WI • Shelf stocking surveys at participating retailers • Store level phone surveys of non-participating retailers • Program rewards	Lack of sales in non-participating retailers is evidence programs are having little effect on them	No. Provides net-to-gross estimations, but states that the market has not changed as a direct result of the 2006 program

[29] The Massachusetts evaluation does, however, describe market effects in terms of changes in awareness, quality, usage, and demand for CFLs, as well as in terms of decreases in incandescent sales.

State	Title	Author	Publish Date	Surveys and Methodologies Employed	Key Metrics	Data Sources Used	Sustainability Assessment	Market Effects Identified (Yes/No; quantification)
BC, Canada	Direct and Market Effects of BC Hydro's 2006-07 Residential CFL Program	Sampson Research	Sep, 2007	• Comparison state baseline analysis (North and South Dakota) • Shelf stocking study • 3 consumer phone surveys (1 of BC Hydro customers; 1 RDD of households that entered a BC Hydro contest; 1 in comparison region)	• CFL awareness • Promotion awareness • Satisfaction rate • Installation rate • CFL replacement rate • Free rider rate • Spillover rate • Average purchase cost and quantity	• Shelf stocking study • Three consumer phone surveys • Program redeemed coupon information	Analysis of expended CFLs replaced by new CFLs	Yes. For 2006-07, direct program savings estimated at 7.6 GWh/yr and market effects estimated at 72.5 GWh/yr.
VT	Final Report: Phase 2 Evaluation of the Efficiency Vermont Residential Programs	KEMA	Dec, 2005	• Comparison state baseline analysis (Maine) • Retailer surveys • Sales data collection directly from retailers • Telephone surveys	• CFL awareness • Installation rate • Future installation potential • Consumer stock • Avg coupon purchases per customer • Total sales by retailer	• Program coupon records • Sales from sample of participating stores • Census sales from one hardware chain in Maine • Survey of non-participating retailers • Customer phone survey • Sales info from studies in MA, CA, WI, Long Island, and Pacific NW	N/A	Yes, significant amount of non-participant spillover credited to program.

The findings from the literature review have been used to inform the data sources we assessed for possible inclusion in the later tasks of this study. The findings were also used to assess the most reliable (tried and tested) approaches to consider for estimating market effects in general and baseline CFL sales for California in particular, and the approach to take for assessing sustainability of California's CFL market. The complete bibliography that the team assembled as part of this task is provided in Appendix B.

2.4. Data Assessment

Among the most critical metrics for both analyzing the evolution of the CFL market and for assessing market effects are accurate current and historic counts of total CFL sales in California and in the rest of the U.S. The CIEE CFL Market Effects Study Plan presented a number of data sources that are potentially useful for market effects quantification. However, because the information contained in each of these data sets was originally collected for specific purposes that are separate and apart from this study, each has limitations in terms of addressing the data needs of the CFL market effects evaluation. While none of the data sources alone provides a comprehensive assessment of the CFL market, our assessment of the data sources shows that when used in combination, several of the data sets will, in fact, serve the purposes of this study.

As described above, the ULP theory suggests that these programs will reduce the retail price of CFLs, thereby inducing increased consumer demand. To enable us to test the program theory that the ULP manufacturer buy-downs increase consumer demand for CFLs in California and perhaps out-of-state, across various retail channels, for non-ENERGY STAR as well as ENERGY STAR CFLs, and for specialty (e.g., dimmable or three-way CFLs) as well as non-specialty lamps (standard "twister" style screw-in bulbs), the CFL Market Effects Team prepared a list of variables to use in assessing the available data sets. Specifically, for each data set we examined the: geographic coverage and granularity, retail channel coverage, time period coverage and granularity, ability to distinguish between ENERGY STAR and non-ENERGY STAR CFLs, ability to distinguish between specialty and non-specialty CFLs, inclusion of pricing data, and other bulb type granularity (wattage, package size, etc).[30] An ideal data set would be extremely robust and versatile and would provide the information shown in Table 6.

[30] Granularity refers to the resolution, or level of detail, that is available in the data.

Table 6. Information Sought from CFL Data Sets

Variable	Coverage
Geography	By state, for all 50 states
Retail Channels	Large grocery, small grocery, drug, mass merchandisers, big box do-it-yourself (DIY, or home improvement), Independent small hardware, club, dollar/bargain, as well as Internet sales for each of these channels
Time	2006-2008, by month; 2005 and earlier by quarter
Inclusion of Price Data	At Universal Product Code (UPC) level[31]
ENERGY STAR versus non-ENERGY STAR	Data at UPC level to distinguish between Energy Star and non-Energy Star
Specialty vs. non-specialty	Data at UPC level to distinguish between specialty and non-specialty
Other bulb type info	Data at UPC level to distinguish between bulb types

With these variables in mind, the CFL Market Effects Team reviewed each of the data sources identified in the CIEE CFL Market Effects Study Plan, including:

- Program tracking data
- EPA ENERGY STAR Partner sales data
- Point-of-sale (POS) scanner data (much of which, for California and the U.S. as a whole, is captured in the California Residential Lighting Market Share Tracking Study)
- CFL market effects studies in other states
- EPA's annual national ENERGY STAR awareness study
- Past saturation surveys and utility process evaluations and market assessment studies, and
- The Database for Energy Efficiency Resources (DEER).

Additionally, we examined data sources such as information from the 18seconds.org website, Nielsen Homescan data, and U.S. Department of Commerce data. In the following section, we discuss the existing data sources, their strengths and weaknesses, how they can be used in combination, and the approaches CFL Market Effects Team can take to supplement the combined data set in order to address remaining data gaps.

2.4.1. Data Sources

Program Tracking Data

The CFL Market Effects Team has been obtaining and analyzing the data from IOU Lighting Program tracking database for a number of years. The database, which includes program data from 1998 through 2005, will be crucial to the analysis of historical retail sales trends in California and of the cumulative effects of California's CFL programs.

[31] UPC is a barcode symbology (i.e., a specific type of barcode), that is widely used for tracking products.

In addition, the CFL Market Effects Team has already made extensive use of the IOUs' 2006-07 E3 calculators in characterizing their CFL programs and computing the number of CFLs that have been distributed through their programs. These data will continue to be used as we estimate current CFL sales in California in later tasks.

EPA ENERGY STAR Partner Sales Data

One option for better characterizing the sales of CFLs in California and elsewhere is to utilize and expand on CFL sales data collected by the EPA. Discussions with the Cadmus Group staff who collect these data on EPA's behalf indicated the data will continue to be released and to contain data from a minimum of three of the top national retailers (do-it-yourself or DIY, Club, and Mass Merchandiser channels) for ENERGY STAR CFLs.[32] For some retailers, data for non- ENERGY STAR qualified CFLs will soon be available as well. These data, presented by Metropolitan Statistical Area (MSA) and state, provide a valuable cross-sectional data set. The information is publicly available and is free-of-charge. Table 7 provides an overview of the EPA ENERGY STAR data across the key variables.

Table 7. EPA ENERGY STAR Partner Sales Data Coverage

Variable	Description
Geography	All 50 states, by state and by MSA
Retail Channels	5 or 6 major retailers (minimum requirement is 3) with partial coverage of DIY, Club, and Mass Merchandise
Time	Quarterly. Currently available for Q1-Q2 2007; Q3-Q4 2007 forthcoming.
Inclusion of Price Data	Not available
ENERGY STAR vs. non-ENERGY STAR	Totals by state from some partners[33]
Specialty vs. Non-Specialty	Not available
Other Bulb Type Info	Not available

The data could be significantly improved upon by including other distribution channels such as grocery chains and hardware stores as well as non-Partner stores. EPA itself would be very interested in data from these other retail channels as they share a similar interest with the CPUC in being able to quantify the percent of market share ENERGY STAR® receives. However, limited Federal budgets preclude expansion of the retail sales data collection effort; thus, federal outreach into these additional channels is unlikely to occur in 2008.

POS Scanner Data (collected and processed by Itron)

Missing from the EPA ENERGY STAR data are a number of important CFL retail channels including grocery, hardware, and drug stores. These additional distribution channels have recently been targeted by the California IOU programs and are believed to

[32] 2007 was the first year for which ENERGY STAR retail partners provided CFL sales data to EPA. The partners' sharing of the CFL sales information for the first and second quarters of 2007 has resulted in the identification of important changes and improvements to the EPA reporting procedures that should ensure more robust and higher quality data.

[33] The CFL Market Effects Team is continuing to pursue obtaining ENERGY STAR versus non-ENERGY STAR data to supplement the information already provided by some partners.

account for an increasingly large percentage of California's CFL sales. Information about these channels is therefore critical for this analysis.

The POS Scanner data, collected by Itron for its annual California Residential Lighting Market Share Tracking Study, covers the majority of these channels. It is a combination of data purchased from The Nielsen Company that provides information from the food, drug, and mass merchandiser channels, and data purchased from Activant (Vista Information Services) that provides information for the small hardware channel. Table 8, on the following page, provides an overview of the POS Scanner data across the key variables of interest.

Table 8. POS Scanner Data Coverage

Variable	Description
Geography	CA vs. rest of US for food, drug, and mass merchandisers; by major metropolitan statistical areas (MMSA) for small hardware
Retail Channels	95% coverage of large food and drug stores, mass merchandisers (excluding Wal-Mart)
Time	1998 - 2007, by month
Inclusion of Price Data	Available at UPC/channel level
ENERGY STAR vs. non-ENERGY STAR	Available at UPC/channel level
Specialty vs. Non-Specialty	Available at UPC/channel level
Other Bulb Type Info	Available at UPC/channel level

Both The Nielsen Company and Activant have state-specific data available for purchase:[34] the cost of purchasing Nielsen data for several states falls within the budget for this project; the cost of purchasing state-specific Activant data does not.

18seconds.org Data

The 18seconds.org website contains counts of CFLs sold at specific (though not specified) national chains throughout the United States. Data on the site, which is supported by Wal-Mart and Yahoo and is provided by The Nielsen Company, can be manually downloaded free-of-charge. The information can be used to compare CFL sales through these national chains in California to sales through the chains in other states, and to estimate the number of CFLs sold at the chains within specific metropolitan regions throughout the U.S. As shown in Table 9 below, however, the data set provides little else of value to this study.

[34] Note, however, that state-specific data is not available for all states. Furthermore, the purchase of all available state-specific data would be cost prohibitive for this project.

Table 9. 18seconds.org Data Coverage

Variable	Description
Geography	State and metropolitan region-specific
Retail Channels	Not available
Time	Began in 2007 and is on-going; snapshots for specific historic timeframes are not available; frequency of updates is not known.
Inclusion of Price Data	Not available
ENERGY STAR vs. non-ENERGY STAR	Not available
Specialty vs. Non-Specialty	Not available
Other Bulb Type Info	Not available

In addition to these limitations, there is speculation that the total CFL counts shown on the site actually represent units or packages rather than individual bulbs sold (although, given the data's opaqueness, this cannot be verified), and a recent analysis of the data has called its reliability into question.[35] For all of these reasons, the CFL Market Effects Team has concluded that the 18seconds.org data does not warrant further analysis through this study.

Nielsen Homescan Panel Data

Nielsen's Homescan panel is a consumer-based group of approximately 125,000 households nationwide that record their retail purchases via an in-home handheld scanner provided by Nielsen. Upon returning home, panelists enter basic shopping trip details into the scanner, then scan each item and enter the price they paid along with any deals/coupons used. The panel is demographically balanced by metropolitan area to match the demographics of the U.S. as closely as possible and the panel's purchases are projected based on their demographics to approximate national sales. The data is rich with insights since the purchase transactions can be linked with the demographics of the household. Table 10 presents an overview of the Homescan data.

Table 10. Nielsen Homescan Panel Data Coverage

Variable	Description
Geography	State and metropolitan region-specific
Retail Channels	All
Time	Monthly, 2005-2007
Inclusion of Price Data	Available at UPC/channel level
ENERGY STAR vs. non-ENERGY STAR	Available at UPC/channel level
Specialty vs. Non-Specialty	Available at UPC/channel level
Other Bulb Type Info	Available at UPC/channel level

The data capture close to 25,000 CFL bulb purchase transactions (each of which involves the purchase of one or more bulbs) by 15,000 unique households per year. This results the primary limitation of Nielsen's Homescan data: it generally underestimates total national sales because the panelists neglect to scan everything they purchase. For most channels, including those of interest to this study, the coverage of projected panelist sales

[35] See: Hoefgen, Lynn. "What the CFL Data in 18seconds.org Really Mean." May 3, 2007.

is typically 60-70% of actual sales.[36] Furthermore, the data set's reliability decreases as it is broken down into more granular levels.

The Homescan panel data is available for purchase at both the transactional and aggregated (by retail channel, time period, geographical, and product line) levels, although due to the expense of the data, the CFL Market Effects Team is not planning to make this purchase.

CFL Market Effects Studies from Other States

As described in Section 2.3 above, the CFL Market Effects Team has reviewed a number of recent CFL market effects studies conducted in other part of the country. This review has already played a crucial role in our decisions about the approaches we plan to take and the data sources we plan to use for the remainder of this study. As the project progresses we will continue to refer to these studies as we refine our methodologies, develop interview guides and surveys, and conduct analyses.

EPA's Annual "National Awareness of ENERGY STAR®" Survey

Since 2000, the Consortium for Energy Efficiency (CEE) has conducted an annual, national survey of household awareness of the ENERGY STAR label. The survey queries consumers about their recognition and understanding of ENERGY STAR label, requests that the consumers self-report their ENERGY STAR-labeled product purchases, asks about the consumers' sources of information about energy-efficient products, and inquires about the value consumers place on the label (i.e., brand equity).

Because CEE has conducted and analyzed the results of the National Awareness of ENERGY STAR Survey for several years, the organization is able to compare how consumers' awareness of the label has changed over time. For example, at a national level, the 2007 Survey has found significant increases in ENERGY STAR label recognition and understanding since the Survey's inception: 74% of household recognized the label in 2007, compared to only 41% in 2000, and 76% had a "high" or "general" understanding of the label in 2007, compared to 37% with a comparable understanding in 2000.

Several utilities, including California's IOUs, have funded over-samples of the survey for their respective service areas. The CFL Market Effects Team will use the results of the California over-samples to inform our understanding of how awareness in the state has changed over time.

To consider the effect of publicity on national awareness, the designated metropolitan areas (DMAs) in the national sample frame are classified by publicity category using the following criteria:

- **High publicity:** Active local ENERGY STAR® program *recently*[37] sponsored by a utility, state agency, or other organization for two or more continuous years. The

[36] To validate the Homescan panel data for the food, drug, and mass merchandiser channels, Nielsen compares its panel data to POS data. To validate the Homescan panel data for the home improvement and club channels, Nielsen compares its panel data to manufacturer shipments (where available).

[37] As defined by the EPA, the two years of activity must include the time of the survey fielding.

activities must include *sustained*[38] promotions and publicity from non-federal activities.

- **Low publicity:** Federal campaign activities only and no *significant*[39] regional program sponsor activities.
- **Other:** All other DMAs.

This categorization has proved helpful in selecting candidate baseline states for the state-to-state comparison analysis (discussed in Section 3 below), as the CFL Market Effects Team was certain to select only "baseline" candidates that fall into the CIEE-designated "low publicity" and "other publicity" areas.

Past Saturation Surveys and Utility Process Evaluations and Market Assessment Studies

As described above, the California IOUs launched their first ULP in 1999 in the context of the state's market transformation mandate. Table 11 below presents a summary of the studies conducted in support of the program from the late 1990s through program year 2005. The early studies collected baseline measurements, with subsequent studies repeating those earlier research efforts to measure market progress and assess the program's market effects. The evaluations conducted from 2002 on included impact evaluation, reflecting the state's focus on resource acquisition in response to the energy crisis of 2001. The table also includes two saturation surveys, which included on-site visits to California households to determine the saturation of energy efficient lighting products and appliances.

Table 11. Prior Program Evaluations and Market Studies

Study Type	Program Name and Year (if applicable) or Study Name	Study Author	Date Study Published	Down-stream Research	Upstream Research
Comprehensive Impact and Process Evaluation	2004/2005 Statewide Residential Retrofit Single-Family Energy Efficiency Rebate Program	Itron Inc. and KEMA Inc.	October 2007	2,511 general population surveys	37 interviews with lighting retailers and manufacturers
Saturation Survey	2005 California Lighting and Appliance Saturation Survey	RLW Analytics	2005	850 on-site surveys	None
Comprehensive Impact and Process Evaluation	2002 Statewide Crosscutting Residential Lighting Program	KEMA-XENERGY and Quantum Consulting	October 2003	1,000 general population surveys	45 interviews with lighting retailers and manufacturers
Phase 4 Market Effects	2001 California Residential Lighting and Appliance Program	KEMA-XENERGY	2002	800 general population surveys	91 lighting retailer mystery shopper surveys

[38] As defined by the EPA, the two years of activity must be continuous.
[39] In addition to any direct federal publicity efforts, publicity efforts must include a deliberate and multifaceted regional program sponsor investment in ENERGY STAR programming, such as direct marketing and promotional efforts.

Study Type	Program Name and Year (if applicable) or Study Name	Study Author	Date Study Published	Down-stream Research	Upstream Research
Phases 2 and 3 Market Effects	2000 California Residential Lighting and Appliance Program	KEMA-XENERGY	2001	None	98 lighting retailer mystery shopper surveys; 50 lighting retailer store manager surveys
Saturation Survey	2000 California Lighting and Appliance Saturation Survey	RLW Analytics	2000	1,250 on-site surveys	None
Phase 1 Market Effects	1998 - 1999 California Residential Lighting and Appliance Program	KEMA-XENERGY	1999	1,350 general population surveys (of which 350 were out-of-state)	95 lighting retailer mystery shopper surveys; 100 lighting retailer store manager surveys (of which 50 were out-of-state)
Market Baseline	CBEE Baseline Study on Public Awareness and Attitudes Towards Energy Efficiency	Hagler Bailly	1999	1,600 general population surveys (of which 600 were out-of-state)	none

As shown in the table, most studies addressed both downstream and upstream market participants. Downstream research consisted of general population surveys, which were intended to address multiple research objectives:

- Measure general population energy efficiency awareness, attitudes, knowledge and behaviors
- Determine general population awareness and purchases of energy efficient lighting products
- Identify recent CFL purchasers to assess CFL purchase behaviors, CFL satisfaction levels, barriers to future purchases, and awareness and effectiveness of program marketing messages and supplier advertisements and point-of-purchase materials

The early market baseline and market effects studies' upstream research focused on lighting retail stores, with surveys of store managers and mystery shopper surveys. Research objectives included the following:

- Awareness of and participation in the program, and for non-participants, reasons for not participating and barriers to future participation
- Assessment of the program's impacts on sales of energy efficient lighting products
- Assessment of the effectiveness of salesperson training
- General feedback on program implementation

Later studies focused on decision-makers at lighting retailers (for national and regional chains, franchise hardware stores and independent stores) and lighting manufacturers. Upstream research objectives were similar to the earlier studies, but with more of an emphasis on incentives and less emphasis on marketing and salesperson training in response to program design changes.

These prior studies provide the CFL Market Effects Team with a wealth of historic data on both upstream and downstream lighting market participants. We expect to combine these prior data with the 2006-2008 program research to provide a rich array of data to support the estimation of cumulative program market effects.

Database for Energy Efficiency Resources (DEER) Assessment and Analysis of Market Evolution

The Database for Energy Efficient Resources (DEER) provides information on the most commonly-installed energy-efficiency measures. This information includes well-documented estimates of peak demand and energy savings, measure costs, and effective useful life at both sector- and building type levels. Co-sponsored by the California Energy Commission and California Public Utilities Commission (CPUC), the DEER database is updated every 3 to 4 years with new savings and cost information. Currently four versions of the database are available, starting with the 1996 version, which was updated in 2001, and later in 2004-05. The most recent version of DEER is has just recently been made available.

The CFL Market Effects Team will examine CFL measure costs, energy and demand savings, and effective useful life values in all of the DEER database versions. From these we may be able to identify time series CFL price and quality trends for use in the pricing analysis discussed in Section 3 below. The team will also compare CFL data for different sectors and building types in the DEER databases in an effort to determine the variations in time series trends across these variables.

Comparing CFL price and efficiency trends over the past decade with other energy efficient lighting measures over the same time period may provide some additional insight into CFL market evolution.

U.S. Department of Commerce Data

The U.S. Department of Commerce collects data each year on the number of CFLs imported into the United States. These annual CFL counts, which the Department of Commerce sells for a nominal fee, do not identify the number of CFLs sold in a given year, provide no granularity for any of the variables of interest to this study, and do not account for the number of CFLs exported from the U.S[40]. Since virtually all CFLs purchased in the U.S. are produced overseas, however, the Department of Commerce counts can be used as a rough guide for verifying the total annual U.S. sales counts derived from other data sources.

[40] Unlike with CFL imports, the U.S. Department of Commerce data set does not include a code to specifically identify CFL exports. Instead, the Department of Commerce has a code that identifies a more generic "lighting" category of exports that is not sufficiently specific to be of use in this study.

2.5.Evolution of the North American CFL Market[41]

The U.S. demand for CFLs had been steadily increasing for more than a decade, growing from 52 million CFLs nationwide in 1994, to 73 million CFLs in 1999, to 96 million in 2004.[42] By some estimates in the popular press, CFL sales soared to 300-350 million in 2007. While the CFL share of all medium screw-based lamps (MSBLs) sold in the U.S. was less than 1% in 1998, it grew to 4.5% in 2005.[43]

In California, not only have program sales steadily climbed over the 1999-2007 time period (see Table 1 above), but the CFL share of all MSBLs has risen significantly from less than 1% in 1998 to 8.7% in 2001, and 11.3% in 2005. The California CFL market has also witnessed other significant changes over the past decade including:

- Awareness of CFLs increased from 68% in the late 1990s to 95% in 2006
- Self-reported household purchase rates for CFLs increased from 35% in 2001 to 65% in 2006
- The range of CFL models produced increased from less than 50 in 1999-2000 to more than 300 in 2006.[44]

Our review of the recent CFL market effects studies conducted elsewhere in North America shows that the CFL markets in other regions have experienced similar changes. For example, Massachusetts witnessed CFL sales grow from 430,000 per year in 2000 to nearly six million in 2005, at which time they accounted for 9.3% of all MSBL sales statewide. In British Columbia, CFLs occupied 13.8% of total MSBL shelf space in late 2006, up from 13.0% in 2005, 10.3% in 2004, and 6.1% in 2002.[45] In addition, several studies have noted declining CFL prices over time. An enhanced summary of the CFL market evolution in North America will be presented in the November 2008 Interim Report.

2.6.Evolution of the International CFL Market

One of the earliest, if not the first, government-sponsored programs to assist in the diffusion of CFLs occurred in 1986 in Sweden.[46] There were at least six campaigns sponsored by Stockholm Energi between 1986 and 1992, distributing approximately 185,000 CFLs. Unfortunately, these early CFLs were of a low quality and did not prove to be satisfactory substitutes for the incandescent bulbs they were supposed to replace. Because the technology was premature, the programs appear to have had a negative effect

[41] Note that this section is a work-in-progress and will be expanded and enhanced for the final CFL Market Effects Scoping Study.
[42] See: Freedonia, 2006.
[43] See: Itron, Inc. "California Residential Efficiency Market Share Tracking: Lamps 2005." An updated version of this report is expected to be released soon and will likely reveal an even higher CFL share of all MSBLs.
[44] See: Itron, Inc. and KEMA, Inc. *2004/2005 Statewide Residential Retrofit Single-Family Energy Efficiency Rebate Evaluation, Final.* October 2, 2007.
[45] See: Sampson Research, 2007.
[46] Bertoldi, P. & Atanasiu, B. "Residential Lighting Consumption and Saving Potential in the Enlarged EU." European Commission – DG Joint Research Centre, Institute for Environment and Sustainability, 2006.

on the Swedish market. This is supported by the fact that the average number of CFLs per household in Sweden today is one of the lowest in the European Union (EU).

Spain's residential CFL program, sponsored by the electric utility Iberdrola, began in 1991 and ended in 1995. Participation in the program exceeded expectations due to the ability of the program sponsor to achieve crucial partnerships with consultants, manufacturers, and financiers. It seems that although Sweden's programs occurred only a few years earlier and were seemingly premature and ineffective at providing a proving ground for the new technology, Spain's program was more effective due to its partnerships and to the planning inputs from consultancies and manufacturers. Germany also ran several programs in the mid to late 1990s to promote CFLs to residential customers.[47] Although most CFL programs in Germany ended before the year 2000, over 500,000 lamps were handed out to households through direct delivery programs. Many of the hand-out programs were accompanied by rebate programs that sought to motivate customer purchases of additional bulbs at a discounted rate. Unfortunately, current German CFL sales information is not available, so an assessment of the sustainability of the German CFL market is not feasible at this time.

From 1999 through 2003 the Efficient Lighting Initiative (ELI) was implemented by the International Finance Corporation (IFC), the private sector investment arm of the World Bank, to increase the adoption of high-quality energy-efficient lighting products in seven countries around the globe. This market transformation program was successfully run for all five years in Argentina, the Czech Republic, Hungary, Latvia, Peru, the Philippines, and South Africa by developing good partnerships with stakeholders such as government agencies, utilities, retailers, manufacturers, and customers. ELI's flexibility enabled each country to implement the program according to its own economic, political, and market conditions (among other factors). Across all countries, the program's emphasis was on public awareness and education; financial incentives (e.g., subsidies, rebates) were offered only in South Africa. Specific examples of ELI's successes included:

- The program's persistence in Argentina, which succeeded in reversing a strong downward trend in CFL sales that resulted from a mid-program economic crisis and currency devaluation.
- ELI played a critical role in reducing the number of cheap CFLs sold on the black market in the Philippines through tariff enforcement and by increasing consumers' awareness about the importance of CFL quality.
- Although South Africa was undergoing rapid electrification and experiencing tremendous growth in its residential appliance market during ELI's implementation, the program succeeded in increasing the demand for CFLs, decreasing the price of high-quality CFLs, and reducing the adoption rate of incandescent lamps.[48]

[47] Ibid.
[48] See Freeman, Luisa, Joseph S. Lopes, Edward Vine, et al.

Several other countries implemented CFL programs in the late 1990s through the early- to mid- 2000s, including Belgium, Brazil, China, France, Ireland, Italy, the Netherlands, Poland, and the United Kingdom. These programs offer discounted or free CFLs to European, African and South American households and have generally been successful in increasing the saturation of CFLs in their respective countries.[49]

Table 12, on the following page, presents a timeline of the CFL programs by year for the countries for which this information is available.

[49] Few details about country-specific increases in CFL saturation are available. However, one source states that although Ireland's program was implemented for just one year (2000), the number of CFLs per household increased from 2.0 to 2.5. See: Ibid.

Table 12. International CFL Programs By Year[50, 51,52]

Country	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Argentina														X	X	X	X	X			
Belgium																			X	X	
Brazil														X	X	X	X	X	X	X	X
China																X	X	X	X	X	
Czech Republic																X	X	X			
Denmark														X	X	X	X	X	X		
Germany									X	X	X	X	X	X							
Hungary														X	X	X	X	X			
Ireland															X						
Italy																X	X	X	X	X	
Latvia														X	X	X	X	X			
Netherlands												X	X	X	X	X	X	X	X	X	X
Peru														X	X	X	X	X			
Philippines														X	X	X	X	X			
South Africa														X	X	X	X	X			
Spain						X	X	X	X	X											
Sweden	X	X	X	X	X	X	X														
United Kingdom									X	X	X	X	X	X	X	X	X	X	X	X	X
United States							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

[50] Bertoldi, P. & Atanasiu, B. "Residential Lighting Consumption and Saving Potential in the Enlarged EU." European Commission – DG Joint Research Centre, Institute for Environment and Sustainability: 2006.

[51] Freeman, Luisa, Joseph S. Lopes, Edward Vine, et. al. "Results from the Efficient Lighting Initiative: Amazing Outcomes and Implications for Market Transformation," Proceedings of the 2004 ACEEE Summer Study, American Council for an Energy-Efficient Economy, Washington, D.C.

[52] Lefèvre, N., de T'Serclaes, P. & Waide, P. "Barriers to Technology Diffusion: The Case of Compact Fluorescent Lamps." Organisation for Economic Co-Operation and Development, International Energy Agency: October 2006.

China manufactures about 80% of the CFLs produced worldwide, over 90% of the CFLs produced by major Asian-producer countries, and is the world's largest CFL exporter. Table 13 shows the number of CFLs produced by major Asian-producer countries.

Table 13. Total CFL Production (in Million Units) by Country for Major Asian Producers[53]

Year	China	India	Indonesia	Philippines	Thailand	Vietnam	Total
2001	750	N/A	10	45	N/A	N/A	805
2002	800	34	40	N/A	N/A	N/A	874
2003	1,040	40	50	N/A	N/A	5	1,135
2004	1,380	46	60	18	N/A	7	1,511
2005	1,760	70	70	24	10	8	1,942
2006	2,400	100	90	N/A	15	11	2,616
Total	8,130	290	320	87	25	32	8,884

Most Chinese-made CFLs are priced at least 30% lower than models produced elsewhere and target low- to mid-range customers. Approximately 95% of Chinese CFL manufacturers are locally-owned companies that operate on a small scale (employ fewer than 100 workers, use minimal quality control, and have an annual capacity of fewer than 3 million units). The remaining five percent of Chinese CFL manufacturers are owned by subsidiaries of major corporations such as Philips, GE, and Osram-Sylvania. These manufacturers generally produce high-quality CFLs and have annual capacities of 30-100 million units. U-shaped lamps account for 60-70% of Chinese CFL exports, spirals account for 20%, and candles and globes make up the remaining 5-10%.[54]

The Cuban market is the second only to the U.S. in terms of the number of CFLs it imports annually. In 2006, China exported 192 million CFLs, worth over $235 million, to Cuba. Cuba disseminates CFLs through a lighting exchange program in which customers receive new CFLs as replacements for their incandescent lamps.

Chinese exports to Australia have also been strong, and increased to 28 million bulbs in 2006. This growth is expected to accelerate as incandescent bulbs are phased out as part of a government effort to reduce emissions.[55]

As discussed in the case of Sweden above, inconsistent and unpredictable CFL quality is a commonly cited issue that has prevented the penetration of CFLs from increasing even more than it already has internationally. Table 14 shows the distribution of CFLs by quality in the major Asian-producing nations, and Table 15 shows the total 2006 production of low quality CFLs for each of these major Asian-producer nations. At the time of this writing, the CFL Market Effects Team has been unable to quantify the percentages of low-quality CFLs destined for domestic sale and for export.

[53] Ibid.
[54] See: Global Sources, China Sourcing Reports, "Compact Fluorescent Lamps," Hong Kong: 2007.

[55] Ibid.

Table 14. Quality Distribution of CFLs by Country for Major Asian Producers[56]

Market Category	Description	China	India	Indonesia	Philippines	Thailand	Vietnam
High Quality - International / Well-Known Brands	Well-known name brands, such as OSRAM, Philips, National/Panasonic, GE, etc., >=6000 hour lifetime; evidence of testing and/or quality registration	15%	N/A	36%	68%	70%	17%
High Quality - National / Not-Well Known Brands	Not well-known name brands, >=6000 hour lifetime, evidence of testing and/or quality registration	30%	N/A	35%		15%	44%
Poor Quality	Not well-known name brands, 3000 - 6000 hour lifetime, little or no evidence of testing	55%	40%	29%	32%	15%	39%
Very Poor Quality	Not well-known name brands, <= 3000 hour lifetime or no claimed lifetime, little or no evidence of testing and/or quality registration, typically US$1 or less in the market						

Table 15. 2006 Annual Production of Total and Low-Quality CFLs by Country for Major Asian Producers[57]

	China	India	Indonesia	Philippines	Thailand	Vietnam
Estimated 2006 Total Production (Million Units)	2,400	136	30	N/A	N/A	13
Estimated % of Low-Quality CFLs	55%	40%	29%	N/A	N/A	39%
Estimated Number of Low Quality CFLs (Million Units)	1,320	54	9	N/A	N/A	5

In response to concerns about low quality, countries such as Australia, Brazil, Ghana, Mexico, Thailand, and China (in addition to the U.S.) have individually instituted minimum energy efficiency standards that require basic safety and quality testing. A label on product packaging is used to inform consumers about products that meet these standards.[58,59]

Globally, one of the most significant efforts to address the CFL quality issue is the International CFL Harmonization Initiative (CFLI) proposed by the Australian Greenhouse Office in May 2005. The CFLI is supported by more than 80 participants from 20 organizations and 13 countries,[60] including (in addition to Australia): China, the U.S., the EU, the Efficient Lighting Initiative, and a number of major lighting manufacturers. CFLI policies address both integrated-

[56] USAID International Response Group, Asia. "Confidence in Quality: Harmonization of CFLs to Help Asia Address Climate Change." Discussion Paper, October 2007.
[57] Ibid.
[58] Lefèvre, N., de T'Serclaes, P. & Waide, P. "Barriers to Technology Diffusion: The Case of Compact Fluorescent Lamps." Organisation for Economic Co-Operation and Development, International Energy Agency: October 2006.
[59] Bertoldi, P. & Atanasiu, B. "Residential Lighting Consumption and Saving Potential in the Enlarged EU." European Commission – DG Joint Research Centre, Institute for Environment and Sustainability: 2006.
[60] Australian Greenhouse Office. "Compact Fluorescent Lamps." Atmosphere/Air Pollution, Case Study No. 2: Accessed 6/20/2008 <http://www.environment.gov.au/commitments/publications/pubs/lamps.pdf>

ballast and pin-based CFLs. Because many manufacturers export lamps to numerous countries around the globe, they are interested in the creation of a universal label to signify that a lamp has successfully passed CFLI testing. As yet unresolved, however, is the issue of a common labeling scheme since EU member nations share one common labeling scheme for CFLs, while the US and Canada share the Energy Star label.

The U.S. has witnessed significant price decreases for CFLs in recent years. While one theory holds that these recent price drops are due to increases in demand (which are potentially attributable to CFL programs), further investigation is needed to verify (or deny) this assertion and to identify and assess other possible causes.

The CFL Market Effect Team expects to present additional insights into the evolution of the international CFL market in the November 2008 interim report.

3. RECOMMENDED CALIFORNIA CFL MARKET EFFECTS APPROACH

3.1. Analysis of Market Effects

The analysis of program-induced market effects will assess the effects of California's CFL programs on retail sales, retail pricing, and other progress indicators. It will consist of a wide range of tasks including: reviewing program tracking data; collecting and analyzing CFL sales data; collecting and analyzing interview and survey data; and collecting and analyzing data from in-store shelf stocking surveys and in-home lighting audits. The analysis will include assessing the market effects "metrics" developed as part of the theory and logic models, a far more comprehensive and rigorous analysis of sales data than that proposed by the Residential Retrofit Evaluation Team as part of the market-based approach to estimating Net-to-Gross, and as described in more detail below, will employ both state-to-state comparison and regression approaches.

Hypothesized market effects include:

- Changes in customer awareness, knowledge, or capability to find and buy and install CFL bulbs.
- Increases in number of manufacturers providing CFLs and or customer demand for CFLs, which leads to lower prices and higher sales: a reinforcing loop.
- Increases in the number of stores and channels offering CFLs to the public.
- Changes in overall product quality through use of energy star label.
- Changes in the breadth of CFL bulb types or functionality suited for different lighting tasks.

3.1.1. Market Effects of CFL Retail Sales

3.1.1.1. Analysis of Current Retail CFL Sales Patterns in CA and Elsewhere in the U.S. (Task 1)

In order to understand the potential market effects of California's CFL programs on retail sales, one must be able to develop reliable estimates of both current and baseline sales in the absence of programs (i.e., what would have happened: a dynamic baseline rather than a pre-post measurement). The discussion in this section is focused on the analysis of current (i.e., 2006-08 programs) CFL sales patterns; baseline CFL sales patterns are discussed in the next section.

Direct program sales of CFLs can be derived from program tracking data bases, but more complex approaches are required to estimate the total (program plus non-program) sales. The CFL Market Effects Team plans to make use of many of the data sources described in Section 2, and to supplement these by purchasing additional POS data and by conducting a number of primary data collection efforts We will combine and triangulate the results of the program tracking data analysis, sales data analysis, and primary data collection activities to develop current retail sales estimates for California and for other regions of the U.S. A discussion of each of these approaches follows.

Analysis of Program Tracking Data (Task 1A)

The first step is analyzing current (2006-08 IOU programs') retail sales in California will be to review the program tracking data. Although this was largely completed during the Scoping Study, the CFL Market Effects Team had questions about some of the IOU program data that we will attempt to have answered/clarified as part of this task.

We will also collect more information about the programs offered by non-IOUs—including the large, the mid-sized, and the compact utilities—than was collected during the Scoping Study. This will allow us to more accurately estimate the total (aggregated) number of CFLs distributed through *all* utilities during the 2006-07 program years.

Analysis of POS/EPA Sales Data (Task 1B)

Based on our assessment of the data sources described in Section 2, the CFL Market Effects Team has concluded that combining the EPA ENERGY STAR Partner sales data with the POS sales data will produce the best secondary data source for analyzing current (and baseline, as discussed below) CFL sales.[61] The CFL Market Effects Team has been working closely with the collectors of both the POS Scanner data and the EPA ENERGY STAR data to ensure the two data sets can be successfully merged. For example, while our initial assessment indicates that there may be some overlap of retailers in the mass merchandiser channel between the POS Scanner data and the EPA ENERGY STAR data, the data exist at a granular enough level that the CFL Market Effects Team will be able to remove the overlapping data when the data sets are combined. An additional advantage of both the EPA ENERGY STAR and the POS sales data is that both data sets are available free of charge for this study.

Data from several of the other sources, namely CFL market effects studies in other states, EPA's annual national ENERGY STAR awareness study, past saturation surveys, utility process evaluations and market assessment studies, the DEER database, and U.S. Department of Commerce data will be used to provide historical (pre-2006) CFL sales information, to validate/triangulate the results of the merged EPA-POS data set, and to inform some of the analyses discussed below.

Taken together, all of these data will provide significantly improved coverage of the current (and historical) CFL market in California and other regions of the U.S. Nonetheless, several significant gaps will remain. Table 16, on the following page, summarizes the coverage obtained by the combined data set as well as the remaining gaps.

[61] The CFL Market Effects team notes, however, that there are a number of questions about several aspects of both the POS and EPA data. Due to these questions, the team's approach to estimating both current and baseline sales will rely predominately on information gathered through the primary data collection activities described in subsequent tasks.

Table 16. Combined EPA ENERGY STAR Data-POS Scanner Data (with supplementation from other sources)

Variable	Description	Gaps Remaining
Geography	CA vs. rest of US for food and drug; by 4 national regions for small hardware; by state and MSA for club, DIY, and mass merchandisers	State-specific food, drug, dollar, and small hardware
Retail Channels	Large food and drug stores, mass merchandisers, most of DIY and club	Small, independent grocers and drug retailers, one major club retailer, and one major DIY retailer
Time	1998 -2007, by month for food, drug, and most mass merchandisers; 2007 (Q1-Q2) for DIY, club, and mass merchandiser	Pre-2007 data for club, DIY, and 1 mass merchandiser; all 2008 data
Inclusion of Price Data	Available at UPC/channel level for food, drug, and most mass merchandisers	Not available for club, DIY, and 1 mass merchandiser
ENERGY STAR vs. non-ENERGY STAR	Available by state for some club, DIY, and 1 mass merchandiser; available by UPC/channel for food, drug, and most mass merchandisers	Some club, DIY, and mass merchandisers
Specialty vs. Non-Specialty	Available at UPC/channel level for food, drug, and most mass merchandisers	Not available for club, DIY, and 1 mass merchandiser
Other Bulb Type Info	Available at UPC/channel level for food, drug, and most mass merchandisers	Not available for club, DIY, and 1 mass merchandiser

Additional Nielsen POS Scanner Data

The CFL Market Effects Team has discussed the gaps listed above with The Nielsen Company and has received a quote (that has been included in the CFL Market Effects budget) for purchasing additional data that will provide state-level food, drug, and mass merchandiser information for use in the comparison state analysis (discussed in detail below).

CFL User Survey (Task 1C)

As explained earlier, a key part of assessing the market effects of the California CFL programs is to establish a dynamic baseline: what would have happened in the absence of the programs. While not perfect, the CFL markets in states without programs can provide an approximation of such a baseline, albeit without consideration of the effects of the California programs on those other states' markets.

One way the CFL Market Effects Team proposes to assess the markets in these other states compared to California is to conduct telephone surveys of residents. The team proposes to conduct random-digit dial (RDD) surveys among representative samples of 400 households in Georgia, 400 in Kansas, and 400 in Pennsylvania;[62] a separate survey of over 500 California

[62] The selection of these comparison states is presented below.

households is being conducted as part of the Residential Retrofit impact evaluation. Questions to be asked in these surveys include the following:

- Familiarity with CFLs
- Number of CFLs currently installed in the home
- Price(s) of recently purchased CFLs
- Whether they have ever used CFLs
- Whether they have removed CFLs, if so why, and what happened to them
- Number of CFLs currently in storage, and when they are expected to be installed
- Number of years ago they first tried CFLs
- Whether or not they have any concerns about use or disposal of CFLs, and if so what
- Whether or not they have disposed of any CFLs and, if so, how
- Perceptions of CFLs on various aspects:
    - Overall
    - Dimming capability
    - 3-way switching capability
    - Light color
    - Brightness
    - Having a constant light output—no flickering
    - Immediate start-up—no delays
    - Fit in fixture
    - Look in light fixture
    - Long bulb life
    - Purchase price
- Number of incandescent, or regular light bulbs, purchased in 3-month study period
- Number of CFLs purchased in 3-month study period
- Number of other types of bulbs (incandescent, halogen) purchased in 3-month study period
- Store types where they bought incandescent bulbs
- Store names and locations where they bought CFLs, by number of CFLs in package and price of package
- How many recently purchased CFLs are currently installed
- Why the others are not installed—what they intend to do with them
- Familiarity with the ENERGY STAR label
- What does the ENERGY STAR label mean in regard to lighting
- Is ENERGY STAR lighting better, worse, or about the same as lighting without the label
- General familiarity with LED lights

- Familiarity with LED holiday lights and with other specific types of LED lamps, fixtures, and bulbs
- Whether any LEDs are currently in use and, if so, what type(s)
- Environmental awareness questions
- Demographics
- Recruitment for onsite visits

Many of the above questions, such as familiarity with and perceptions of CFLs, correspond directly to indicators outlined in the program theory, which may be compared between California and the other states to help establish patterns of market effects. Deriving estimates of CFLs purchased for purposes of estimating a baseline will depend on various questions. In addition to using the survey for direct measurement of indicators, the CFL Market Effects Team will also use the responses about stores where CFLs are purchased to develop samples of retailers for the shelf stocking studies in comparison states (see below).

In-Home Lighting Audit (Task 1D)

It is possible that residents of non-program states, as well as some California residents, will not be aware enough of CFLs to reliably report how many they have and how many they have purchased. To validate reported purchases, therefore, the CFL Market Effects Team proposes to visit 70 households reporting CFL purchases in the past three months in each of the comparison states and in California. The team will recruit households for these on-site visits while conducting the CFL User Survey.

While at respondents' homes, the CFL Market Effects auditor will verify the following:

- The total number of CFLs currently installed in the home
- The number of CFLs purchased during the past three months that are currently installed
- The total number of CFLs currently in storage in the home
- The number of CFLs purchased during the past three months that are currently in storage
- The total number of medium screw-based light sockets in the home

Based on the observed counts, the CFL Market Effects Team will calibrate estimates of recent CFL purchases, CFLs currently installed, and CFLs in storage from the CFL User Survey, which may be compared with similar estimates from California. The team will also use the on-site visits to estimate saturation of CFLs out of all eligible sockets, which may also be compared with estimates from California. Saturation represents the cumulative effects of CFL purchases over the years, although it must be interpreted with caution given the ongoing removal of CFLs.

Shelf Stocking Study (Task 1E)

The CFL Market Effects Team will conduct in-store visits as another way to estimate CFL sales in California and the comparison states. In California, the team will visit 40 stores as a supplemental sample to the stores being visited as part of the Residential Retrofit impact evaluation. In each of the three comparison states, the team will also visit 40 stores. To develop

the sample of stores, the team will rely on the results of the CFL User Survey, determining how many CFLs and other bulb types respondents in each state have bought at each store type (retail channel), and selecting stores to visit that will represent that mix. Because the team will be visiting only a limited number of stores per state, some weighting will be necessary—based on the number of stores in each category listed in Dun & Bradstreet or InfoUSA—but this approach will keep weighting to a minimum. Likely store types include:

- Grocery stores
- Price Clubs such as Costco
- Home Depot (separate category)
- Lowe's (separate category)
- Other home improvement stores
- Hardware stores
- Wal-Mart (separate category)
- Other mass merchandise or discount department stores such as Kmart or Staples
- Drug stores such as Walgreens
- Convenience stores such as Seven-Eleven
- Specialty lighting or electrical stores
- Home furnishing stores such as a Bed, Bath and Beyond or Pottery Barn
- Bargain stores such as the Christmas Tree Shop or Family Dollar

To begin each store audit, the auditor will ask each store manager if we could have, under strict confidentiality, the electronic sales records of all bulb sales during the study period. In addition, the auditor will record:

- Types of bulbs sold
- Presence of end cap displays for CFLs
- Types of CFL promotional materials present
- Whether a CFL promotion is occurring, and if so type of signage
- Location of CFLs in relation other types of bulbs
- Location of promoted CFLs in relation to other types of bulbs
- Inventory of CFLs, including:
    - CFL style:
        Spiral
        A-bulb
        Flood
        Globe
        Candelabra

Spiral 3-way
Flood dimmable
Bullet
Bug light
Torpedo
Circline
A-bulb 3-way
Torpedo candelabra
Double tube
Quad tube
Triple tube
Spiral dimmable
Torpedo dimmable
Single tube

- Manufacturer
- Model number
- Location
- Quantity in pack
- Number of packs (of that model) on the shelf
- Price per package (before discount or sale)
- Discount amount (if discount provided)

Sale price (if on sale)
Wattage
Lumens
Rated life
ENERGY STAR label on package

- Inventory of incandescent and other bulbs, including:
  - Bulb type (incandescent, halogen, etc.)
  - Bulb style (flood, 3-way, etc.)
  - Manufacturer
  - Model number
  - Location (aisle, endcap, other)
  - Quantity in pack
  - Number of packs (of that model) on the shelf
  - Price per package (before discount or sale)
  - Discount amount (if discount provided)
  - Sale price (if on sale)
  - Wattage
  - Lumens
  - Rated life

In turn, after counting the number of packages of each unique type, we will ask the store manager to estimate how long it would take to sell out that number of packages in the spring,

summer, fall, and winter, and how long it would take to restock each package type. On that basis we will estimate the annual sales of each package type at that store, validated when possible by electronic sales data from the store, or by sales data for that store from the EPA data set. We will then project the sales estimates for individual stores to the population of stores in the state based on Dun & Bradstreet or InfoUSA data. This will provide a baseline sales estimate to compare to the estimate for California.

The retail in-store audits will also provide information on CFL pricing to compare between California and the other states, and to determine whether the incentives paid by utilities appears to be applied 100% to each individual package, applied across CFL types from a given manufacturer, or incompletely applied to the prices paid by California consumers.

Customer Intercept Surveys (Task 1F)

As part of the Residential Retrofit evaluation, we are conducting point-of-sale research with consumers purchasing lighting products at participating retailers throughout California. The research has been designed such that trained researchers "intercept" consumers after they have made a lighting purchase decision and recruit them to participate in a brief, in-aisle survey. Consumers are recruited immediately following their decision to purchase a particular light bulb (i.e., after they have placed it in their shopping cart or basket). This positioning and timing enables the researcher to discuss the range of available light bulbs in a particular store with a consumer who has just selected from among those products.

One of the key advantages of this research is that it allows an accurate identification of 'program participants' (i.e., purchasers of IOU-discounted CFLs) and, as such, it provides a rare opportunity for exploring how important the discount (and IOU sponsorship) was in influencing the specific purchase decision. This research will also provide for the most meaningful exploration of the various other factors that may influence a consumer's specific CFL purchase decisions, as well as their decisions to not purchase CFLs, such as prior awareness and experience, in-store displays and other promotional materials, product placement and accessibility, and so on. Finally, conducting research in the actual stores that are participating in the program (i.e., selling discounted CFLs) allows for examination of how the influences on purchasing decisions vary by retail channel. These insights will be useful in both the assessment of direct program impacts as well as market effects.

In addition, a limited stocking survey will also be administered while conducting the intercept research. This survey provides an inventory of all CFL and incandescent bulb models available in the store within a specified range of wattage and styles as well as some other details about the store's lighting product display and signage. As discussed in Section 3.1.1.1.5, we plan to expand this stocking survey as part of the CFL Market Effects study to provide more comprehensive data that can be used to assess CFL sales patterns.

Current plans call for conducting a total of 1,200 intercept surveys at approximately 240 retail stores throughout California. This research will be conducted in three waves (Summer 2008, Fall 2008, and Winter 2009), with 400 intercepts completed at 80 stores during each wave.

Analysis of Upstream Market Actor Interviews (Task 1G)

Another key data collection activity that will provide valuable information for the analysis of current and historical retail CFL sales patterns, as well as CFL pricing trends, is the upstream market actor interviews. As part of the Residential Retrofit evaluation, we were planning to conduct in-depth interviews with representatives from upstream market actors (manufacturers and retailers) to assess direct program impacts. The CFL Market Effects Team has added a number of questions to the manufacturer and retailer in-depth interview guide to explicitly address market effects. The key issues that will be addressed through the manufacturer and retailer in-depth interviews include:

- Program participation characteristics, motivation
- Sales data request, program sales confirmation
- Recent program trends and policies
- Free ridership assessment
- Spillover, other market effects assessment
- Supply chain characterization
- Stocking practices (retailers only)
- Program leakage assessment
- Pricing practices
- Market characterization (market share, policies, global sales)
- Product quality, recycling
- Program satisfaction

Manufacturer and Retailer Participation

A total of 25 different manufacturers supplied the more than 50 million CFLs rebated through the 2006-2007 ULP. Table 17 lists manufacturers that have participated in the program, as well as their share of program sales (rebated units) through 2007.

Table 17. Distribution of Rebated CFLs by Manufacturer (Upstream Lighting Program, 2006-2007)

Manufacturer	Percent of Units Rebated
Manufacturer A	18%
Manufacturer B	18%
Manufacturer C	9%
Manufacturer D	8%
Manufacturer E	8%
Manufacturer F	6%
Manufacturer G	4%
Manufacturer H	4%
Manufacturer I	4%
Manufacturer J	4%

Manufacturer	Percent of Units Rebated
Manufacturer K	3%
Manufacturer L	3%
Manufacturer M	2%
Manufacturer N	2%
Manufacturer O	2%
Manufacturer P	1%
Manufacturer Q	1%
Manufacturer R	1%
Manufacturer S	1%
Manufacturer T	1%
Manufacturer U	1%
Manufacturer V	<1%
Manufacturer W	<1%
Manufacturer X	<1%
Manufacturer Y	<1%

Participation among retailers in California has been fairly widespread. As shown in Table 18, 34% of the CFLs rebated during 2006-2007 were distributed through grocery stores, 15% were distributed through discount stores, and 9% were distributed through drug stores. While a few large, national chains accounted for a sizable share of these distributions, the majority of the sales in the grocery channel are accounted for in many small, local chains and independent stores.

Club/membership stores, such as Costco and Sam's Club, accounted for 21% of the rebated units distributed. Big box general merchandise stores such as Wal-Mart accounted for 5%.

Due at least in part to the IOU programs' recent emphasis on smaller retailers, only 8% of the rebated units during 2006-2007 were distributed through large home improvement stores, such as Home Depot, Lowe's and Orchard Supply. A similar percentage (6%) was distributed through dozens of small hardware stores.

Table 18. Distribution of Rebated CFLs by Retailer (Upstream Lighting Program, (2006-2007)

Channel	Percent of Units Rebated
Big Box/General Merchandise	5%
Club/Membership	21%
Discount	15%
Drug	9%
Grocery	34%
Large Home Improvement	8%
Lighting & Electronics	2%
Small Hardware	6%
Other	<1%

Approximately 100 retailers account for more than 85% of the rebated units through 2007. This includes most of the large, national chains as well as many of the smaller, local chains and independent stores that have accounted for significant sales through the program.

Sample Design

The sample design for the Residential Retrofit evaluation calls for 75 in-depth interviews with participating manufacturers and retailers, conducted over three periods (summer 2008, fall 2008, and spring 2009). These interviews will be distributed as described in Table 19. Manufacturer and retailer interview guides, including a mapping of the questions to topic areas, are included in Appendix C and Appendix D.

Table 19. Sample Design for CFL Manufacturer and Retailer In-depth Interviews

	Residential Retrofit EM&V			CFL Market Effects	
	Summer 2008	Fall-Winter 2008	Spring 2009	California	Other States (per state)
Manufacturers					
Participating	20	20	20	NA[63]	NA
Non-participating	5	5	5		
Retailers					
Large/National					
Participating	25	25	25	20	0
Non-participating	0	0	0	5	5
Small/Independent					
Participating	100	100	100	0	0
Non-participating	0	0	0	50	100

For the CFL Market Effects Study, we are planning to conduct up to five additional manufacturer interviews with major manufacturers who are not participating in California's programs and who will not be interviewed as part of the Residential Retrofit evaluation effort.

We are also planning to conduct additional retailer interviews as part of the CFL Market Effects Study. We expect to conduct an additional 30 interviews with representatives from participating and non-participating large and/or national chains. In some cases, we will be interviewing a different individual within the retailer organization to address issues that are more relevant to the market effects analysis (e.g., cumulative market effects, global sales, sustainability). In other cases, we will be interviewing representatives with knowledge about CFL sales in different states. For some states, there may be somewhat different players in the large/national chain market and these will need to be included.

While the sample size for small and/or independent participating retailers in California should be sufficient for both direct impacts as well as market effects analysis, we will need to conduct interviews with non-participating small/independent retailers in California as well as with non-participating retailers in the comparison states. These additional 50 interviews with California retailers and 100 interviews with out-of-state retailers will all be conducted by telephone.

3.1.1.2. Analysis of Baseline Retail CFL Sales Patterns in CA

In theory, market effects can be measured through analysis of the difference between total energy-efficiency market share realized in the presence of a program and the market share that would have occurred in absence of any program activities. As noted earlier, the evaluation

[63] Since the manufacturers who will be interviewed sell CFLs in multiple states, they are not solely affiliated with California (nor are they solely affiliated with one or more of the comparison states). The NAs shown in the table are intended to indicate the manufacturers' lack of state-specific affiliation.

protocols limit analysis to impacts directly attributable (net of free ridership) to the California IOUs. In Figure 4, which illustrates the calculation of program impacts and market effects, directly attributable impacts would be based on the difference between the lower and middle lines. However, should market effects (e.g., non-participant spillover) exist, the actual savings should be the difference between the upper and lower lines.[64]

Given external influences on the CFL market, including a Wal-Mart initiative to double its sales of CFLs, promotion of CFLs by the popular press as a strategy for individuals to address climate change, and the recently passed Energy Bill requiring more efficient lighting beginning in 2012, it is clear a that number of important other factors are influencing and will continue to influence CFL sales in future years. The baseline sales estimates, therefore, will be critical for also assessing the importance of these other influencing factors.

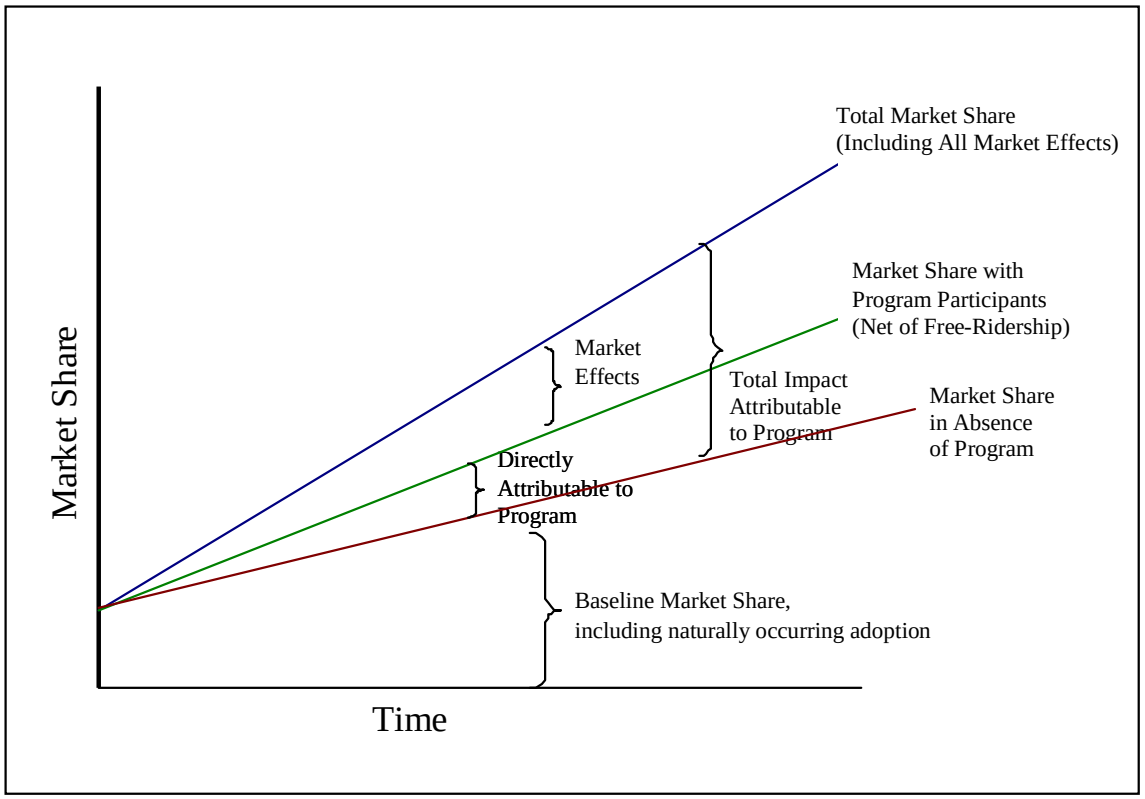
There are at least three approaches to estimating baseline sales:

- Examining sales per household in a group of comparison states that do not offer CFL programs;
- Developing a regression model to predict sales per household as a function of program activity and other influencing factors;
- Selecting a set of retailers and comparing California sales to sales in comparable metropolitan areas that do not have programs.

More detail on each of these approaches is presented in Figure 4, on the following page.

[64] In order to avoid double counting, the analysis will subtract any known CFL sales already being claimed through the other programs, including those from municipalities and non-retail programs.

Figure 4. Calculation of Market Effects on CFL Sales[65]



Comparison State Approach (Task 2A)

The primary approach for estimating baseline CFL sales in California will be to examine per household CFL sales for a comparison group of states that do not have utility or government sponsored programs to promote CFLs. The presumption is that the CFL sales in these states approximate what sales would have been in California in absence of the CFL programs.[66]

The selection of the comparison states will be based on a mix of socio-economic indicators, as well as other variables that might impact CFL sales, including:

- Median household income and education levels (% graduated from college) comparable to those in California;
- Alternative socio-economic indicators that are comparable to California (e.g., political affiliation, "eco-consciousness index," English speaking households, foreign-born, percent below poverty line, white/non-white);
- There are no utility or government-sponsored CFL promotional programs;

[65] Note that this graph (including the magnitudes and slopes of the lines) was developed for illustrative purposes only. In fact, it is possible that some or all market effects could be negative; in the extreme case in which all market effects were negative, the "Total Market Share" line could be below the "Market Share in Absence of Program" line. The CFL Market Effects Team has elaborated on potential negative market effects and our plan for addressing them in a memorandum to the CPUC dated September 17, 2008.

[66] Note that all programs that promote CFLs, including the ULPs and Marketing and Outreach campaigns, influence sales of CFLs. Methods for parsing out the impacts of these two major efforts are discussed below.

- Saturation of influential CFL retailers (e.g., square feet of Wal-Mart per capita) is comparable to California

This approach has been implemented successfully in recent evaluations of programs in Wisconsin and Massachusetts. The primary shortcoming of using this methodology is that no single state really directly compares with California, which is often considered a country unto itself when examining its size (land area is third in U.S.), population (first in U.S.), economy (first in U.S. and between seventh and tenth in the world depending on sources), resources (oil, gas, minerals, tourism etc) and politics. In fact, economic studies often compare California to other countries instead of states since it has such a large economy. To mitigate this issue, a comparison group of states – as opposed to a single comparison state – will be selected. A second shortcoming of the comparison state approach is that California sales may spill over into neighboring states because of regional ordering patterns.

Initial Selection of Comparison States

As part of the scoping study, an initial selection of comparison states was examined. U.S. Census Bureau data was used for socio-economic indicators, with the most current available data being the 2006 American Community Survey. This data set provided information on households, population, income, and education on a state-by-state basis. The percent of the state population that are college graduates was used as a proxy variable for education. Median income was used as the economic indicator variable. All major big-box / retailer data was gathered from publicly available company-level websites and SEC filings (10-K filings in particular). The existence of a CFL program was collected from the Residential Lighting Programs National Summary prepared by Consortium for Energy Efficiency in September 2007. North Carolina State University's Database of State Incentives for Renewables and Efficiency (DSIRE.org) website and state-and utility-level programs found on the web were also used to verify program activity by state.

Additional demographic data collected from the 2006 American Community Survey were median age, percent English not primary language, percent foreign born, percent below the poverty line, and percent white. State-level political affiliation was calculated by using the 2004 presidential election results (http://www.cnn.com/ELECTION/2004) and the political affiliation of the 2004 state legislature elections (http://www.ncsl.org).

To rank the states according to income and education, an income/education index ranking was created. The first step was to calculate the absolute value of the difference between the reference California values and each state's values. These values were then ranked—sorted by ascending order—and were then weighted equally ((income rank*0.5) + (education rank*0.5)) in order to rank the states in order of similarity. The preliminary results from the income/education index are below in Table 20. The top four candidates are currently Georgia, Kansas, and Pennsylvania.[67] The final selection of comparison states will also be based on an examination of the other variables mentioned above, including alternative socio-economic variables and saturation of major CFL retailers.

[67] The analysis assumes that Delaware is too small (and the population is likely to shop in neighboring states), and that Alaska and Hawaii, lying outside the contiguous United States, contain unique characteristics that make them less suitable as comparison states.

Table 20. Top 20 States according to Income/Education Index

State Abbrev	Number of Households	Population	Income Rank	College Rank	Ranking: Combined	CFL Program(s)?	Ttl Wal-Mart SqFt/HH
CA	12,151,227	36,249,872					1.94
IL	4,724,252	12,777,042	4	1	2.5	Y	4.82
RI	405,627	1,061,641	2	4	3.0	Y	2.98
WA	2,471,912	6,374,910	3	7	5.0	Y	2.81
MN	2,042,297	5,154,586	6	6	6.0	Y	4.66
DE	320,110	852,747	5	10	7.5		3.98
HI	432,632	1,278,635	13	5	9.0		NA
UT	814,028	2,579,535	16	2	9.0	Y	7.98
NY	7,088,376	19,281,988	8	13	10.5	Y	2.10
AK	229,878	677,450	12	11	11.5		NA
KS	1,208,765	2,755,817	21	2	11.5		8.33
VA	2,905,071	7,640,249	7	23	15.0	Y	5.57
NE	700,888	1,763,765	20	11	15.5	Y	7.68
OR	1,449,662	3,691,084	24	7	15.5	Y	2.83
VT	253,808	620,778	14	17	15.5	Y	1.59
NH	504,503	1,311,821	18	15	16.5	Y	7.40
CO	1,846,988	4,766,248	1	33	17.0	Y	6.57
PA	4,845,603	12,402,817	15	20	17.5		4.46
WI	2,230,060	5,572,660	11	24	17.5	Y	6.03
GA	3,376,763	9,342,080	23	14	18.5		7.45
ND	272,352	637,460	28	17	22.5		6.93

Estimating Sales in Comparison States

Each of the selected comparison states will receive a comprehensive mix of primary and secondary data analysis to estimate CFL sales, closely replicating the approach in California. Data sources will include:

- Combining the POS and EPA data
- Conducting an RDD CFL User telephone survey with 400 residential customers per state
- A validation site visit with 70 telephone survey respondents per state
- Stocking surveys and manager interviews at 40 retailers in each state

As noted above, the per-household CFL sales will be examined and compared to California during the same period (2007). The CFL sales for the comparison states, which are influenced by the presence of retailer promotions (e.g., the Wal-Mart initiative), national campaigns (e.g., Change a Light, Change the World), the increasing interest in climate change and "green" products, and other potential influencing factors on CFL sales, still lack the influence of utility CFL programs. The CFL sales in these states, therefore, are assumed to represent what sales would have been in California in absence of any utility programs and, thus, serve as a baseline estimate of CFL sales.

Regression Model Approach (Task 2B)

Another approach for estimating baseline sales is the use of a regression model. The concept is that CFL sales can be predicated as a function of a comprehensive list of explanatory variables, including the level of program activity, socio-economic characteristics, energy prices, population center distribution (urban/suburban/rural), and other variables.

As an example in the formula below, *S* is the number of CFLs per household, *X is* a vector of demographic, economic and environmental characteristics affecting high-efficiency sales, and *Z* is a vector of program activities affecting sales. The number of CFL sales per household in area *i* is:

$$S_i = F(Z_i, X_i) = \frac{e^{\alpha + Z_i\Theta + X_i B}}{(1 + e^{\alpha + Z_i\Theta + X_i B})}$$

where α, θ, and β are coefficients to be estimated and indicate how incentives and demographic, environmental, and economic characteristics affect CFL sales. The vector Z_i includes program variables such as:[68]

- Upstream: A dummy variable (1=YES, 0=NO) indicating whether incentives were offered to retailers/manufacturers.
- Value: Total dollar value of CFL incentives paid, per capita, to promote CFL sales
- Marketing and Outreach: Level of marketing and outreach campaigns to promote CFLs
- Years of activity: Number of years that CFL programs have been running

X_i includes the environmental, demographic, and socio-economic variables such as:

- Income: Median income.
- College: The percentage of adults who are college-educated.
- Urban: The percentage of population living in urban areas.
- Employment: Average unemployment rate.
- Wal-Mart: Saturation of Wal-Mart (square footage per capita)
- DIY: Saturation of large do-it-yourself retailers (e.g., Home Depot and Lowes)

The primary advantage of the regression based approach is that it can control for a comprehensive list of factors that can impact CFL sales. In addition, the regression model approach can explore alternative scenarios, identifying best practices for program design and the most effective program features for increasing CFL sales. This component supports forward looking program design and provides administrators with information on optimal incentive levels, incentive structures, marketing techniques, and other program features.

The primary limitation of the regression based approach, however, is that it requires estimates of CFL sales for as many states as possible. The cost of collecting primary data on CFL sales for all states is prohibitive, and the POS data offer limited coverage (at a high cost) for all states, so the

[68] Note these are examples of explanatory variables that will be explored in developing the model.

model will have to rely on secondary sources, notably the EPA data.[69] Due to the data limitations, the CFL Market Effects Team proposes to use the regression based approach solely as a supplement to the comparison state based approach.

Store-to-Store Comparison Approach

The third approach to estimating baseline sales is to compare CFL sales for a selected retail chain or set of chains both in California and a set of carefully matched stores both in and out of California. Advantages of this approach, identified in the CIEE Study Plan, are that it may provide data over a period of years (depending on the cooperativeness of the retailers) and, by providing data in multiple states, it helps to balance out the exogenous (non-program) variables that impact CFL sales.

While the store-to-store comparison offers a potential approach to estimating baseline sales, the CFL Market Effects Team has selected not to pursue this approach for a number of reasons:

- ***Retailer store sales vary dramatically based on socio-economic variables and other factors.*** Retailer CFL sales will vary dramatically between stores based not only on program activity, but on the socio-demographics and other variables presented above. The process of matching stores is problematic, particularly without the use of a regression model that can control for as many variables as possible.
- ***The product market share will vary dramatically by state.*** The ULP in California has made tremendous progress in promoting CFL sales in distribution channels that have historically had low CFL sales, including grocery stores and bargain (e.g., dollar) stores. These sales may be "cannibalizing" CFL sales from some of the larger national retailers in California, thus leading to lower estimates of CFL sales for some of the large national chains (e.g., Home Depot or Lowes) in California when compared to similar stores elsewhere.

Comparison of Results to Those from Studies in Other Regions (Task 10)

A final method of assessing the baseline for retail CFL sales in California will be to review the baseline sales developed through CFL market effects studies in other regions. While the baselines developed elsewhere may not be directly applicable to California, they should provide some useful points of comparison.

3.1.1.3. Analysis of Cumulative Effects of Programs on Historical Retail Sales (Task 3)

The CFL Market Effects Team will compile a database of CFL sales in California and for comparison region(s) from 1998 through 2005. We plan to carefully review the California IOUs' historic and current CFL program logic models and to draw on a number of data sources including:

- IOU Lighting Program tracking data from 1998 to 2008
- Residential Market Segment Tracking Studies from 1999 to 2008

[69] Although the Nielsen Company and Activant offer POS data for CFL sales by state, the data are both costly and there is some question regarding the accuracy of the data at the state level.

- CFL market effects studies conducted in other states/regions of the U.S.[70]
- Informal studies performed in-house by the IOUs to track their programs' progress[71]

The team's experience in obtaining and analyzing these data will be crucial to this task, as we expect there will be many deficiencies in the data and inconsistencies across sources.

In analyzing the cumulative effects of the IOUs' programs on historical CFL sales we will also use information gleaned from this study's manufacturer and retailer interviews, past saturation surveys, program evaluations, and market assessment studies, and—to the extent possible—international CFL manufacturing and sales trends.

The resulting database will be used to provide a quantitative assessment of the potential of the cumulative market effects of utility programs run over the last decade.

3.1.1.4. Leveraging Marketing and Outreach (M&O) Evaluation Activities (Task 4)

The objectives of the statewide M&O evaluation are twofold: first, to assess the attitudinal and behavioral impacts of the statewide umbrella marketing campaigns that support California's 2006-08 energy efficiency programs, and second to gain an understanding of the effect of these marketing efforts on individual programs, including California's CFL programs.

However, as described in the CIEE CFL Market Effects Study Plan, the timeframe for the M&O study does not directly overlap the timing of the CFL Market Effects study. The former is intended to assess the effects of the statewide marketing campaign implemented during 2006-08, while the latter is intended to assess the market effects that manifest themselves in the 2006-08 timeframe but are likely to have been caused by programs implemented in previous years.

Nevertheless, the M&O evaluation may help determine the role that the statewide marketing has played in generating market effects beyond those generated directly by the CFL programs. Assuming that statewide marketing has caused significant effects, the M&O evaluation could also help determine whether statewide marketing is currently continuing to contribute to market effects or whether changes in the market have become self-sustaining. The integration of the M&O evaluation results with the CFL market effects study may be an area for future research.

Based on several conference calls with the M&O Evaluation Team, the CFL Market Effects Team has identified two of the M&O Team's planned activities on which we can collaborate through the current study:

- ***Structural equation modeling (SEM)***, through which the M&O Team seeks to gain an understanding of the behavioral and other impacts of both the umbrella marketing program and the CFL lighting programs. The CFL Market Effects Team will provide input to the M&O Team as the SEM analysis progresses.

[70] A summary of recent CFL Market effects studies is provided in Section 2 above.
[71] The existence of these informal studies was suggested by one of the IOU's program managers during the course of CFL Market Effects Team's Scoping Study interviews. These studies may contain historical data going back in time to the early 1990s. Such data, however, is expected to provide estimates only—it will not be able to be independently corroborated.

- ***A large-scale RDD survey*** that tracks changes in awareness and behavior in California and one or more comparison states.[72] Working collaboratively, the CFL Market Effects and M&O Teams have agreed that this RDD survey will include questions about CFL awareness and purchase decisions. To date, the two teams have worked together to ensure that the M&O survey wording (for CFL-related questions) is consistent with that used in the Residential Retrofit evaluation surveys.

  The literature and work conducted in other (non-energy) fields suggests that social networks may implicitly contribute to market effects by playing a valuable role in the diffusion of information and technologies. To gain some initial insight into the importance of social networks in the diffusion of CFLs, and to explore whether an in-depth social network analysis may be warranted in the future, the CFL Market Effects and M&O Teams have also discussed including questions about social networks in consumers' CFL purchase decisions as part of this M&O survey.

3.1.2. Program-Induced Market Effects on CFL Retail Pricing (Task 5)

In addition to examining market effects on sales, the study will also examine market effects on the retail pricing of CFLs. There are a number of questions of interest concerning the retail prices of CFLs, including:

- What is the magnitude of the "multiplier" effect of manufacturer rebates on retail prices? (i.e., do the manufacturer incentives lead to higher, lower, or equivalent discounts on the retailer shelf?)
- What are the indirect effects of program promotions on prices of competing lighting products?
- Do those effects carry over to non-rebate periods or to other geographical areas?
- How do those effects vary by sales channel?
- Have the California CFL programs led to a decline, over time, in CFL prices in California and elsewhere?

There are also a number of questions concerning the price-related demand for CFLs, including:

- How much does a reduction in retail price stimulate sales of CFLs (i.e. what is the price elasticity of demand)?
- What is the cross price elasticity of demand for CFLs with incandescent bulb prices?
- Does the price elasticity change over different price ranges?
- Has the price elasticity changed over time (due to changes in awareness, concern about energy conservation, global warming, etc.)?

[72] Note, however, that the comparison state(s) selected by the M&O team will be state(s) in which there are well-developed programs, both with and without mass media marketing efforts. The M&O comparison state(s) will therefore differ from the CFL market effects comparison states, so only the California responses to this survey may be valuable to the current study.

Many of these questions serve both the needs of the Residential Retrofit Impact Evaluation as well the CFL Market Effects Study. For example, one approach for estimating program impacts is to calculate the multiplier effect on retail prices, then use the price elasticity of demand to estimate the associated sales impacts. However, should the study find that the multiplier effect is greater than 1.0 (e.g., a $1 manufacturer incentive leads to a $2 retail price reduction), the additional price reduction and resulting increase in sales may be considered program spillover, and thus a market effect.

To estimate CFL pricing market effects, the CFL Market Effects Team will therefore conduct a number of research activities and analyses to answer the questions posed above. The research leverages both the research of the Residential Retrofit evaluation (e.g., the retailer stocking surveys in California) with the research of the current study (e.g., retailer stocking surveys in the comparison states) to collect a comprehensive set of primary and secondary pricing data. Because the data collection and analysis serve dual purposes in terms of both impact evaluation and market effects, the costs will be split between the two studies.

Sources of Pricing Data

Similar to the sales data analysis, the study will rely on both POS and stocking data collected during on-site retailer visits.[73] In addition, pricing data collected from the consumer intercept stores will also be used to gather pricing data. As shown in Table 21, the states, time period, and distribution channels vary, depending on the source. All sources, however, will provide detailed information on the bulb type, the retail channel,[74] the month collected, and the exact price of the bulb. Note that the stocking studies will be conducted during both rebated and non-rebate periods in order to ensure that prices are collected during both periods.

These detailed pricing data will be supplemented with more qualitative data from the retailer and manufacturer surveys. The qualitative data will provide more insight into perceived trends, as well as attribution of the California CFL programs in terms of pricing marketing effects.

Table 21. Sources for Pricing Data

General Source	Detailed Source	State(s)	Time period	Distribution Channels
POS	Nielsen	50	2000-2007	Food, drug, mass merchandisers
	Activant	20	2000-2007	Hardware
Stocking survey	CA stocking study	CA	2008	All
	Comparison states stocking study	3-4	2008	All
Intercept surveys	N/A	CA	2008	All

[73] Note the EPA data, while an important resource for the sales data analysis, do not contain pricing information.
[74] For some channels, retailer-specific data is expected to be available.

Analysis of Pricing Data

As noted above, there are a number of both supply-side and demand-side questions that will be addressed by the study. Supply-side analysis, relying on the POS, stocking data, and consumer intercept survey data, includes:

- ***Comparative, descriptive statistics of retail prices.*** This entails selecting a number of common product types (e.g., four-packs of 15w "twister" style bulbs) and comparing the price across a number of different parameters, including state, distribution channel, month, and rebated vs. non-rebated

- ***Regression-based analysis of retail prices.*** A regression model, commonly called an hedonic price index, will estimate the retail price as a function of variables such as rebate levels, bulb characteristics, distribution channel, state, and month.

The key output of the supply-side analysis is a quantitative estimate of the supply elasticity with respect to the rebate amount; in other words, how much the retail price is discounted for a given wholesale rebate level.

In addition, the demand-side analysis will include the development of a model of the retail demand for efficient lighting.[75] The primary way that any rebate program for efficient products (e.g. CFLs) stimulates sales is by making those technologies more affordable relative to inefficient ones (e.g. incandescent bulbs). That effect is represented in a lighting demand model through the relation between sales and the retail price of the efficient technology, along with other factors. Those "other" factors include the prices of competing (inefficient) technologies, as well as the delivery channel (e.g. hardware, chain store, etc.), bulb type, utility rates, and season. The price effect on sales is summarized in the price elasticity of demand for the efficient lighting, which represents the percentage increase in sales for a given percentage decrease in price.

Because only the POS data contain both sales and prices, the demand pricing models will have to rely on limited distribution channels.[76] The POS data do track sales over time, allowing the analysis to look at possible changes in elasticities over time, but only contain distribution channels that represent a limited percentage of all CFL sales.

The analysis offers the best "hard" data for analyzing price impacts on purchase behaviors. In addition, to mitigate impacts of these limitations, the Residential Retrofit Evaluation Team will explore the impacts of these other factors (e.g., incentive type and in-store promotions) through

[75] Itron, a subcontractor on the Residential Retrofit Evaluation Team, is currently under contract with the IOUs to produce the 2007 lamp report, which will include development of a regression model to estimate CFL's price elasticity using POS data on California lamp sales. The demand model proposed here will build upon the existing model but be more comprehensive in nature in that it includes sales outside of California, additional distribution channels (purchased for this study), and more rigorous in nature.

[76] The CFL Market Effects Team recognizes that there are serious limitations of this demand-side analysis because it is dependent on the POS data which represents a limited percentage of total CFL sales.

customer intercepts and focus groups.[77] Past evaluations and their contractors may have quantitative data on specific stores/retailers that could be gathered. The Market Effects project will work with M&O and Flex Your Power to get their data on store displays, partnerships, advertising, etc.

Strengths and Limitations of the Pricing Analysis

The data sources and analysis that will be used to conduct the analysis offer a number of strengths and limitations. Specific strengths include:

- The study will provide excellent insight into how the incentives translate into retail discounts (i.e., the multiplier effect);
- The study will be able to determine if price decreases carry over to non-rebated products, are sustained during non-rebated periods, and vary by sales channel;
- The study will estimate demand elasticity across a number of parameters, thus allowing the research to quantify the relationship between reduced price and increased sales.
- The study will look for systematic decreases in CFL prices over time. Using the distribution channels contained in the POS data, this cross-sectional, time-series analysis will look for changes in CFL prices in California versus other parts of the U.S.

The available data and defined approach, however, also contain a number of limitations and challenges. Specifically, these include:

- The POS data do not specifically identify rebated bulbs, making it difficult to classify rebated vs. non-rebated bulbs. However, because some UPCs are specific to the ULP, equivalent non-rebated product can be identified and tracked. Note the stocking pricing data should be able to determine whether or not a bulb was rebated.
- The stocking pricing data will have no longitudinal information, thus limiting the time-series analysis to the POS distribution channels, which represent only a portion of all CFL sales in California and elsewhere (and begin having sufficient data in 2000). Furthermore, the channels represented by the POS data have been specifically targeted by the California programs and therefore may differ from the channels through which many CFLs are sold elsewhere in the U.S.
- The study does not quantify the impact of the California programs on the reduction of CFL prices in other geographic areas; instead, this topic is explored qualitatively through the interviews with retailers and manufacturers. Should the programs have impacted CFL prices elsewhere, the findings from the inter-geographic pricing comparisons would lead to a conservative estimate of California market effect impacts (i.e., the baseline prices, determined by CFL prices outside of California, would be higher in absence of no California programs, and thus the difference between California prices and prices elsewhere would be greater absent the influence of California programs).

[77] These topics will also be explored through quantitative data on displays/promotions conducted through the programs, as well as coordinating with M&O and Flex Your Power to get the data on store displays, partnerships, advertising, etc.

3.1.3. Market Effects on Other Progress Indicators (Task 6)

This task will essentially fill in the evaluation framework that will be established by the prior program theory and logic model tasks, gathering and presenting data on market indicators collected by the wealth of prior California market studies from 1998 on. The CFL Market Effects Team's experience conducting most of these prior studies will allow us to easily obtain and interpret the relevant data. We will combine the prior market indicator data with the current 2006-2008 program research activities, including the manufacturer interviews, participating and non-participating retailer interviews, and end-use customer surveys, to provide a complete assessment of downstream and upstream market participants.

3.2. Attribution Analysis (Task 7)

The assessment of the attribution task is really an analytical task of assembling and triangulating all study data, including sales data, market actor interviews and surveys, stocking and shelf space data, analytical data (e.g., comparison states and regression modeling), and any additional findings, to explore overall consistency and "themes." As noted in the CIEE Market Effects Study Plan, "attribution in this study will be based on a preponderance of evidence approach, under which the researcher attempts to construct an argument as to just what has transpired based on the convergence of evidence from a wide range of sources, and the consistency of this evidence with the program theory."

The CFL Market Effects Team plans on identifying all relevant net-to-gross adjustments, including freeridership, participant spillover, and non-participant spillover. Freeridership and participant spillover will be based on findings from the Residential Retrofit Impact Evaluation. The remaining "delta" in measured vs. predicted market share, therefore, would be due to non-participant spillover, thus providing an estimate of sales due to market effects. That is,

CFL ME from 2006-2008 CA IOU CFL Programs =
Total CA CFL Sales –
(Baseline Sales + IOU Program Sales + Participant Spillover + Non-IOU CFL Sales)

Where:

Total CA CFL Sales = Total estimated sales of CFL bulbs in CA in 2006-2008

Baseline Sales = Estimated 2006-2008 CA CFL sales in absence of any program activity

IOU Program Sales = Direct CFL sales credited to the IOUs for 2006-2008 programs

Participant Spillover = Participant spillover sales credited to the IOUs for 2006-2008 programs

Non-IOU CFL Sales = Sales of 2006-2008 CA CFLs credited to non-IOU programs

When estimating "direct distributions" and "participant spillover distributions," the CFL Market Effects Team will coordinate with the Marketing and Outreach (M&O) to ensure that CFLs in the state are not double-counted.

As suggested in the CIEE CFL Market Effects Study Plan, the CFL Market Effects will focus on the quantification of the market effects *realized* during the 2006-08 program timeframe, and will provide only qualitative insights into the portion of these savings that were also *caused* during 2006-08.

As described earlier, due to data limitations and the timing of this study, the focus of this analysis will be on the 2007 program year. The team will extrapolate the 2007 data to 2006 and 2008 in order to develop total CFL market effects estimate for the entire 2006-08 program planning cycle.

3.3. Net Energy and Demand Savings Estimation (Task 8)

The attribution analyses described in the previous section will result in a stream of CFL distributions or sales that are attributable to the IOUs' programs. These CFL streams will be multiplied by the deemed energy and demand savings from the most current version of the DEER database to estimate the total net energy and demand savings attributable to market effects.

These savings estimates from market effects will then be used to analyze impacts on the cost-effectiveness of California's CFL Programs. Although we expect these programs are already cost effective, we will nonetheless document the resulting impacts on the programs' benefit/cost ratios.

3.4. Sustainability Assessment (Task 9)

The CPUC also wishes to examine the sustainability of the market effects, assessing the extent that market effects would continue should program activity be withdrawn or scaled back. As noted above, there are a tremendous number of external influences on the CFL market, including a Wal-Mart initiative to double the sale of CFLs, promotion of CFLs by the popular press as a strategy for individuals to address climate change, and the recently passed Energy Bill requiring more efficient lighting beginning in 2012.

To assess the extent to which the CFL market has already been transformed, as well as the extent to which these factors will continue to increase CFL sales in the absence of current program efforts, the CFL Market Effects Team will include a number of additional questions in the manufacturer and retailer interviews and the customer surveys discussed earlier in this document. Specifically, the team intends to adopt the approach developed in Massachusetts and devise interview guide/ survey questions that address the sustainability questions posed by Hewitt.[78]

Table 22, on the following page, shows how Hewitt's original questions could be rephrased to fit the CFL market, and also summarizes how the questions might be answered.[79] As applicable, these questions will be asked in terms of how they pertain to both rebates and to marketing campaigns.

[78] Hewitt, D.C. 2000. "The Elements of Sustainability." In *Efficiency & Sustainability, Proceedings of the 2000 Summer Study on Energy Efficiency in Buildings.* Washington DC: American Council for an Energy-Efficient Economy. Pp. 6.179-6.190.

[79] Modified from *Market Progress and Evaluation Report (MPER) for the 2007 Massachusetts ENERGY STAR Lighting Program,* prepared by Nexus Market Research for Cape Light Compact, National Grid, NSTAR, Western Massachusetts Electric, and Unitil, June 13, 2008.

Table 22. Assessment of Sustainability of the CFL Market

Issue	Response
Will manufacturers continue to develop and market CFLs and will retailers continue to market them without individual regional program support? (Original: Has a private market developed to continue the facilitation?)	Yes. Several manufacturers have announced that they are building new, higher capacity factories in China to accommodate the increased international CFL market demands, and report that CFLs are profitable. The ENERGY STAR program has revised specifications for CFLs, fixtures using the GU-24 technology, and SSL in the form of LEDs, which will become effective during 2008, and manufacturers say they will have products meeting the new specs. CFL sales by California retailers not participating in the utilities' program increased by over xx times from 2005 to 2008, to xx.x million units.
Are CFLs now a mainstream option? (Original: Has the profession or trade adopted it as a standard practice?)	Somewhat. Awareness of CFLs is nearly universal in California, but consumers still choose incandescents over CFLs for many applications. xx% of California households still do not use CFLs. CFLs are available in a broad range of store types, but drug stores, convenience stores, and discount stores still have limited offerings.
Would it be difficult or costly to revert to earlier equipment—that is, going back to incandescents? (Original: Would it be difficult or costly to revert to earlier equipment or practices?)	Not yet, but relatively soon: Federal legislation EISA 2007 passed in December of 2007 will phase out inefficient light bulbs beginning in 2012.
Are end-users requesting or demanding CFLs? Would there be sufficient consumer demand without regional program support? (Original: Are end-users requesting or demanding it?)	Yes. CFL sales have increased dramatically in areas without program support—2008 sales in the non-program comparison areas of Georgia and Kansas, respectively, are xx million and xx million CFLs, or x.x and x.x per household. However, consumer education is still important for encouraging consumers to use CFLs in more applications and to choose products that will satisfy their lighting needs. Also, about xx% of California households are still not using CFLs; most of those are aware of the technology, but have not used it yet.
Have the risks to private market actors for manufacturing or marketing CFLs been reduced or removed? (Original: Have the risks to private market actors been reduced or removed?)	Yes. Demand for CFLs nationwide and globally has increased. Many manufacturers announced plans to expand their manufacturing facilities in China this year. Federal EISA 2007 legislation will also encourage the development of more efficient lighting technologies, including incandescents, CFLs, and LEDs. However, the issue of CFL recycling to avoid unsafe mercury disposal still remains unresolved and will become an even more important issue with a greater number of spent CFLs requiring disposal in the coming years.
Are purchasers satisfied with CFLs? (Original: Are purchasers satisfied with it)	Yes. xx% of current CFL users are 'satisfied' or 'very satisfied' with the products.

If the study determines that the market has not been fully transformed, it will provide feedback on what else must be done, and for how long, to obtain a sustainable change. For example, there may be retails sales channels that warrant additional attention and outreach, and there may be additional "niche" opportunities for future program design (e.g., dimmable lights).

3.5. Ongoing Meetings and Coordination (Task 10)

The CFL Market Effects Team has been conducting regular conference calls (every other week) with the CPUC, and CIEE Market Effects Team and intends to continue doing so, as warranted, throughout the remainder of the project. Staff on these calls have been, and are expected to continue to be, largely the same as the ULP subgroup for the Residential Retrofit Impact Evaluation, which allows for a great deal of coordination between the two studies

As needed, the team will also continue conducting coordination call with other research efforts, including:

- M&O team (as discussed above)
- Other market effects teams: the CPUC is conducting two additional market effects evaluations, one for residential new construction and the other for high bay lighting. The CFL Market Effects Team will coordinate with these two teams regarding potential overlap (e.g., CFLs in residential new construction), as well as methodology and approaches.

3.6. Task 8: Reporting and Formal Presentations (Task 11)

In addition to this report, the CFL Market Effects study has two primary deliverables:

- An interim draft report in November 2008; and
- A final report in August 2009.

More details on these deliverables are presented in the timeline below. In addition, we have assumed the results from each of these deliverables would include one webinar for the CPUC and affiliated consultants (MECT, DMQC, etc.) and one in-person presentation for the IOUs and public stakeholders.

4. EVALUATION COORDINATION EFFORTS

4.1. Coordination with Residential Retrofit Evaluation Team

The CFL market effects team has been, and will continue, working as a subgroup within the Residential Retrofit Evaluation Team. The team generally contains the same members as the ULP subgroup, with a few additional members. Details are covered in bi-weekly teleconferences that focus on specific issues related to ULP and CFL market effects.

4.2. Coordination with DEER Database Team

In assembling the CFL market effects work plan, the top priority is ensuring the protocol requirements are met or exceeded and the study objectives fully explored. The team has already worked with the DEER team to review the sales data collected as part of the NTG updating analysis, and positive synergies have resulted. Some data collected, particularly during pricing analysis, will likely be useful for updating numbers or filling gaps in the DEER database. The CFL market effects team will meet with the DEER team to ensure that, where possible, the team's data collection efforts also will meet DEER's needs.

4.3. Inter-Contract Group Coordination

As discussed above, the CFL Market Effects Team will continue working closely with the M&O impact evaluation team regarding inclusion of CFL questions in tracking surveys, assessing the role of M&O activities compared to other lighting program impacts, and other topics requiring coordination. In particular, the CFL Market Effects Team will also carefully review the Structural Equation Modeling survey to determine if that research effort captures the role of incremental cost and pricing on CFL sales.

The CFL Market Effects Team has been, and will continue, to have regular teleconferences at the same time as the Residential Retrofit Impact Evaluation ULP subgroup, thus ensuring coordination between the two efforts. Coordination with other evaluation or market effects teams will also be conducted as necessary.

The CFL Market Effects Team has also been working collaboratively with the Local Government Program (LGP) evaluation team. The two groups have worked together to develop questions for the LGP give-away survey to assess the extent to which give-away programs are helping to drive the demand for CFLs by providing consumers a favorable initial experience with the technology. Once the fielding of the survey has been completed, the CFL Market Effects Team expects to contribute to the analysis of the CFL-related survey responses.

4.4. Early Feedback to IOUs

The CFL Market Effects Team envisions early feedback to the IOUs will exist only through formal communications. Formal early feedback to the IOUs will be coordinated through the CPUC in the form of submission of draft findings memos (as needed) and draft reports. These documents will be provided to the CPUC for review, and then conveyed by the CPUC to the IOUs on behalf of the CFL Market Effects Team.

5. EVALUATION TIMELINE

This study is being performed on a timeline roughly coinciding with that of the ULP evaluation study because of overlap between the studies. However, due to the CPUC's need for timely results to inform its strategic planning efforts, an interim CFL Market Effects report will be provided in December 2008 and the final report in August 2009. The interim report will present findings to date, based on market effects analyzed through the end of 2007, and will include:

- Final program characterization
- Final theory and logic models;
- Preliminary results from the market actor surveys and interviews;
- Preliminary results from the analysis of POS and EPA data;
- Preliminary results from the regression model approach; and
- Preliminary results of the CFL user survey.

The August, 2009 report will include updates to these analyses (through the end of 2008), where applicable, as well as:

- Shelf stocking survey results
- In-home audit results
- Comparison state analysis
- Final market effects based on all available data (POS/EPA data, CFL user survey, in-home audit, upstream interviews, and shelf stocking study);
- Attribution analysis;
- Net savings;
- Sustainability analysis; and
- Based on our work on all of the project tasks, suggestions about possible revisions to market effects protocols, utility savings goals, and/or performance incentive mechanisms for subsequent action by the CPUC.

Table 23. Timeline for CFL Market Effects Study

	2008					2009							
Task	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Task 1A:Analysis of Program Tracking Data													
Task 1B:Analysis of POS/EPA Data													
Task 1C:CFL User Survey													
Task 1D:In-home Lighting Audit													
Task 1E:Shelf Stocking Study													
Task 1F:Leveraging Customer Intercept Surveys													
Task 1G: Leveraging Upstream Interviews													
Task 2A:Comparison State Approach (Analysis)													
Task 2B:Regression Model Approach													
Task 2C:Comparions to Results in Other Regions													
Task 3:Analysis of Cumulative Effects													
Task 4:Leveraging M&O Activities													
Task 5: Market Effects on CFL Retail Pricing													
Task 6: Market Effects on Other Progress Indicators													
Task 7: Attribution Analysis													
Task 8: Net Energy and Demand Savings Calculations													
Task 9: Sustainability Assessment													
Task 10: Ongoing Meetings and Coordination													
Task 11: Presentations and Reporting													

6. EVALUATION BUDGET

Table 24 provides the budget to complete the work presented in this work plan.

Table 24. Budget for CFL Market Effects Study

Task	Budget
Task 1A: Analysis of Program Tracking Data	$14,861
Task 1B: Analysis of POS/EPA Data	$57,422
Task 1C: CFL User Survey	$83,702
Task 1D: In-home Lighting Audit	$79,436
Task 1E: Shelf Stocking Study	$95,700
Task 1F: Leveraging Customer Intercept Surveys	$11,494
Task 1G: Leveraging Upstream Interviews	$98,500
Task 2A: Comparison State Approach (Analysis)	$23,985
Task 2B: Regression Model Approach	$22,354
Task 2C: Comparison to Results in Other Regions	$5,645
Task 3: Analysis of Cumulative Effects	$22,593
Task 4: Leveraging M&O Activities	$5,645
Task 5: Market Effects on CFL Retail Pricing	$37,650
Task 6: Market Effects on Other Progress Indicators	$8,531
Task 7: Attribution Analysis	$16,267
Task 8: Net Energy and Demand Savings Calculations	$10,455
Task 9: Sustainability Assessment	$15,872
Task 10: Ongoing Meetings and Coordination	$34,453
Task 11: Presentations and Reporting	$108,107
Total Budget	**$752,674**

APPENDIX A: IOU LIGHTING PROGRAMS AND CHARACTERISTICS

California CFL Program Characterizations

Adminis-trator	Program Name	Program Type (Retail/Non-Retail)	% of Ttl CFLs Distributed by IOU, 2006-07	Ranking (1=most CFLs)	Brief Description	Primary Objective(s)	Claiming Savings from CFLs (Y/N)	1st Yr of Pgm Implemen-tation	Sector(s) Addressed / Target Market
PG&E	PGE2000 Mass Markets Residential (includes non-LGP CFL give-aways)	Retail; Non-retail	43.20%	1	Uses PG&E, 3P specialists and local gov't partnerships to deliver a portfolio of ee, DR, and distrib gen svcs. Incl statewide elements as well as elements specially targeted to PG&E cust. Incl both turnkey and customized direct installation elements.	c-e, comprehensive, relevant, targeted elements to achieve EE & DR targets	Y	2006	Res: all
PG&E	PGE2016 LGP Association of Montery Bay Area Governments (AMBAG) energy Watch	Non-Retail	0.08%	19	Energy assessment reports, res and non-res direct install programs and retrofit programs targeting municipalities.	reduce energy use	Y	2006	Res& Non-res
PG&E	PGE2017 LGP Bakersfield and Kern County Energy Watch	Non-Retail	0.05%	22	EE info and direct installation of ee equipment. Retrofit of municipal properties. Trainings for city building inspectors.	reduce energy use	Y	2006	Res & Non-res (small businesses & municipal properties)
PG&E	PGE2020 LGP East Bay Energy Watch (EBEW)	Non-Retail	0.04%	24	EE info, audits, and direct installation of ee equipment. Ccoord's with PG&E's core and 3P pgms and leveraging of municipal resources.	promote reduced energy use and energy savings	Y	2004	Res & Non-res
PG&E	PGE2021 LGP Fresno Energy Watch (FEW)	Non-Retail	0.03%	25	Offers locally-based ee seminars, focuses on local energy policies that promote energy efficiency practices, codes and standards.	provide comprehensive energy efficiency services to the City of Fresno and the County of Fresno	Y	2006	Res & Non-res
PG&E	PGE2024 LGP Madera Energy Watch	Non-Retail	0.01%	43	Works w/ local trade allies to install ee equipment. Offers locally-based training, and focuses on local energy policies that promote energy efficiency practices, codes and standards.		Y	2006	Res & Non-res (small business, municipal facilities)

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
PG&E	PGE2000 Mass Markets Residential (includes non-LGP CFL give-aways)		for ltg: 1) work w/ ltg manuf to promote and improve perf of CFLs; 2) in-store point-of-purchase and manuf buy-downs; 3) expand to buy-downs and POS to commerical elec distrib warehouses and wholesalers	ES Change-A-Light; CA Ltg Tech Ctr; 3P pgms; ltg manuf; commercial elec distrib and wholesalers	24,140,204	2006-07	17,280,903	6,859,301	4Q2007 E3 calc	Program boundaries, lack of information, time/cost limits, initial investment,
PG&E	PGE2016 LGP Association of Montery Bay Area Governments (AMBAG) energy Watch		Local newspaper articles; direct mail to realtors w/ follow-up phone calls; trainings; booths at local events; coordination local BOMA; TV ads	Staples Marketing; community groups	46,589	2006-07	35,618	10,971	4Q2007 E3 calc	None listed
PG&E	PGE2017 LGP Bakersfield and Kern County Energy Watch		Booth at local events; community meetings; seminars	Staples Marketing; community groups	26,329	2006-07	20,255	6,074	4Q2007 E3 calc	Lack of information about incentives available
PG&E	PGE2020 LGP East Bay Energy Watch (EBEW)		Brochures disseminated at local events; outreach through the Business Energy Services Team (BEST); direct installs through CBO partnerships and citiles; trainings	community groups	20,782	2006-07	14,388	6,394	4Q2007 E3 calc	None listed
PG&E	PGE2021 LGP Fresno Energy Watch (FEW)		CFL give-aways; other?		18,067	2006-07	12,244	5,823	4Q2007 E3 calc	None specifically mentioned (only "local market barriers")
PG&E	PGE2024 LGP Madera Energy Watch		trainings; work w/ City to ID municipal opportunities; other?	local contractors, builders, & building departments	3,060	2006-07	2,592	468	4Q2007 E3 calc	None listed

California CFL Program Characterizations

Adminis-trator	Program Name	Program Type (Retail/Non-Retail)	% of Ttl CFLs Distributed by IOU, 2006-07	Ranking (1=most CFLs)	Brief Description	Primary Objective(s)	Claiming Savings from CFLs (Y/N)	1st Yr of Pgm Implemen-tation	Sector(s) Addressed / Target Market
PG&E	PGE2025 LGP Marin County Energy Watch	Non-Retail	0.03%	28	Marin Energy Mgmt Team (MEMT) acts as 'energy manager" for public sector agencies incl local gov'ts, school districts & special districts to reach smaller public sector institutions. Incl audits, tech asstce, engineering, asstce in financing and obtaining incentives, specifying and managing projects, energy acctg and rptg, procurement, peer meetings and training workshops.		Y	2006	Res & Non-res, incl public agencies & schools
PG&E	PGE2026 LGP Merced/Atwater Energy Watch	Non-Retail	0.00%	48	Works w/ local trade allies to install ee equipment. Offers locally-based training, and focuses on local energy policies that promote energy efficiency practices, codes and standards.		Y	2006	Non-res: cities of Merced and Atwater
PG&E	PGE2027 LGP Motherlode Energy Watch	Non-Retail	0.01%	38	Partnership with several counties and cities to increase participation in PG&E's ee programs.		Y	2004	Non-res: small business & municipal facilities
PG&E	PGE2028 LGP Redwood Coast Energy Watch	Non-Retail	0.01%	35	Partnership PG&E's pgms by using local staff expertise and resources to provide program marketing, outreach, information, education and technical assistance. Information-only program?	energy savings	Y	2006	Res & Non-res
PG&E	PGE2030 LGP South San Joaquin (SSJ) Energy Watch	Non-Retail	0.02%	32	Targeted ee info & installation of ee equipment to municipal facilities, businesses and res cust. Locally-based ee seminars; focuses on local energy policies that promote ee practices, codes and standards.	capitalize on the infrastructure set by in the 2004-05 pgm to reduce energy use	Y	2004	Res & Non-res, incl municipal facilities
PG&E	PGE2032 LGP Sonoma County Energy Watch (SCEW)	Non-Retail	0.00%	58	Comprised of 4 elements: 1) Bldg Tune-up--retrofits and retro-commissioning; 2) CA Wastewater Process Optimization Pgm--audits and incentives for treatment facilities; 3) Sm Bus Energy Alliance--free surveys; pre- and post-construction inspections; incentives; 4) training and incentives for licensed real esate brokers & agents and home inspectors		Y	2006	Non-res: all, incl. wastewater processing

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
PG&E	PGE2025 LGP Marin County Energy Watch		Trainings for real estate brokers, agents, and home inspectors; local networking events; Torchiere Swap and CFL give-aways	Small Business Energy Alliance; Marin Green Business; CA Youth Energy Services	16,661	2006-07	11,271	5,390	4Q2007 E3 calc	None specifically mentioned (only "addressing specific barriers as needed")
PG&E	PGE2026 LGP Merced/Atwater Energy Watch		• Participation in Change a Light campaign; newspaper promos; participation in local events; direct installs		960	2006-07	717	243	4Q2007 E3 calc	None listed
PG&E	PGE2027 LGP Motherlode Energy Watch		Training and education offerings; direct delivery to small businesses; direct mktg of vending machine controllers to vendors		6,095	2006-07	3,148	2,947	4Q2007 E3 calc	Lack of information about incentives available
PG&E	PGE2028 LGP Redwood Coast Energy Watch		Presentations to local gov't agencies; speakers at local events; workshops and tours; CFL give-aways during "Change A Light" campaign--; newspaper ads; Residential Neighborhood CFL sweeps incl info dissemination; torchiere exchanges	Energy Star Change-A-Light; local orgs	8,018	2006-07	6,885	1,133	4Q2007 E3 calc	None listed
PG&E	PGE2030 LGP South San Joaquin (SSJ) Energy Watch		low-cost meas give-aways to small commercial cust; partic in Change-A-Light; other?	Energy Star Change-A-Light; local orgs	8,917	2006-07	5,066	3,851	4Q2007 E3 calc	None listed
PG&E	PGE2032 LGP Sonoma County Energy Watch (SCEW)		direct mktg to identified non-res cust and to Cities; other?		143	2006-07	143	0	4Q2007 E3 calc	Initial installation costs (small businesses), lack of incentives (med/lrg businesses)

California CFL Program Characterizations

Adminis-trator	Program Name	Program Type (Retail/Non-Retail)	% of Ttl CFLs Distributed by IOU, 2006-07	Ranking (1=most CFLs)	Brief Description	Primary Objective(s)	Claiming Savings from CFLs (Y/N)	1st Yr of Pgm Implemen-tation	Sector(s) Addressed / Target Market
PG&E	PGE2033 LGP Stockton Energy Watch	Non-Retail	0.01%	40	Works with local trade allies to install ee equipment. Offers locally based ee seminars, and focuses on local ee that promote energy efficiency practices, codes and standards		Y	2006	Res & Non-res, incl municipal facilities
PG&E	PGE2047 3P Coin Operated Laundry	Non-Retail	0.00%	57	Repl of inefficient gas and electric water-heated commercial clothes washers.	promote replacement (normal replacement as well as early replacement) of high-usage commerical clothes washers that use water from inefficient WHs.	Y	2006	Res: MF
PG&E	PGE2050 3P Campus Housing Efficiency Solutions	Non-Retail	0.48%	7	Targets student residences for ee rebates and/or installation support services Student edu and ltg and appliances measures for student residences focus on sustaining energy-saving beyond a single academic year		Y	2006	Non-res: universities and colleges
PG&E	PGE2051 3P RightLights	Non-Retail	0.00%	54	Multilingual direct install pgm that delivers comprehensive ltg retrofits, pre-rinse spray valves, refrigeration fan motor replacements, et al.		Y	2002	Non-res
PG&E	PGE2052 3P LodgingSavers	Non-Retail	0.00%	60	Energy audits, job specification and design assistance, installation services and financial incentives. Covers retrofits and retrocommissioning (RCx) Meas incl ltg, HVAC, controllers, refrig, and water saving measures.		Y	2006	Non-res: lodging
PG&E	PGE2054 3P Energy Fitness	Non-Retail	0.03%	27	Facility audits + no-cost direct installation (e.g., ltg, exit signs, vending machine controllers, and occ sensors). Other meas may include window film and HVAC condenser coil cleaning. Also, audit report offers recommendations for lighting, refrig, HVAC, motors, building envelope, and food service.		Y	2006	Non-res

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
PG&E	PGE2033 LGP Stockton Energy Watch		Partic in Change a Light; direct installs; other?	local contractors, builders, & building departments	4,347	2006-07	2,463	1,884	4Q2007 E3 calc	None listed
PG&E	PGE2047 3P Coin Operated Laundry		meetings w/ commercial washer leasing and financing co's; other?	local water agencies	149	2006-07	119	30	4Q2007 E3 calc	Lack of accurate information about available EE measures
PG&E	PGE2050 3P Campus Housing Efficiency Solutions		direct mtgs with university directors, incl campus housing contacts and private housing companies; other?		267,198	2006-07	267,198	0	4Q2007 E3 calc	None listed
PG&E	PGE2051 3P RightLights		seb site; displays at local events; direct mailings; press releases; newspaper articles;		281	2006-07	281	0	4Q2007 E3 calc	None listed
PG&E	PGE2052 3P LodgingSavers		press releases; direct mailings; tradeshow presence; educational/training events; other?		54	2006-07	54	0	4Q2007 E3 calc	None listed
PG&E	PGE2054 3P Energy Fitness		referrals from the local PG&E sales and service reps; direct mailings; newspaper articles		17,193	2006-07	16,250	943	4Q2007 E3 calc	None listed

California CFL Program Characterizations

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PG&E	PGE2060 3P Cool Control Plus for the Hotel / Motel Industry	Non-Retail	0.82%	5	Direct install services. Free meas incl t-stats, occ sensors for qualifying Acs, and vending machine controllers. Ltg meas have fixed customer co-payment per measure.		Y	2006	Non-res: small to mid size hotels

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
PG&E	PGE2060 3P Cool Control Plus for the Hotel / Motel Industry		local events, incl coord w/ with local water utilities; other?		460,441	2006-07	460,441	0	4Q2007 E3 calc	None listed

California CFL Program Characterizations

Adminis-trator	Program Name	Program Type (Retail/Non-Retail)	% of Ttl CFLs Distributed by IOU, 2006-07	Ranking (1=most CFLs)	Brief Description	Primary Objective(s)	Claiming Savings from CFLs (Y/N)	1st Yr of Pgm Implemen-tation	Sector(s) Addressed / Target Market
PG&E	PGE2066 3P PGE Supermarket Controls	Non-Retail	0.35%	9	No-cost energy audits, savings reports, contractor enrollment, tech consultation, rebates and information about ee technology and operations. Promotes ee lighting, HVAC, and refrig systems.		Y	2006	Non-res: groceries >= 70 kW
PG&E	PGE2074 3P Energy Savers	Non-Retail	0.00%	45	Energy surveys, incentives, and comprehensive ee svcs to sm & med businesses. Focus is on short-payback measures. Meas incl: ltg, HVAC repl, HVAC tune-ups, refrigeration tune-ups, programmable t-stats	reduce peak demand and energy use	Y	2006	Non-res: <= 500 kW
PG&E	PGE2078 3P PGE Comprehensive Manufactured Mobile Home	Non-Retail	0.01%	36	Comprehensive energy program (initially focusing on the hotter climate zones: 11, 12 and 13) customer education & direct installation of tailored package of measures, personalized assistance, quality assurance, and add'l pgm referrals.	energy use reduction	Y	2006	Res: manuf homes
PG&E	PGE2080 Mass Market/ULP (nonresidential)	Retail; Non-retail	4.96%	4	Uses PG&E, 3P specialists, and local gov't partnerships to deliver a portfolio of ee, DR and distrib gen svcs. Incl statewide elements as well as elements specially targeted to PG&E cust.	#REF!	Y	2006	Non-res; Res
PG&E	PGE2095 LGP San Luis Obispo Energy Watch	Non-Retail	0.00%	47	ee info, training, and direct installation. Also provides retrofitting to municipal facilities.	reduce energy use	Y	2006	Non-res: small businesses
PG&E	Relief for Energy Assistance through Community Help (REACH)	Non-Retail	0.00%	64					
PG&E	Low-Imcome Home Energy Assistance Program (LIHEAP), Weatherization Services	Non-Retail	0.17%	12	Federally-funded program that provides free home weatherization or financial assistance with energy bills.				Res: low-income
PG&E	PG&E Energy Partners Program	Non-Retail	0.00%	65					
SCE	SCE2501 Residential Energy Efficiency Program--LightWise		0.03%	26			Y	pre-2006	Res
SCE	SCE2501 Residential Energy Efficiency Program--ULP	Retail	38.82%	2	Provides prescriptive rebates on a number of lighting measures for res customers, program is similar to other CA IOUs	reduce per-capita energy use	Y	pre-2006	Res

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
PG&E	PGE2066 3P PGE Supermarket Controls		mtgs w/ manuf and distrib sales reps; participation in local grocery store events; direct mktg to area grocers; direct mailings to selected grocers; coord w/ PG&E field reps		196,814	2006-07	196,814	0	4Q2007 E3 calc	None listed
PG&E	PGE2074 3P Energy Savers		web site; dissemination of success stories; other		2,271	2006-07	2,271	0	4Q2007 E3 calc	None listed
PG&E	PGE2078 3P PGE Comprehensive Manufactured Mobile Home		direct mailings to mobile home residents; neighborhood meetings	Energy Star	7,982	2006-07	5,981	2,001	4Q2007 E3 calc	split incentives, lack of info/money, language, physical difficulties with installation
PG&E	PGE2080 Mass Market/ULP (nonresidential)		coupon booklets to advertise to specific customer sectors; field outreach with appliance retailers and HVAC contractors.		2,774,191	2006-07	1,979,883	794,308	4Q2007 E3 calc	Program boundaries, lack of information, time/cost limits, initial investment, short-term attitude
PG&E	PGE2095 LGP San Luis Obispo Energy Watch		NA (partnership estab. In late 2007)		1,896	2006-07	1,896	0	4Q2007 E3 calc	None listed
PG&E	Relief for Energy Assistance through Community Help (REACH)									
PG&E	Low-Imcome Home Energy Assistance Program (LIHEAP), Weatherization Services				93,252					
PG&E	PG&E Energy Partners Program									
SCE	SCE2501 Residential Energy Efficiency Program--LightWise				17,822	2006-07	0	17,822	0	
SCE	SCE2501 Residential Energy Efficiency Program--ULP		POS materials, adverisements in retail circulars, direct mail, community outreach, e-mail, shared mail, utility bill inserts	Independent contractors/retailers	21,688,307	2006-07	0	15,434,151	6254156	comparatively high initial cost, steep learning curve, limited availability, and quality concerns

California CFL Program Characterizations

Adminis-trator	Program Name	Program Type (Retail/Non-Retail)	% of Ttl CFLs Distributed by IOU, 2006-07	Ranking (1=most CFLs)	Brief Description	Primary Objective(s)	Claiming Savings from CFLs (Y/N)	1st Yr of Pgm Implemen-tation	Sector(s) Addressed / Target Market
SCE	SCE2502 Multifamily Energy Efficiency Program	Non-Retail	0.53%	6	Motivates MF property owners/managers to install EE equipment thru prescriptive rebates.	long-term energy savings; incr owners/tenants awareness & knowledge of EE	Y	pre-2006	MF property owners/managers (common areas + indiv units); mobile home parks (common areas of only)
SCE	SCE2503 Home Energy Efficiency Surveys	Non-Retail	0.06%	20	Fill gap between consumer awareness and adoption of EE measures/practices by providing information about energy and energy usage.	increase consumer awareness, knowledge & adoption of opportunities for energy and water efficiency	Y	pre-2006	Res
SCE	SCE2504 Integrated School-Based Program	Non-Retail	0.10%	16	Educate K-12 and university students on EE measures/practices. Install EE measures in K-12/university facilities.	promote EE and DR programs	N	pre-2006	Non-res: schools
SCE	SCE2510 Agricultural Energy Efficiency Program	Non-Retail	0.00%	51	Realize DSM as a resource while targeting ag customers--through info and incentives -- who have historically had little concern with EE due to energy's small role in their overall costs	enhance adoption of EE equipment / practices among ag customers	Y	pre-2006	Ag: non-res
SCE	SCE2511 Nonresidential Direct Installation	Non-Retail	0.35%	8	Secure cost-effective, permanent, verifiable annual energy savings from small business that do not intergrate EE in their businesses due to costs/split-incentives/location.	verifiable annual energy savings	Y	pre-2006	Non-res: small business

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
SCE	SCE2502 Multifamily Energy Efficiency Program		Ads in local, major trade journals; flyers to apt assoc; presentations at apt assoc mtgs; exhibits at trade shows; direct mailings. Direct, personal contact to mega-property mgmt firms. Also, local partnerships & oth SCE pgms.	independent contractors; federal and state housing authorities	298,801	2006-07	0	194,061	104740	split incentives; lack of knowledge; add'l out-of-pocket costs; landlords/property owners are a disparate group
SCE	SCE2503 Home Energy Efficiency Surveys		direct mail, on-line marketing, IVR, community events, radio, newspaper ads, coord w/ statewide marketing agencies' marketing efforts	independent contractors/auditors	31,314	2006-07	0	21,026	10288	lack of information/awarenes s of EE measures, skepticism of sales personnel regarding EE measures
SCE	SCE2504 Integrated School-Based Program		in-school instruction of students regarding EE measures/practices	water utilities	55,615	2006-07	0	38,034	17581	lack of info, performance uncertaininty and organizational practices
SCE	SCE2510 Agricultural Energy Efficiency Program		integrate program with upstream motors & demand reduction offerings; partner with PG&E, Sempra, & USDA to promote currently proven technologies.	water pump repair contractors, independent contractors, USDA	455	2006-07	0	455	0	energy costs perceived as relatively small; ag customers largely unaware of potential savings
SCE	SCE2511 Nonresidential Direct Installation		outreach activities, education opportunities, on-site visits (D2D/F2F)	independent contractors	197,014	2006-07	0	143,280	53734	split incentives; location; initial costs

California CFL Program Characterizations

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SCE	SCE2517 Business Incentives & Services	Non-Retail	0.16%	13	Provide on-site energy audits, design assistance, project implementation, consulting, financial incentives, and M&V to non res customers	long term energy savings; become source for non-res EE projects	Y	pre-2006	Non-res: com, ind, ag
SCE	SCE2519 Ventura County Partnership	Non-Retail	0.00%	61	Offer technical assistance & project management support for EE projects for res/non-res customers in Ventura County	short/long-term energy savings & demand reduction; EE ethic	Y	pre-2006	Res & Non-res
SCE	SCE2520 South Bay Partnership	Non-Retail	0.02%	31	Identify retfrofit opportunities in South Bay muni bldgs, distribute EE info, provide support as cities transition to new energy codes, funnel customers into other programs	short/long-term energy savings & demand reduction, EE ethic	N	pre-2006	Non-res; muni buildings
SCE	SCE2521 Bakersfield and Kern County Energy Watch	Non-Retail	0.02%	33	Optimize oppts for customers to achieve EE goals through promotion of an EE ethic, demand response, self generation, and energy management assistance, funnel customers into other programs	short/long-term energy savings & demand reduction, EE ethic, integration of DSM strategies	Y	pre-2006	Res & Non-res
SCE	SCE2522 Santa Barbara Partnership	Non-Retail	0.00%	62	Assist res & non-res customers in managing & reducing energy use/costs through educational/outreach initiatives. Some customers will be funneled into other programs	energy savings, EE ethic	Y	2006	Res & Non-res
SCE	SCE2524 Community Energy Partnership (Resource)	Non-Retail	0.09%	18	Partnership to deliever EE measures in SoCal. Raise awareness, reduce peak demand, stress renewable energy through outreach and media campaigns	energy savings, EE ethic	Y	pre-2006	Res & Non-res
SCE	SCE2525 San Gabriel Valley Energy Efficiency Partnership Program	Non-Retail	0.00%	55	Provide energy ed, retrofit assitance, RCx, design consulting & energy analysis of new const. and renovation project plans	energy savings, EE ethic	Y	2006	Res & Non-res: new construction or renovation

California CFL Program Characte

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					Number	Time Period (date to date)	2007	2006		
SCE	SCE2517 Business Incentives & Services		direct mail, email, telephone, edu/training/outreach	vendors, SCE acct reps, CBOs, FBOs	86,614	2006-07	0	49,078	37536	lack of information/ availability; split incentives, high initial expense, lack of financing
SCE	SCE2519 Ventura County Partnership		trainings/workshops, community events; direct mail, program lit., fact sheets, F2F meetings, customer ed, outreach, web links, ads in local media	independent contractors	31	2006-07	0	0	31	technical, operational, financial to project implementation
SCE	SCE2520 South Bay Partnership		direct mail, e-newsletter, pgrm lit, fact sheets, F2F meetings, customer education, outreach events, web links, & local media ads	independent contractors (subs)	10,276	2006-07	0	4,314	5962	none listed
SCE	SCE2521 Bakersfield and Kern County Energy Watch		local gov't mail, religious & ethnicity-based orgs, and tenant and landlord assts.	other IOUs, independent contractors	8,896	2006-07	0	8,727	169	none listed
SCE	SCE2522 Santa Barbara Partnership		direct mail, e-newsletter, prog lit, fact sheets, F2F, cust edu & outreach events, web links, local media ads	independent contractors	0	2006-07	0	0	0	none listed
SCE	SCE2524 Community Energy Partnership (Resource)		articles in cmmnty newsletters, video/radio production, press and video news releases, e-mail communication, printed materials for distribution	independent contractors (installers)	51,120	2006-07	0	51,120	0	none listed
SCE	SCE2525 San Gabriel Valley Energy Efficiency Partnership Program		awareness campaigns, outreach events/materials, participation in community events.		215	2006-07	0	215	0	lack of financing for EE projects, complexity of projects, lack of info

California CFL Program Characterizations

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SCE	SCE2526 California Community Colleges	Non-Retail	0.09%	17	Partnership to assist in the implementation of retrofits, new const, RCx, MBCx projects on community college campuses	energy savings, develop standard methodologies to indentify/implement target projects	Y	2006	Non-res: community college campuses
SCE	SCE2536 EE DR Flex Program	Retail	0.00%	49	Showcase/optimize delievery of emerging DR lighting technology through direct installation of these measures	complete installations in 142 businesses	Y	2006	Non-res: commercial / light industrial
SCE	SCE2544 CA Preschool Energy Efficiency Program	Non-Retail	0.00%	46	Deliver cost-effective energy/demand savings through audits, technical assistance, financial analysis, implementation and verification to a previously untargeted sector	increased EE awareness	Y	2006	Non-res: preschools
SCE	SCE2546 Lights for Learning CFL Fundraiser	Retail	0.01%	42	Partner with youth orgs and CBOs to sell Energy Star P CFLs as part of a fundraiser put on by these organizations	long-term energy savings; installation of CFLs	Y	2006	Res
SCE	SCE2559 The Lighting Energy Efficiency PAR 38_30 CFL Program	Non-Retail	0.02%	29	Replace halogen PAR lamps with PAR CFLs in order to demonstrate their quality and energy savings abilities, maintain the installed CFLs over a 6 year period, generally at no cost to recipient.	Replace PAR halogen lamps with PAR CFLs	N	2007	Non-res
SCE	SCE2562 Campus Housing Energy Efficiency Program	Non-Retail	0.00%	56	Provide EE solutions to private college housing sector through EE retrofits, RCx, and building tune-up services	Install EE measures in 7 private college campuses	Y	2006	Non-res: private college campus housing
SCE	SCE2566 Palm Desert Partnership	Non-Retail	0.01%	39	Multi-faceted program that includes home and business audits (w/ CFLs & other low-cost meas distrib to homes); selling, financing, and installing EE meas; tech asstce; demo projects; school curriculum; POS incentives; neighborhood sweeps, and code changes.	Reduce City's energy and peak demand by 30% over 5 yr period.	Y	2006	Res; Non-res
SCE	SCE2567 Mammoth Lakes Partnership	Non-Retail	0.00%	52	Provide specific EE projects and community outreach activities in the Mammoth Lakes area in order to induce energy savings	measurable, verifiable energy savings	Y	2007	Res; Non-res
SCE	SCE2568 Ridgecrest Partnership	Non-Retail	0.00%	53	Provide specific EE projects and community outreach activities in the Ridgecrest area in order to induce energy savings	measurable, verifiable energy savings	Y	2007	Res; Non-res

California CFL Program Characte

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					Number	Time Period (date to date)	2007	2006		
SCE	SCE2526 California Community Colleges		attend regional CC conferences	other IOUs, independent contractors	51,949	2006-07	0	51,949	0	funding, time/budget constraints,
SCE	SCE2536 EE DR Flex Program		brochures, direct emails	independent contractors (installers)	939	2006-07	0	118	821	initial costs
SCE	SCE2544 CA Preschool Energy Efficiency Program		newsletters, email, direct mail, web-sites, conference & professional development meetings	independent contractors / auditors	2,120	2006-07	0	1,958	162	lack of info/funding, absence of targeted programs
SCE	SCE2546 Lights for Learning CFL Fundraiser		print/electronic materials, direct marketing (phone outreach), D2D & F2F marketing		3,099	2006-07	0	3,099	0	none listed
SCE	SCE2559 The Lighting Energy Efficiency PAR 38_30 CFL Program		Marketing brochures, phone solicitations.	RETEX (retail buying cooperative)	13,219	2006-07	0	13,219	0	cost
SCE	SCE2562 Campus Housing Energy Efficiency Program		program brochures, presentations, press releaseses, trade journal articles, direct mail, telemarketing	independent contractors (installers)	177	2006-07	0	177	0	budget constraints
SCE	SCE2566 Palm Desert Partnership		Lighting exchanges/turn-ins; audits w/ direct CFL installs;	The Energy Coalition, facilitator; HVAC contractors/dealers	5,656	2006-07	0	5,656	0	lack of information & funding, performance uncertainty, transaction costs
SCE	SCE2567 Mammoth Lakes Partnership		Local radio and print ads.		445	2006-07	0	0	445	None listed
SCE	SCE2568 Ridgecrest Partnership		Newspaper and radio ads		411	2006-07	0	225	186	none listed

California CFL Program Characterizations

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SCE	SCE2569 State of California IOU Partnership Program	Non-Retail	0.00%	63	Utilize custom incentives and core programs to achieve cost effective energy savings through EE RCx, equipment retrofits, new construction and DR programs.	reduce state energy purchases by 20% by 2015	Y	2007	Non-res
SCE	SCE2570 Federal Direct Install Initiative	Non-Retail	0.02%	30			N		
SCE	Low-Income Energy Efficiency (LIEE) Program--Relamping	Non-Retail	0.21%	11					
SDG&E	SDGE 3002 City of Chula Vista Partnership	Non-Retail	0.01%	34	Aims to enable residents, developers, and Southbay cities to implement energy effic and conservation measures. Also aims to increase public awareness about energy effic and conservation through non-traditional education and outreach outlets used by cities and the County.	• Enable City to implement EE & DR projects at City-owned facilities. • Enable residents to implement EE. • Enable/motivate developers to invest in EE upgrades for MF. • Enable Southbay Cities to institutionalize EE practices.	Y	2006	Res; Non-res
SDG&E	SDGE 3005 City of San Diego Partnership	Non-Retail	0.01%	41	Facilitates retrofitting the City's least energy-effic bldgs, provides incentives (expedited permitting) to developers who implement energy effic while undertaking condo conversions, educates residents (esp hard-to-reach) on energy effic and available incentives, and assists other local gov'ts inimplementing energy effic projects.	• Increase EE meas installations in condo conversion projects. • Increase # of local gov't agencies partic in EE projects. • Provide local EE info clearinghouse to City residents.	Y	2006	Res--MF; Non-res--City facilities
SDG&E	SDGE3006 Lighting Exchange and Education	Non-Retail	0.11%	14	Offers hard-to-reach res customers opportunity to exchange incandescents for CFLs and halogen torchieres for CFL torchieres.	Short- and long-term residential energy savings	Y	2006	Res

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
SCE	SCE2569 State of California IOU Partnership Program		F2F meetings, phone calls between state agencies	other IOUs, independent contractors	0	2006-07	0	0	0	none listed
SCE	SCE2570 Federal Direct Install Initiative				12,536	2006-07	0	12,536	0	
SCE	Low-Income Energy Efficiency (LIEE) Program--Relamping				117,353					
SDG&E	SDGE 3002 City of Chula Vista Partnership	NA	Direct mail; community events; brochures; website; literature at SDG&E and CCSE Planning Counter Lobby; city staff visits to area businesses and residences (perform home energy assessments); workshops for Plng & Bldg Dept Staff; lighting exchanges in all Sweetwater School District high schools (to begin in Q1 2008).	Other South Bay cities (Coronado, National City, Imperial Beach, & uninc. areas of SD county); National Energy Research Center for Sustainable Communities; area businesses	8,240	2006-07	0	8,240	0	• Hard-to-reach cust have limited access to EE info. • Condo conversion developers not req'd to meet current Title-24 reqmts. • Southbay Cities' lack of energy mgmt policies.
SDG&E	SDGE 3005 City of San Diego Partnership	NA	Fliers at City facilities; workshops/seminars for developers; community event participation & workshops; website; newspapers, lighting exchanges.	condo conversion developers; other local gov't agencies	3,781	2006-07	0	3,781	0	• Lack of staff dedicated to addressing EE in City bldgs. • Condo conversion developers not req'd to meet current Title-24 reqmts. • Lack of info avail to low-income and elderly customers
SDG&E	SDGE3006 Lighting Exchange and Education	NA	Direct mailings; distrib of flyers in schools, agencies, community-based orgs, park & rec centers, churches, senior centers, local gov't offices, and groceries; radio spots; SDG&E website; sponsor events.	Schools, agencies, community-based orgs, park & rec centers, churches, senior centers, local gov't offices, and groceries	61,180	2006-07	0	61,180	0	Hard-to-reach customers have limited resources ($ and info); cust whose 1st language is not English.

California CFL Program Characterizations

Adminis-trator	Program Name	Program Type (Retail/Non-Retail)	% of Ttl CFLs Distributed by IOU, 2006-07	Ranking (1=most CFLs)	Brief Description	Primary Objective(s)	Claiming Savings from CFLs (Y/N)	1st Yr of Pgm Implemen-tation	Sector(s) Addressed / Target Market
SDG&E	SDGE3012 Express Efficiency Rebate Program	Retail	0.01%	37	Prescriptive rebate to encourage non-res cust to retrofit existing equip w/ hi-e equip.	Long-term energy and peak demand reductions	Y	2006	Non-res: targets cust > 100 kW avg monthly demand (or 4,166 avg monthly therms)
SDG&E	SDGE3016 Upstream Lighting Program	Retail	8.56%	3	Promotes purchase/installation of qualifying EE ltg products to consumers via manuf-to-retailer discounts/buy-downs.	• kW and kWh savings • Significantly increase acceptance of EE lighting.	Y	2006	Res
SDG&E	SDGE3017 Multi-Family Rebate Program	Non-Retail	0.22%	10	Offers prescriptive rebates to motivates MF owners/managers to install EE products in both common areas and tenant dwelling units.	Long-term energy savings	Y	2006	Res: MF
SDG&E	SDGE3020 Small Business Super Saver	Non-Retail	0.04%	23	Local presciptive rebate pgm to encourage energy effic retrofits. Also offers contractor incentives and an on-bill financing option.	Long-term demand and energy savings	Y	pre 2006	Non-res: targets cust < 100 kW monthly demand (or <4,166 therms avg monthly use)

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
SDG&E	SDGE3012 Express Efficiency Rebate Program	NA	SDG&E Energy Program Reps & other staff; seminars; professional trainings; industry trade shows; work w/ equipment reps; direct mail.	Prof orgs/trade associations; contractors	6,618	2006-07	0	6,618	0	• Customer confusion: previously, pgm meas and mkt segments overlapped. • Procurement and installation requirements of corp chains, schools, and gov't agencies.
SDG&E	SDGE3016 Upstream Lighting Program	NA	Coord w/ national ES products and "Change A Light…" campaign; coord w/ statewide Flex Your Power advertising; POP materials in retail stores.	National ES program; statewide Flex Your Power program	4,781,243	2006-07	0	4,781,243	0	• High first cost. • Steep learning curve. • Limited availability. • Concerns about quality.
SDG&E	SDGE3017 Multi-Family Rebate Program	NA	Direct mail; presentations at community housing org workshops, local MF assoc mtgs, and SD&E's website.	Community housing orgs; local MF assoc	123,498	2006-07	0	123,498	0	• Split incentives (property owners/managers vs tenants).
SDG&E	SDGE3020 Small Business Super Saver	NA	Direct delivery by SDG&E Energy Pgm Facilitators and other staff, community-based orgs, faith-based orgs, ethnic orgs, vendors, contractors, and equip dealers; education and training seminars	Community-based orgs, faith-based orgs, ethnic orgs, vendors, contractors, and equip dealers	22,731	2006-07	0	22,731	0	• High first cost / lack of financing. • Customers are typically renters (split incentive). • Limited information: do not understand financial benefits / utility bill savings.

California CFL Program Characterizations

Adminis-trator	Program Name	Program Type (Retail/Non-Retail)	% of Ttl CFLs Distributed by IOU, 2006-07	Ranking (1=most CFLs)	Brief Description	Primary Objective(s)	Claiming Savings from CFLs (Y/N)	1st Yr of Pgm Implemen-tation	Sector(s) Addressed / Target Market
SDG&E	SDGE3030 3P California Preschool EE Program	Non-Retail	0.00%	44	Brings EE to preschool centers: provides detailed technical audits (incl financial analysis), assists with implementation, offers training for facility owners & managers, and provides informational outreach to enrolled children and their parents.	Implement EE projects in the 800 early care and edu ctrs w/in SDG&E's service area.	N	2006	Non-res: pre-schools
SDG&E	SDGE3035 3P Mobile Home Program	Non-Retail	0.05%	21	Provides comprehensive EE meas to cust in manuf and mobile homes.	Energy savings and demand reductions	N	pre 2006 (in SCE/SCG and PG&E service areas)	Res: manuf & mobile homes, esp those in hotter climates
SDG&E	SDGE3039 3P Mobile Energy Clinic	Non-Retail	0.00%	59	Improves EE for sm non-res thru diagnositcs & maintenance of HVAC equip, implementing low-cost meas, and recommendations from energy audits.	Energy savings	N	2006 (modified version of SCG pgm running since 2001)	Non-res: small retail (business < 5,000 sqft.)
SDG&E	SDGE3042 3P Laundry Coin-Op Program	Non-Retail	0.00%	50	Promote installation of ES equivalent commercial-grade clothes washers as replacements for ineffic washers; provide additional energy effic measures (pipe wrap, lighting, hot water temp setback)	• 4,300 ineffic washer change-outs. • Comprehensive add'l meas implemented in 800 commercial laundromats & MF laundry rooms.	N	approved in 2005 by PAG for SCE/SCG and MWD	Non-res: property managers and owners, equip manuf, and leasing co's and route operators of laundromats, institutions, and MF facilities

California CFL Program Characte

Adminis-trator	Program Name	FOR NON-RETAIL PGMS ONLY: How were CFLs obtained for distribution to customers?	Marketing Plan	Trade Allies Involved	Cumulative CFLs Distributed		Annual CFLs Distributed		Description of method used to calc # of CFLs	Market Barriers
					Number	Time Period (date to date)	2007	2006		
SDG&E	SDGE3030 3P California Preschool EE Program	NA	Outreach thru childcare ntwks, lg orgs w/ child care, and preschools; presentations/workshops; info on partner websites, newsltr updates, and other mktg material distrib	CA Dept of Edu, Child Development Division; CA Head Start Assoc	2,520	2006-07	0	2,520	2520	• High first costs and competing demands for funds • Technology information search costs. • Performance uncertainties. • Lack of viable service providers. • Controllability.
SDG&E	SDGE3035 3P Mobile Home Program	NA	Flyers distrib @ parks, direct mail, and telemarketing. Follow-up neighborhood mtgs w/ sample measures & demos.	NA	27,499	2006-07	0	27,499	0	• Cost-effectiveness. • Split incentives. • Park managment directives. • Income, language, and educational barriers.
SDG&E	SDGE3039 3P Mobile Energy Clinic	NA	Door-to-door, face-to-face mtgs (incl walk-thru audit, diagnostics, and rec's), w/ follow-up phone calls. Encourages follow-up thru partic in Express Efficiency (et al.)	NA	61	2006-07	0	61	0	• Until recently, energy costs not large enough to be noticed by small business owners. • Unaware of EE options and associated benefits. • Lack of time to focus on EE information, attend seminars, etc.
SDG&E	SDGE3042 3P Laundry Coin-Op Program	NA	Focused on CWs: (1) working w/ distrib and route operators on in-house sales trainings; (2) edu packets to MF property managers & owners	Non-res: property managers and owners, equip manuf, and leasing co's and route operators of laundromats, institutions, and MF facilities	882	2006-07	0	882	0	• Previous rebate levels too low to result in change in lease agreement (that would require Energy Star equipment). • Diverse equipment leases; lack of education for both leasors and leasees. • Lack of team approach (gas + water utilities)

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APPENDIX C. MANUFACTURER SURVEY MAPPING MATRIX AND INTERVIEW GUIDE

Lighting Manufacturer Survey Mapping Matrix

Research Objectives	Interview Guide Sections/Questions
Program participation characteristics, motivation	• II
Requests for sales data	• III. A – D.
Recent ULP trends, policies	• III. E
Upstream Lighting Program free ridership	• IV. A. – C.
Upstream Lighting Program spillover, other market effects	• IV. D. (program effects on non-discounted CFLs in California) • V. A – K. (Early, cumulative effects of California lighting rebate programs)
Supply chain characterization	• VI. A. – I.
Program leakage	• V. L. – M. • VI. G. – I.
Pricing practices	• VII. A. – G.
Market characterization	• VIII. A. – G.
Product quality, recycling	• IX. A – F.
Program satisfaction	• X. A. – D.

Program Attribution, Market Effects, and Market Characterization Interview Guide for Lighting Manufacturers Participating in the 2006-2008 California Upstream Lighting Programs

I. Introduction

A. Contact Protocol

1. Call potential interviewees to ascertain most appropriate interviewee. Obtain email address(es) of appropriate interviewees. If company refuses interview, determine reasons for refusal and if it's logistical in nature, try to find workaround.
2. Send email interview invitation to appropriate interviewee. This invitation will include:
   a) Explanation of purpose and scope of interview.
   b) Explanation of time frame within which the interview will need to be completed.
   c) Explanation of expected duration of interview and flexibility to complete interview over multiple sessions.
   d) Instructions to propose a convenient interview time.
   e) Contact information for interviewers.
   f) Assurances of confidentiality.
   g) A letter attachment from the CPUC explaining the importance of the interview.

3. If target interviewee does not respond to the email invitation within a week, a follow-up call will be made to try to schedule an interview time, find an alternate interview target, or determine reasons for refusal.
4. Once an interview time has been arranged, the interviewee will be emailed, a couple days in advance of the interview, a copy of the interview guide as well as a customized data table similar to Table 1 below. The email will contain additional assurances of confidentiality.

B. At the beginning of the interview, collect information on interviewee's position, overall responsibilities, and experience with the program..

II. Program Participation Confirmation and Reasons for Participation

A. Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric jointly participate in an Upstream Lighting Program which provides per bulb or per fixture financial incentives to buy down the cost of energy efficient lighting products. According to our information your company has been receiving these manufacturer buydown incentives from this California Upstream Lighting Program during the 2006-2008 time period. Are you aware of your company's participation in this program? [IF UNAWARE, FIND SOMEONE WITH THE COMPANY WHO IS AWARE. IF THEY RECOGNIZE THIS PROGRAM BY A DIFFERENT NAME, EXPLAIN THAT FOR THE SAKE OF SIMPLICITY YOU'LL HENCEFORTH REFER TO THE PROGRAM AS "THE CALIFORNIA UPSTREAM LIGHTING PROGRAM."]

B. Besides getting these financial incentives, are there any other aspects of this California Upstream Lighting Program that your company has actively taken part in?

1. [IF YES] What other aspects of this program has your company been involved in?

C. About what year did your company first get involved with the California Upstream Lighting Program?

D. Before becoming involved with the California Upstream Lighting Program, was your company involved in any other California programs that provide rebates or buydown discounts for energy-efficient lighting products?

1. [IF YES] What programs were these? [IF REBATES MENTIONED, TRY TO DETERMINE IF THESE WERE UPSTREAM OR DOWNSTREAM (MAIL-IN REBATES, POINT-OF-SALE REBATES)]

2. [IF YES] About when did this involvement begin and what was the nature of this participation?

E. Was your company selling compact fluorescent bulbs or fixtures in California before getting involved with any of these California lighting rebate or discount programs?

F. What was your primary reason for getting involved with the California Upstream Lighting program?

G. Did you have any other reasons for getting involved with the California Upstream Lighting program?

1. [IF YES] What were these?

III. 2006-2008 CFL Product Sales and California Upstream Lighting Program Trends

A. My next questions concern which compact fluorescent bulbs or fixtures you sell in California and what retail channels you sell them through. Is this a topic that you are familiar with? [IF INTERVIEWEE IS FAMILIAR, PROCEED. IF NOT FAMILIAR, GET ALTERNATIVE CONTACT NAME AND SKIP TO NEXT SECTION]

B. **Non-Specialty CFL Bulbs** [IF THEY SOLD NON-SPECIALTY CFL BULBS ELSE SKIP TO III. C.] First I'm going to ask you some questions about your sales of non-specialty CFL bulbs in California. By "non-specialty" CFL bulbs I mean bulbs that do not have special functions or features such as reflectors, dimmability, three-way light levels, or flood lighting. Now earlier I emailed you a table that shows you a record of the types of non-specialty CFL bulbs that we have records of you selling through the ULP program along with some spaces for non-program sales that we were hoping you could fill in. [REPEAT ASSURANCES OF CONFIDENTIALITY]

Table 1
Sample DataTable

Retail Channel/Product Type	# Non-Specialty CFL Bulbs Through Upstream Lighting Program				# Non-Specialty CFL Bulbs Sold in California Not Through Upstream Lighting Program			
	2006	2007	Q1 2008	Total 2006-2008	2006	2007	Q1 2008	Total 2006-2008
Non-Specialty CFL Bulbs of Type Sold Through Upstream Lighting Program								
Large Home Improvement								
CFL INT INTEGRAL - 13 WATT >= 800 LUMENS - SCREW-IN	50,000	78,000	32,000	**160,000**	A	B	C	D
INTERIOR CF BULB - 23 WATT 1,100 TO 1,399 LUMENS	100,000	213,000	81,000	**394,000**	E	F	G	H
Grocery								
CFL INT INTEGRAL - 13 WATT >= 800 LUMENS - SCREW-IN	60,000	93,600	38,400	**192,000**	I	J	K	L
INTERIOR CF BULB - 23 WATT 1,100 TO 1,399 LUMENS	120,000	255,600	97,200	**472,800**	M	N	O	P
INTERIOR CF BULB - 23 WATT >=1,600 LUMENS	85,000	34,000	56,000	**175,000**	Q	R	S	T
Other Non-Specialty Energy Star CFLs Sold in California But Not Through Upstream Lighting Program								
Channel?								
???								
???								
???								
Channel?								
???								
???								
???								
Non-Specialty Non-Energy Star CFLs Sold in California								
Channel?								
???								
???								
???								
Channel?								
???								
???								
???								

1. Does the table I sent to you seem correct in terms of the types and volume of non-specialty CFLs you sold through the California Upstream Lighting Program?

    a) [IF NO] [Record any corrections to the table]

2. Why did you choose to sell these particular products and packages through the California Upstream Lighting Program?

3. [IF THEY DID FILL IN NON-ULP DATA INTO TABLE THAT INDICATED NON-SPECIALTY ENERGY STAR CFLs SOLD IN CALIFORNIA IN 2006-2008 BUT NOT THROUGH ULP

PROGRAM] I noticed that when you filled out the table you indicated that in the 2006-2008 period you sold non-specialty Energy Star CFLs in California that were not rebated by the California Upstream Lighting Program. Why didn't you sell these CFL bulbs through the program?

a) [IF THEY INDICATE MULTIPLE REASONS] Which of these reasons was the most important?

b) [IF NOT ALREADY EXPLAINED] What advantages, if any, did you see in not selling CFL bulbs through the program?

c) [IF NOT ALREADY EXPLAINED] What disadvantages, if any, did you see in not selling CFL bulbs through the program?

4. [IF THEY DID FILL IN NON-ULP DATA INTO TABLE THAT INDICATED NON-SPECIALTY NON-ENERGY STAR CFLs SOLD IN CALIFORNIA IN 2006-2008] I noticed that when you filled out the table you indicated that in the 2006-2008 period you sold non-specialty non-Energy Star CFLs in California. Why do you sell these rather than just Energy Star CFLs?

   a) [IF THEY INDICATE MULTIPLE REASONS] Which of these reasons was the most important?

   b) What would have to change for you to only offer Energy Star CFLs for the CFLs you sell?

   c) What are the advantages and disadvantages of getting bulbs certified by Energy Star?

5. [IF THEY DIDN'T FILL IN NON-ULP DATA INTO TABLE] During the 2006-2008 period did you sell non-specialty Energy Star CFL bulbs in California that **did not** receive discounts from the Upstream Lighting Program?

   a) [IF YES] Are the bulb types and packages different from those you sell through the California Upstream Lighting Program?

      a. [IF YES] How so?

   b) [IF YES] What sorts of distribution channels did you sell these non-specialty Energy Star CFLs through?

   c) [IF YES] Why didn't you sell these bulbs through the California Upstream Lighting Program?

6. [IF THEY DIDN'T FILL IN NON-ULP DATA INTO TABLE] During the 2006-2008 period did you sell non-specialty non-Energy Star CFL bulbs in California that **did not** receive discounts from the Upstream Lighting Program?

   a) [IF YES] What sorts of bulb types and packages were these non-specialty, non-Energy Star bulbs?

   b) [IF YES] What sorts of retail channels do you sell these non-specialty, non-Energy Star bulbs through? [MAKE SURE TO CLARIFY WHICH BULB TYPES/PACKAGES WERE SOLD THROUGH WHICH RETAIL CHANNELS]

7. When discounts from the Upstream Lighting Program **were not** available, due to delays in program startup or product allocations for discounted CFLs running out, did you sell non-specialty Energy Star CFL bulbs in California?

   a) [IF YES] Were the bulb types and packages different from those you sell through the California Upstream Lighting Program?

      a. [IF YES] How so?

   b) [IF YES] What sorts of distribution channels did you sell these non-specialty CFLs through?

8. [IF THEY DIDN'T COMPLETE THE TABLE] Please provide your best estimate of what % of non-specialty CFL bulbs that you sold in California during the 2006-2008 period fit into the following categories:

First consider the non-specialty CFL bulbs that were discounted by the California Upstream Lighting Program (ULP). About what % non-specialty CFL bulbs that you sold in California during the 2006-2008 period did these account for?	__%
Next consider the non-specialty CFL bulbs that met Energy Star specifications but were not discounted by the program. About what % non-specialty CFL bulbs that you sold in California during the 2006-2008 period did these account for?	__%
Finally consider the non-specialty bulbs that did not meet Energy Star specifications. About what % non-specialty	__%

CFL bulbs that you sold in California during the 2006-2008 period did these account for?	
Total non-specialty CFL bulbs sold in California during the 2006-2008 period	**100%**

9. Did you sell non-specialty CFLs in the 2006-2008 period that you believe exceed Energy Star specifications? [REMIND INTERVIEWEE OF ENERGY STAR SPECIFICATIONS]

    a) [IF YES] In what ways do these bulbs exceed Energy Star specification?

    b) [IF YES] What types (wattages, brands) of non-specialty CFL bulbs were these?

    c) [IF YES] Why do you offer such non-specialty bulbs that exceeded Energy Star specifications?

    d) [IF YES] What sorts of distribution channels did you sell these better-than-Energy Star CFL bulbs through?

    e) [IF YES] About what percentage of the non-specialty CFL bulbs that you sold in California during the 2006-2008 period did these account for?

10. [IF THEY SOLD NON-SPECIALTY CFLS IN CALIFORNIA IN 2006-2008 THAT DID NOT RECEIVE CALIFORNIA UPSTREAM LIGHTING PROGRAM DISCOUNTS]. The California Public Utilities Commission and the California investor-owned utilities have sales data for the CFL products that your company sold through the California Upstream Lighting Program. However, they are also very interested in learning about prices and sales volumes for CFL products that were not sold through the Upstream Lighting Program. If we provided assurances to protect the confidentiality of these sales data, would you be willing to share these data?

    a) [IF YES] What would be the next step for getting these data?

C. **Specialty CFL Bulbs** [IF THEY SOLD SPECIALTY CFL BULBS ELSE SKIP TO III. D]. Next I'm going to ask you some similar questions but this time about your sales of specialty CFL bulbs. By "specialty" CFL bulbs I mean bulbs that have special functions or features such as reflectors, dimmability, three-way light levels, or flood lighting. [REPEAT QUESTIONS B1. – B10 EXCEPT SUBSTITUTE WORD "Specialty" for "Non-Specialty"]

D. **CFL Fixtures** [IF THEY SOLD CFL FIXTURES ELSE SKIP TO III. E.] Next I'm going to ask you some similar questions but this time about your sales of Energy Star-qualified CFL fixtures. [REPEAT QUESTIONS B1. – B10 EXCEPT SUBSTITUTE WORDS "CFL fixtures" for "Non-Specialty CFL bulbs"]

E. Recent trends, policies for the California Upstream Lighting Program

1. Are there certain types of CFL or LED bulbs or fixtures that the California Upstream Lighting Program has been encouraging your company to sell more than others?

    a) [IF YES] Which products are these?

    b) Have there been differences between the California investor-owned utilities involved in this program in terms of which lighting products they have been encouraging?

        a. [IF YES] What are these differences?

    c) [IF YES] Do you agree with an emphasis on these products?

        a. Why do you say this?

    d) Are there certain types of the energy-efficient lighting products that you think the California Upstream Lighting Program should be promoting that they are not currently promoting?

2. Are there certain types of retailers that the California Upstream Lighting Program has been encouraging lighting manufacturers to partner with more than other retailer types?

    a) [IF YES] Which types of retailers?

    b) [IF YES] Do you agree with an emphasis on these retailer types?

        a. Why do you say this?

    c) Are there certain types of retailers that you think the California Upstream Lighting Program should be focusing on more to encourage their sales of energy-efficient lighting products?

        a. Why do you say this?

3. Before now were you aware that the California Upstream Lighting Program currently has a bulk purchase limit on how many CFLs, CFL

fixtures, LED night lights or holiday lights can be included in a single customer purchase?

a) What is your opinion on these bulk purchase limits?

b) [IF WERE AWARE OF BULK LIMITS] What, if anything, is your company doing to try to enforce these bulk limits?

a. [IF INVOLVED IN POLICING OF BULK LIMITS] The main purpose of the bulk purchase limits is to reduce the chance of CFL products discounted by the Upstream Lighting Program being sold outside of California. Have you discovered any of your CFL products being sold outside of California?

i. [IF YES] How do you think this happened?

IV. Free Ridership and In-State Spillover for 2006-2008 Upstream Lighting Program

A. My next questions are about the impact that the 2006-2008 California Upstream Lighting Program may have had on your California CFL products sales. Are there any retailers or retailer categories that you worked with through the 2006-2008 Upstream Lighting Program that you think would not have been selling any CFL products during this 2006-2008 time period if the discounts of $0.50-$2.75 per bulb from this program had not been available?

1. [IF YES] Which retailers or retailer categories?

2. Are there any retailers or retailer categories that you worked with through the 2006-2008 Upstream Lighting Program that you think would have been selling a different assortment of CFL bulbs or fixtures than they are now if the discounts of $0.50-$2.75 per bulb from this program had not been available?

a. [IF YES] Which retailers/retailer categories and which products?

B. [SURVEYORS: PLEASE FOLLOW THE FOLLOWING INSTRUCTIONS CAREFULLY FOR THE FREE RIDERSHIP PORTION OF THIS SURVEY].

1. FIRST ASK THE MANUFACTURER THE FREE RIDERSHIP AND SPILLOVER QUESTION SEQUENCE FOR THE RETAILER CATEGORY THROUGH WHICH THEY SOLD THE **MOST** CFLS THROUGH THE PROGRAM (SEE MATRIX). **HOWEVER, EXCLUDE ANY RETAILER CATEGORIES THAT THEY**

IDENTIFIED AS NOT SELLING ANY CFL PRODUCTS AT ALL WITHOUT THE BUYDOWNS]

2. SECOND ASK THE MANUFACTURER **THE FREE RIDERSHIP QUESTION SEQUENCES ONLY** FOR THE RETAILER CATEGORY THROUGH WHICH THEY SOLD THE **SECOND MOST** CFLS THROUGH THE PROGRAM (SEE MATRIX). **HOWEVER, AS BEFORE, EXCLUDE ANY RETAILER CATEGORIES THAT THEY IDENTIFIED IN V. A AS NOT SELLING ANY CFL PRODUCTS AT ALL WITHOUT THE BUYDOWNS**]
3. [IF THEY SOLD DISCOUNTED CFLS THROUGH MORE THAN TWO RETAILER CATEGORIES] THEN SAY: "You also sold CFL products through [LIST OTHER RETAILER CATEGORIES, IF ANY, BESIDES THE TWO ALREADY IDENTIFIED]."
   a) "Would your responses regarding the effect of the manufacturer buydowns on CFL product sales in these types of retailers be different, in a non-trivial way than for the retailer categories we already discussed?

      a. [IF YES, OR THEY RESPOND IN A WAY THAT WOULD INDICATE SOME NON-TRIVIAL DIFFERENCE (THIS IS A JUDGEMENT CALL)] For which types of retailers would your responses be different?

         i. ASK A NEW FREE RIDERSHIP QUESTION SEQUENCE FOR EACH ADDITIONAL RETAILER CATEGORY THAT THEY IDENTIFY ABOVE.

C. Free Ridership

1. Non-Specialty CFL bulbs [ASK ONLY IF SOLD NON-SPECIALTY CFL BULBS – OTHERWISE SKIP TO IV.C.2.] According to our records in the 2006-2008 period you received California Upstream Lighting Program manufacturer buydown discounts of $0.50-$2.75 per bulb for the sale of the following types of non-specialty CFL bulbs [NAME TYPES] through [RETAILER CATEGORY] such as [NAME RETAILER EXAMPLE]. The program also provided promotional materials such as signage. If these manufacturer buydown discounts and program promotional materials had not been available during this 2006-2008 period, do you think your sales of these types of non-specialty Energy Star CFL bulbs through [RETAILER CATEGORY] stores would have been about the same, lower, or higher?

a) [IF HIGHER] Why do you say this? [RECORD RESPONSE AND THEN SKIP TO NEXT RETAILER CATEGORY]

b) [IF LOWER] By what percentage do you estimate your sales of non-specialty Energy Star CFL bulbs through [RETAILER CATEGORY] stores would be lower during this 2006-2008 period if these manufacturer buydowns and program promotional materials for non-specialty CFLs had not been available? [RECORD % DECREASE]

    a. I want to make sure I understand you correctly. You estimate that your sales would have been [PERCENTAGE FROM QUESTION IV.C.1. b.] % lower without the manufacturer buydowns. So if you actually sold 100 non-specialty CFLs in a given week, you think you'd have sold only about [100 – (PERCENTAGE FROM QUESTION IV.C.1. b. * 100)] in that period if the manufacturer buydowns hadn't been available? [IF RESPONSE IS ≠ YES THEN CLARIFY ESTIMATED SALES DECREASE]

c) **Manufacturer add-on discounts:** When the California Upstream Lighting Program was providing manufacturer buydown discounts for non-specialty bulbs sold through the [RETAIL CATEGORY] retail channel, did your company ever provide any of its own price discounts in addition to those provided by the Upstream Lighting Program?

    a. [IF NO] Why not?

    b. [IF YES] What were your reasons for providing these additional price discounts?

    c. [IF YES] What was the typical range of these additional discounts on a $ per bulb basis?

    d. [IF YES] Were there particular types of bulbs that you offered these additional discounts on?

        i. [IF YES] What types of bulbs were these?

    e. Using a scale of 0 to 10 where 10 equals "very likely" and 0 equals "not likely at all," how likely were you to offer these additional price discounts if the manufacturer buydowns had not also been available?

[REPEAT QUESTIONS IV. C. 1. a) – d). FOR THE NEXT RETAILER CATEGORY]

2. **Specialty CFL bulbs** [ASK ONLY IF SOLD SPECIALTY CFL BULBS THROUGH THIS RETAILER CATEGORY OTHERWISE SKIP TO IV.C.3.] [REPEAT QUESTIONS IV. C. 1. a) – d) BUT SUBSTITUTE APPROPRIATE PRODUCT NAME AND DISCOUNT LEVELS. REPEAT SEQUENCE FOR EACH RETAILER CATEGORY]

3. **CFL fixtures** [ASK ONLY IF SOLD SPECIALTY CFL BULBS THROUGH THIS RETAILER CATEGORY OTHERWISE SKIP TO NEXT QUESTION] [REPEAT QUESTIONS IV. C. 1. a) – d) BUT SUBSTITUTE APPROPRIATE PRODUCT NAME AND DISCOUNT LEVELS. REPEAT SEQUENCE FOR EACH RETAILER CATEGORY]

4. Effects of other California IOU programs/efforts

a) Besides the discounts and the promotional materials, do you think the California Upstream Lighting Program does anything else to help you sell non-specialty Energy Star CFL bulbs?

   a. [IF YES] What else does the program do?

b) California also has a program called Flex Your Power that does mass advertising for CFL products and other energy efficient measures. Please indicate how significant you think this program is as a driver of increased CFL product sales in California in the 2006-2008 period. Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant. [RECORD RATING]

   a. Why do you give this rating?

c) In addition to the Upstream Lighting Program and the Flex Your Power Program some California utilities have also been involved in other campaigns to promote sales of CFL products such as the Energy Star Change-a-Light promotion. Please indicate how significant you think these promotions have been as a driver of increased CFL product sales in the 2006-2008 period. Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant. [RECORD RATING]

   a. Why do you give this rating?

D. **Program Effects on Non-discounted CFLs Sold in California in 2006-2008** [IF THEY SOLD NON-SPECIALTY CFLS IN CALIFORNIA IN

2006-2008 THAT DID NOT RECEIVE CALIFORNIA UPSTREAM LIGHTING PROGRAM DISCOUNTS ELSE SKIP TO SECTION V.]

1. You said earlier that you also sold CFL bulbs or fixtures in California in the 2006-2008 that did not receive discounts from the California Upstream Lighting Program. What effects, if any, do the program-discounted CFL bulbs or fixtures have on your sales levels of these non-program-discounted CFL bulbs or fixtures? [IF MECHANISM FOR THESE EFFECTS IS NOT EXPLAINED, PROBE FOR MECHANISM]

    a) Would these effects vary depending on the type of CFL product?

        a. [IF YES] How so?

    b) Have these effects changed at all over this 2006-2008 period?

        a. [IF YES] How so and about what time period did these effects change?

2. Do the retailers that you supply ever sell program-discounted CFL bulbs or fixtures and non-program-discounted CFL bulbs or fixtures at the same time?

    a) [IF YES] Would you say this happens always, very often, sometimes, or not very often?

    b) [IF YES] Do you promote these non-program-discounted CFL bulbs or fixtures differently than you do the program-discounted CFL bulbs or fixtures?

        a. [IF YES] How are your promotional efforts different?

    c) [IF YES] Do you think increased shopper foot traffic due to program-discounted CFL bulbs and fixtures has any impact on the sales of non-program discounted CFL bulbs or fixtures that are being sold at the same time?

        a. [IF YES] Why do you say this?

3. What effects do you think program-discounted CFL bulbs or fixtures have on consumer expectations regarding prices of non-discounted CFL bulbs or fixtures?

4. You indicated that you sold the following types of non-specialty CFL bulbs in California during the 2006-2008 period that you did not sell

through the ULP Program:[READ PRODUCT TYPES AND RETAIL CHANNELS (IF AVAILABLE). IF THEY FILLED OUT THE TABLE, DIRECT THEM TO SPECIFIC ROW]. Do you think your sales of these types of non-specialty non-program-discounted CFL bulbs would be about the same, lower, or higher if the California Upstream Lighting program – with its manufacturing buydowns and promotional materials – did not exist during this time period?

a) [IF HIGHER] Why do you say this?

b) [IF HIGHER] By what percentage do you estimate your sales of these non-specialty non-program-discounted CFL bulbs through [RETAILER CATEGORY] stores would be higher during this period if the California Upstream Lighting Program did not exist during this 2006-2008 time period? [RECORD % DECREASE]

    a. I want to make sure I understand you correctly. You estimate that your sales of non-program-discounted bulbs would have been [PERCENTAGE FROM QUESTION IV. D. 4. b.] % higher without the manufacturer buydowns. So if you actually sold 100 of these non-specialty CFLs in a given week, you think you'd have sold about [100 + (PERCENTAGE FROM QUESTION IV. D. 4. b. * 100)] in that period if the California Upstream manufacturer buydowns hadn't been available? [IF RESPONSE IS ≠ YES THEN CLARIFY ESTIMATED SALES INCREASE]

c) [IF LOWER] Why do you say this?

d) [IF LOWER] By what percentage do you estimate your sales of these non-specialty CFL bulbs through [RETAILER CATEGORY] stores would be lower during this period if the California Upstream Lighting Program did not exist during this time period? [RECORD % DECREASE]

    a. I want to make sure I understand you correctly. You estimate that your sales of non-program-discounted bulbs would have been [PERCENTAGE FROM QUESTION IV. D. 4. d.] % lower without the manufacturer buydowns. So if you actually sold 100 of these non-specialty CFLs in a given week, you think you'd have sold about [100 - (PERCENTAGE FROM QUESTION IV. D. 4. d. * 100)] in that period if the California Upstream Lighting Program

did not exist during this time period? [IF RESPONSE IS ≠ YES THEN CLARIFY ESTIMATED SALES DECREASE]

e) [IF SAME] Why do you say this?

f) [IF THEY INDICATED IN IV B. 1. THAT EFFECTS OF PROGRAM ON NON-PROGRAM NON_SPECIALTY CFLS HAS CHANGED OVER 2006-2008 PERIOD, PROBE FOR HOW THESE SALES EFFECTS WOULD VARY OVER THE 2006-2008 PERIOD]

5. [REPEAT SEQUENCE IV. D. 4 FOR SPECIALTY CFLS OR CFL FIXTURES IF RELEVANT, MAKING SURE TO CHANGE PRODUCT DESCRIPTION IN QUESTIONS.]

V. Early, Cumulative Effects of California Lighting Rebate Programs – Up until now we have been talking about the effect of the California Upstream Lighting Program on CFL bulbs and products that you sold in California during the 2006-2008 period. Now I want you to think about the earlier and cumulative effects that the years of California lighting rebate and discount programs might have had on your company's sales of CFL products.

A. Have the years of California lighting rebate and discount programs had any effects on the types of CFL products you sell or the way that you sell them?

1. [IF YES] How so?

B. [IF THEY SAID THAT THEY HADN'T BEEN SELLING CFL PRODUCTS IN CALIFORNIA BEFORE BECOMING INVOLVED IN CA LIGHTING REBATE PROGRAMS – E.G. II. E = "NO"] Earlier you said that your company was not selling CFL products in California before getting involved with any California lighting rebate or discount programs. How significant was the existence of the California lighting rebate or discount programs in your company's decision to enter the California lighting market? Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant.

C. [IF THEY SAID THAT THEY HADN'T BEEN SELLING CFL PRODUCTS IN CALIFORNIA BEFORE BECOMING INVOLVED IN CA LIGHTING REBATE PROGRAMS – E.G. II. E = "YES"] Earlier you said that your company sold CFL products in California before getting involved with any of these California lighting rebate or discount programs. Are you familiar with your company's CFL product sales activities during this period?

1. [IF YES] Currently you sell CFL products in the following retail channels in California [IDENTIFY RETAIL CHANNELS]. Were you selling in these same retail channels before you became involved with the California lighting rebate or discount programs?

    a) [IF NO] Which retail channels did you enter only after becoming involved with the California lighting rebate or discount programs?

        a. How significant was your involvement in the California lighting rebate or discount programs in your decision to enter the [X] retail channel. Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant. [REPEAT QUESTIONS FOR ALL NEW RETAIL CHANNELS]?

        b. Why do you say this?

2. [IF NO, OR NO LONGER RECALL] Is there anyone else in your company that might recall your CFL sales trends during this period? [IF SO, RECORD NAME AND CONTACT INFORMATION AND CONTINUE TO NEXT QUESTION]

3. Do you have California CFL product sales data for this period before you became involved with the California lighting rebate or discount programs?

    a) [IF YES] If we provided assurances to protect the confidentiality of these sales data, would you be willing to share these data?

        a. [IF YES] What would be the next step for getting these data?

D. Does your company sell CFL bulbs or fixtures in any states that **do not** have utilities or state energy efficiency programs that offer manufacturer buydowns or point of sale rebates for these kind of lighting products?

1. [IF YES] Are you familiar with your company's CFL bulb or fixture sales activities in these states?

    a) [IF YES] Currently you sell CFL bulbs or fixtures in [IDENTIFY RETAIL CHANNELS] channels in California. Do you sell CFL products in the same retail channels in these states that **do not have** utilities or state energy efficiency programs offering CFL product rebates or discounts?

a. [IF NO] Which retail channels do you use to sell CFL products in these other states?

b. [IF RETAIL CHANNELS ARE USED IN CALIFORNIA THAT ARE NOT USED IN THESE OTHER STATES] You sell CFL products through the [INCREMENTAL CA CHANNELS] retail channels in California but not in other states. How significant is the 2006-2008 California Upstream Lighting program in explaining why you sell CFL products through these retail channels in California and not these other states? Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant.

b) [IF NO] Who would be another person at your company who is familiar with the sales of these CFL products in states that do not have utilities or state energy efficiency programs offering CFL product rebates or discounts? [RECORD NAME AND CONTINUE TO NEXT QUESTION]

E. [IF YES] If we provided assurances to protect the confidentiality of your data, would you be willing to share recent CFL product sales data for states other than California?

1. [IF YES] What would be the next step for getting these data?

F. California energy efficiency programs have been offering rebates and discounts on CFL bulbs for many years. Do you think these California programs have influenced the level of sales of CFLs in other states?

1. Why do you say this?

a) [IF NOT EXPLAINED IN THEIR ANSWER TO E1] How do the California lighting rebate programs influence the level of sales of CFLs in other states?

2. [IF YES] How significant has been the influence of these years of California rebate programs on the price of CFLs in these states? Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant.

G. Has your firm experienced any reductions in manufacturing production costs for non-specialty CFLs over the last ten years?

1. [IF YES] By how much do you think these reductions in production costs have reduced the average per-bulb prices during this ten-year period?

2. [IF YES] What factors have led to these reductions in manufacturing production costs?

    a) [IF STATE/UTILITY REBATE PROGRAMS ARE MENTIONED] How did these rebate programs influence these reductions in your manufacturing costs?

    b) [IF STATE/UTILITY REBATE PROGRAMS ARE MENTIONED] In what time period did these rebate programs influence these reductions in your manufacturing costs?

    c) [IF STATE/UTILITY REBATE PROGRAMS ARE MENTIONED] Do you think that the California lighting rebate and discount programs in particular have been an important factor in influencing these reductions in your manufacturing costs?

        a. [IF YES] How important a factor were the California lighting rebate programs, in particular, in influencing these reductions in your manufacturing costs? Please use a scale of 0 to 10 where 10 equals "very important" and 0 equals "not important at all."

            i. Why do you give this rating?

                1. [IF INCREASED MANUFACTURING CAPACITY CAUSED BY CALIFORNIA REBATE PROGRAMS MENTIONED] By approximately what % did you increase your manufacturing capacity in response to the California rebate programs?

                2. [IF INCREASED MANUFACTURING CAPACITY CAUSED BY CALIFORNIA REBATE PROGRAMS MENTIONED] About when did these increases in manufacturing

capacity caused by the California rebate programs occur?

3. [IF INCREASED MANUFACTURING CAPACITY CAUSED BY CALIFORNIA REBATE PROGRAMS MENTIONED] By approximately what % did this increase in CFL manufacturing capacity reduce your average CFL production cost?

d) [IF GENERAL INCREASES IN WORLD CFL DEMAND MENTIONED] How important a factor were the California lighting rebate programs, in particular, in increasing demand for these CFL products? Please use a scale of 0 to 10 where 10 equals "very important" and 0 equals "not important at all."

    a. Why do you give that rating?

e) [IF TECHNOGICAL IMPROVEMENTS AT THE FACTORY MENTIONED] How important a factor were the California lighting rebate programs, in particular, in driving these technological improvements in the factory? Please use a scale of 0 to 10 where 10 equals "very important" and 0 equals "not important at all."

    a. Why do you give that rating?

f) If the California rebate and discount programs went away after 2008 do you think your average production costs for non-specialty CFLs would go up, would go down, or stay about the same?

    a. Why do you say that?

H. For years California lighting rebate and discount programs have been working to improve the performance of CFLs as well as their acceptability as substitutes for incandescent bulbs. For example, these programs have long required Energy Star compliance and offered larger rebates for higher lumen levels at a given wattage level. What influences, if any, have these program requirements had on the performance of the CFLs that you manufacture?

I. If the California lighting rebate and discount programs had not existed, do you think the performance improvements you have made to your CFLs would have happened sooner, later, or about the same time as they actually did?

   1. [IF LATER] How much later would you have made these performance improvements?

J. Have the California lighting rebate and discount programs influenced the way that you market your CFLs in other states?

   1. [IF YES] How so?

K. State or utility rebate and discount programs are only some of the factors that may be encouraging sales of CFL bulbs and fixtures. I'm going to name a number of possible drivers of increased CFL bulbs and fixtures. For each one I identify, please indicate how significant you think it is as a driver of increased CFL product sales during the 2006-2008 period. Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant.

   1. State or utility rebate and discount programs? [RECORD RATING]

      a) Why do you give this rating?

   2. The Energy Star program including its Change-a-Light campaign? [RECORD RATING]

      a) Why do you give this rating?

   3. CFL promotion campaigns by some large retailers such as Wal-Mart, Home Depot, and Lowe's that are being done independently of any state or utility energy efficiency programs? [RECORD RATING]

      a) Why do you give this rating?

   4. Media stories promoting the use of CFLs? [RECORD RATING]

      a) Why do you give this rating?

   5. Reductions in CFL production costs and price points due to lower-cost overseas manufacturing and increases in CFL production capacity? [RECORD RATING]

      a) Why do you give this rating?

6. Growing consumer awareness about global warming? [RECORD RATING]

    a) Why do you give this rating?

7. Higher energy costs? [RECORD RATING]

    a) Why do you give this rating?

L. Have you seen any evidence that that some lighting products receiving discounts from the California Upstream Lighting Program are being sold out-of-state or through out-of-state buyers through the Internet?

    1. [IF YES]. What evidence have you seen?

M. What do you think should be done to minimize the occurrence of out-of-state sales of lighting products receiving discounts from the California Upstream Lighting Program?

VI. Supply Chain Characterization

A. Now I would like to ask you some questions about your supply chain. Of the CFL products that you sell in California, where are most of them manufactured?

    1. Are your CFL products that are discounted through the ULP-program manufactured in different places than those that are not discounted through the program? [IF YES, IDENTIFY DIFFERENT SOURCES]

B. How long does it typically take from the time that you notify your production facilities that you have received a new order for CFL products and the time that order is delivered to the California retailer or distributor who ordered it?

    1. Approximately how much of this time is for manufacture?

    2. Approximately how much of this time is for shipment?

    3. Approximately how much of this is for temporary warehousing and storage that occurs before the retailer or distributor receives the product?

C. Are there any types of CFL products for which it takes significantly longer than this to receive after your order them?

    1. [IF YES] Which products?

D. What other factors could cause variations in these delivery times?

E. Are your delivery times for CFL products that you sell through the Upstream Lighting Program different than those for other CFL products that you manufacture?

    1. [IF YES] How so?

F. At what point in the supply chain are the stickers and packages for the California Upstream Lighting Program applied?

    1. What safeguards do you have in place to insure that CFLs which receive the program stickers and packaging are not sent to retailers that are not participating in the program?

G. If a retailer has program-discounted CFLs that remain unsold after a long period of time do you ever regain possession of these unsold bulbs through retailer returns, buybacks, or other means?

    1. [IF YES] Do you track these returned or repossessed CFLs?

    2. [IF YES] About what percentage of the program-discounted CFLs that you sell do these account for?

    3. [IF YES] In such case, what do you typically do with these unsold bulbs?

H. As noted earlier, there is evidence that some lighting products receiving discounts from the California Upstream Lighting Program are being sold out-of-state or through out-of-state buyers through the Internet. At what point in the supply and distribution chain do you think this might be happening?

I. Do you track CFL products that you sell through the California Upstream Lighting Program that are lost due to breakage and other damage?

    1. [IF YES] Do you just track damage/breakage to CFL products before they reach the retailer or also after?

    2. [IF YES] If we gave your company assurances of confidentiality, would you be willing to share information about your loss and breakage rates?

VII. Pricing

A. The California Upstream Lighting Program requires manufacturers to estimate the price for which their CFL products would have been selling for if the program's buydown discounts had not been available. How are these estimates derived?

   1. [IF SOLD PROGRAM-DISCOUNTED CFLs THROUGH MULTIPLE RETAIL CHANNELS] Did they way that you estimate these retail prices vary by retailer type?

      a) [IF YES] How so?

B. You sold the most program-discounted CFL products through the [RETAILER CATEGORY] retail channel. How much influence do the retailers in this channel have over the price of the CFL products that you supply them? Would you say that they are very influential, somewhat influential, or not very influential?

C. [IF SOLD PROGRAM-DISCOUNTED CFLs THROUGH MULTIPLE RETAIL CHANNELS] You sold the second-most program-discounted CFL products through the [RETAILER CATEGORY] retail channel. How much influence do the retailers in this channel have over the price of the CFL products that you supply them? Would you say that they are very influential, somewhat influential, or not very influential?

D. Some claim that retailers often use something called "keystone pricing" where they double the wholesale price to determine the retail price. In your experience, how frequently is this keystone pricing used for setting retail prices for CFL products. Would you say it is done always, most of the time, some of the time, or never?

   1. [IF KEYSTONE PRICING NOT USED ALWAYS] What other rules or strategies do retailers use to mark up wholesale prices?

   2. [ASK OF ALL] Are the retail pricing strategies for the products with California Upstream Lighting Program buydowns handled differently than non-program products?

      a) [IF YES] How are these different?

      b) [IF YES] Why do you think the retail pricing of these program discounted products is set in this way?

E. For CFL types that have very low costs of production, sometimes the buydown discounts from the California Upstream Lighting Program can reduce the wholesale prices to almost nothing. Do you provide any advice to retailers on how to price these free or nearly free CFL products?

1. [IF YES] What advice do you give them?

F. California CFL product prices have been declining in the last 10 years. Do you think this trend will continue, or will prices level off or even increase?

1. What factors are causing you to make this prediction?

G. [IF THEY SELL NON-PROGRAM-DISCOUNTED CFLS ALSO] You said earlier that you also sell CFL products in California that do not receive buydown discounts from the California Upstream Lighting Program. Are the program-discounted CFL products typically sold at a lower retail price, a higher retail price, or at the same retail prices as the non-program-discounted bulbs?

1. On a per-bulb basis, on average, how much [LOWER/HIGHER] are the prices of the program-discounted CFL bulbs than the other CFL bulbs that you sell?

2. On a per-fixture basis, on average, how much [LOWER/HIGHER] is the price on the program-discounted CFL fixtures than the other CFL fixtures that you sell?

3. Are your pricing strategies for the products with California Upstream Lighting Program buydowns handled differently than non-program products?

a) [IF YES] How are these different?

VIII. Market Characterization

A. How would you characterize the current market for CFL products in California in terms of manufacturer market share? For example, are there a few major manufacturers responsible for the major share of product sales? Or are there a large number of major players?

B. Where would you characterize your firm in terms of market share for the California CFL market?

C. Are there factors inherent in the manufacturing, importing or distributing processes that have restricted the production and supply of CFL products in the past year or so? Please describe: [IF RESPONDENT CAN'T THINK OF ANYTHING, PROMPT WITH EXAMPLES SUCH AS SHORTAGES OF INPUTS USED IN MANUFACTURING PROCESSES (LABOR, CAPITAL, RAW MATERIALS), INADEQUATE INFRASTRUCTURE TO PRODUCE OR IMPORT PRODUCTS, OR BRING THEM TO MARKET, ETC.]

1. To what degree have these production and supply restrictions varied with the type of CFL product?

2. How do these supply-side barriers compare to those for non-CFL products?

3. [IF SUPPLY BARRIERS IDENTIFIED] Has there been any progress recently to reduce these barriers?

    a) [IF YES] What factors led to the reduced barriers?

    b) [IF NOT ALREADY MENTIONED] Did the 2006-2008 California Upstream Lighting Program play a role in reducing these barriers?

        a. [IF YES] What role did it play?

    c) Are there any supply-side barriers that have been increased due to the structure or timing of the California lighting rebate programs?

        a. [IF YES] What are these?

        b. [IF YES] How did/does the California programs create or increase these barriers?

4. [IF SUPPLY BARRIERS IDENTIFIED] What, if anything, needs to happen to overcome the remaining supply-side restrictions?

D. What are the most important factors that are limiting customer demand for CFL products? Please explain. [IF RESPONDENT CAN'T THINK OF ANYTHING, PROMPT WITH EXAMPLES SUCH AS LACK OF AWARENESS, PRODUCT PRICING, AND PERCEPTIONS REGARDING PRODUCT PERFORMANCE, BULB FIT, APPEARANCE, EARLY BURN-OUT, ETC. RECORD WHETHER ONE HAD TO PROMPT AND RANDOMLY ROTATE THE EXAMPLES USED IN THE PROMPT.]

1. To what degree do these demand barriers vary with the type of CFL product?

2. [IF DEMAND BARRIERS IDENTIFIED] Has there been any progress recently to reduce these barriers?

    a) [IF YES] What factors lead to the reduced barriers?

b) [IF NOT ALREADY MENTIONED] Did the 2006-2008 California Upstream Lighting Program play a role in reducing these barriers?

a. [IF YES] What role did it play?

c) Are there any demand-side barriers that have been increased due to the structure or timing of the California lighting rebate programs?

a. [IF YES] What are these?

b. [IF YES] How did/does the California programs create or increase these barriers?

3. [IF DEMAND BARRIERS IDENTIFIED] What needs to happen to overcome these demand-side barriers?

E. Are you aware that in 2007 a federal Energy Bill was passed that requires new efficiency standards for light bulbs?

1. [IF YES] What do you think will be the impact of this 2007 Energy Bill on CFL sales and prices?

F. What are your expectations for U.S. CFL product sales in 2008 and beyond?

1. Why do you say that?

G. Do you sell CFL products in other countries besides the United States?

1. [IF YES] Are you familiar with your company's international sales trends?

a) [IF NO] Who would be another person at your company who is familiar with your company's international sales of CFL products? [RECORD NAME AND CONTACT INFORMATION AND SKIP TO SECTION IX]

b) [IF YES] How do your international sales trends for CFL products compare to those in the United States?

c) [IF YES] What do you think are driving these international sales trends?

IX. Product Quality, Recycling

A. Do you think the quality of CFL products in recent years has been increasing, decreasing, or staying about the same?

   1. [IF THEY THINK QUALITY IS DECREASING] What factors do you think might be leading to the production of lower quality CFL products?

B. What do you think should be done to improve the quality of CFL products?

C. Do you think that CFL product discount programs like the California Upstream Lighting Program, have affected consumer attitudes towards the quality of CFL products in any way?

   1. [IF YES] In what way?

D. Energy Star's "CFL Criteria Version 4.0" was released in February 2008 and will become effective in November 2008. What do you think will be the impact of new Energy Star standards on CFL products and prices?

E. CFL disposal has becomes a major issue in recent years. What policies do you advocate for dealing with CFL disposal?

F. What actions has your own company taken to encourage environmentally-safe recycling and disposal of CFL products?

X. Program Satisfaction

Finally I would like to find out your level of satisfaction with the California Upstream Lighting Program

A. Rebate Reservation, Program Verification Process

1. Using a scale of 0 to 10 where 10 = very satisfied and 0 = very dissatisfied, how satisfied have you been with the incentive fund reservation process – that is, the process used by the utility to allocate a set amount of incentive dollars to participating stores?

   a) [IF SATISFACTION RATING IS 0-5] Why do you say that?

2. Again using a scale of 0 to 10 where 10 = very satisfied and 0 = very dissatisfied, how satisfied have you been with the program tracking and verification process – that is, the process used by the utility to insure that the CFL products that they are providing discounts for are being sold by retailers and are properly labeled and promoted?

   a) [IF SATISFACTION RATING IS 0-5] Why do you say that?

B. Incentive Levels and Coverage

1. CFL bulbs [ASK ONLY IF THEY SELL CFL BULBS THROUGH THE PROGRAM]
   a) Using this same satisfaction scale, how satisfied have you been with the level of manufacturer buydown incentives for CFL ***bulbs***?

      a. [IF SATISFACTION RATING IS 0-5] Why do you say that? For which bulb types are you unsatisfied with the incentive levels?

   b) If the program, due to fund constraints, had to eliminate a manufacturer buydown incentive for one type of CFL bulb, which one should they choose? Why do say that?

2. CFL fixtures [ASK ONLY IF THEY SELL CFL FIXTURES THROUGH THE PROGRAM]
   a) Using this same satisfaction scale, how satisfied have you been with the levels of manufacturer buydown incentives for CFL ***fixtures***?

      a. [IF SATISFACTION RATING IS 0-5] Why do you say that? For which fixture types are you unsatisfied with the incentive levels?

3. Are there CFL products that you think that the program should be offering manufacturer buydown incentives for, that it's not currently offering?

   a) [IF YES] For what CFL products?

C. Marketing and Coordination with Retailers

1. Using the same scale of 0 to 10, how satisfied have you been with the California Upstream Lighting Program's efforts to mass-market CFL products?

   a) [ASK ONLY IF SATISFACTION RATING IS 0-5] Why do you say that?

2. Using the same satisfaction scale, how satisfied have you been with the program's efforts to coordinate with retailers on in-store product placement and promotions?

   a) [ASK ONLY IF SATISFACTION RATING IS 0-5] Why do you say that?

3. What effects, if any, does the inclusion of the utility logos have on the sales of your CFL products?

D. Satisfaction with Program Staff and Program As a Whole

1. Using the same satisfaction scale, how satisfied have you been with the program managers and other staff involved in the California Upstream Lighting Program?

    a) [ASK ONLY IF SATISFACTION RATING IS 0-5] Why do you say that?

2. Using the same scale, how would you rate your level of satisfaction with the program in general?

    a) [ASK ONLY IF SATISFACTION RATING IS 0-5] Why do you say that?

3. In what way could the program be improved?

4. Are you planning to participate in the program going forward?

    a) [IF YES] Why do you say that?

5. Do you have any final suggestions for the California Public Utility Commission and the California utilities to help them improve the programs they offer and encourage greater sales of CFL products?

APPENDIX D: RETAILER SURVEY MAPPING MATRIX AND INTERVIEW GUIDE

Lighting Retailer Survey Mapping Matrix

Research Objectives	Interview Guide Sections/Questions
Program Participation characteristics, motivation	• II
Requests for sales data	• III. A – D.
Recent ULP trends, policies	• III. E
Upstream Lighting Program free ridership	• IV. A. – B.
Upstream Lighting Program spillover, other market effects	• IV. C. (program effects on non-discounted CFLs in California) • V. A. – I. (Early, cumulative effects of California lighting rebate programs)
Supply chain characterization and stocking practices	• VI. A. – W.
Program leakage	• V. J. – K. • VI. T. – W.
Pricing practices	• VII. A. – E.
Market characterization	• VIII. A. – H.
Product quality, recycling	• IX. A – J.
Program satisfaction	• X. A. – D.

Program Attribution, Market Effects, and Market Characterization Interview Guide for Executives of Large Lighting Retailers Participating in the 2006-2008 California Upstream Lighting Programs

I. Introduction

A. Contact Protocol

1. Call potential interviewees to ascertain most appropriate interviewee. Obtain email address(es) of appropriate interviewees. If company refuses interview, determine reasons for refusal and if it's logistical in nature, try to find workaround.
2. Send email interview invitation to appropriate interviewee. This invitation will include:
   a) Explanation of purpose and scope of interview.
   b) Explanation of time frame within which the interview will need to be completed.
   c) Explanation of expected duration of interview and flexibility to complete interview over multiple sessions.
   d) Instructions to propose a convenient interview time.
   e) Contact information for interviewers.
   f) Assurances of confidentiality.

g) A letter attachment from the CPUC explaining the importance of the interview.

3. If target interviewee does not respond to the email invitation within a week, a follow-up call will be made to try to schedule an interview time, find an alternate interview target, or determine reasons for refusal.
4. Once an interview time has been arranged, the interviewee will be emailed, a couple days in advance of the interview, a copy of the interview guide as well as a customized data table similar to Table 1 below. The email will contain additional assurances of confidentiality.

B. At the beginning of the interview, collect information on interviewee's position and overall responsibilities, and experience with the program.

II. Program Participation Confirmation and Reasons for Participation

A. Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric jointly participate in an Upstream Lighting Program which provides per bulb or per fixture financial incentives to buy down the cost of energy efficient lighting products. According to our information your company has been selling lighting products that receive these manufacturer buydown incentives from this California Upstream Lighting Program during the 2006-2008 time period. Are you aware of your company's participation in this program? [IF UNAWARE, FIND SOMEONE WITH THE COMPANY WHO IS AWARE. IF THEY RECOGNIZE THIS PROGRAM BY A DIFFERENT NAME, EXPLAIN THAT FOR THE SAKE OF SIMPLICITY YOU'LL HENCEFORTH REFER TO THE PROGRAM AS "THE CALIFORNIA UPSTREAM LIGHTING PROGRAM."]

B. Besides getting these financial incentives, are there any other aspects of this California Upstream Lighting Program that your company has actively taken part in?

1. [IF YES] What other aspects of this program has your company been involved in?

C. About what year did your company first get involved with the California Upstream Lighting Program?

D. Before becoming involved with the California Upstream Lighting Program, was your company involved in any other California energy efficiency programs that provide rebates or buydown discounts for energy-efficient lighting products?

1. [IF YES] What programs were these? [IF REBATES MENTIONED, TRY TO DETERMINE IF THESE WERE UPSTREAM OR

DOWNSTREAM (MAIL-IN REBATES, POINT-OF-SALE REBATES)]

2. [IF YES] About when did this involvement begin and what was the nature of this participation?

E. Was your company selling compact fluorescent bulbs or fixtures in California before getting involved with any of these California lighting rebate or discount programs?

F. Was your company selling **Energy Star** compact fluorescent bulbs or fixtures in California before getting involved with any of these California lighting rebate or discount programs?

G. What was your primary reason for getting involved with the California Upstream Lighting program?

H. Did you have any other reasons for getting involved with the California Upstream Lighting program?

1. [IF YES] What were these?

III. 2006-2008 CFL Product Sales and California Upstream Lighting Program Trends

A. My next questions concern which CFL products you sell in California. Is this a topic that you are familiar with? [IF INTERVIEWEE IS FAMILIAR, PROCEED. IF NOT FAMILIAR, GET ALTERNATIVE CONTACT NAME AND SKIP TO NEXT SECTION]

B. **Non-Specialty CFL Bulbs** [IF THEY SOLD NON-SPECIALTY CFL BULBS ELSE SKIP TO III. C.] First I'm going to ask you some questions about your sales of non-specialty CFL bulbs in California, both Energy Star and non-Energy Star. By "non-specialty" CFL bulbs I mean bulbs that do not have special functions or features such as reflectors, dimmability, three-way light levels, or flood lighting. Now earlier I emailed you a table that shows you a record of the types of non-specialty CFL bulbs that we have records of you selling through the ULP program along with some spaces for non-program sales that we were hoping you could fill in. [REPEAT ASSURANCES OF CONFIDENTIALITY]

Table 1
Sample Data Table

Product Type	# Non-Specialty CFL Bulbs Through Upstream Lighting Program				# Non-Specialty CFL Bulbs Sold in California Not Through Upstream Lighting Program			
	2006	2007	Q1 2008	Total 2006-2008	2006	2007	Q1 2008	Total 2006-2008
Non-Specialty CFL Bulbs of Type Sold Through Upstream Lighting Program								
CFL INT INTEGRAL - 13 WATT >= 800 LUMENS - SCREW-IN	50,000	78,000	32,000	**160,000**	A	B	C	D
INTERIOR CF BULB - 23 WATT 1,100 TO 1,399 LUMENS	100,000	213,000	81,000	**394,000**	E	F	G	H
Other Non-Specialty Energy Star CFLs Sold in California But Not Through Upstream Lighting Program								
???								
???								
???								
Non-Specialty Non-Energy Star CFLs Sold in California								
???								
???								
???								

[IF NO, MAKE APPROPRIATE CORRECTIONS/CLARIFICATIONS]

1. Does the table I sent to you seem correct in terms of the types and volume of non-specialty CFLs you sold through the California Upstream Lighting Program?

   a) [IF NO] [Record any corrections to the table]

2. Why did you choose to sell these particular products and packages through the California Upstream Lighting Program?

3. [IF THEY DID FILL IN NON-ULP DATA INTO TABLE THAT INDICATED NON-SPECIALTY ENERGY STAR CFLs SOLD IN CALIFORNIA IN 2006-2008 BUT NOT THROUGH ULP PROGRAM] I noticed that when you filled out the table you indicated that in the 2006-2008 period you sold non-specialty Energy Star CFLs in California that were not rebated by the California Upstream Lighting Program. Why didn't you sell these CFL bulbs through the program?

   a) [IF THEY INDICATE MULTIPLE REASONS] Which of these reasons was the most important?

   b) [IF NOT ALREADY EXPLAINED] What advantages, if any, did you see in not selling CFL bulbs through the program?

   c) [IF NOT ALREADY EXPLAINED] What disadvantages, if any, did you see in not selling CFL bulbs through the program?

4. [IF THEY DID FILL IN NON-ULP DATA INTO TABLE THAT INDICATED NON-SPECIALTY NON-ENERGY STAR CFLs SOLD IN CALIFORNIA IN 2006-2008] I noticed that when you filled out the table you indicated that in the 2006-2008 period you sold non-specialty non-Energy Star CFLs in California. Why do you sell these rather than just Energy Star CFLs?

    a) [IF THEY INDICATE MULTIPLE REASONS] Which of these reasons was the most important?

    b) What would have to change for you to only offer Energy Star CFLs for the CFLs you sell?

5. [IF THEY DIDN'T FILL IN NON-ULP DATA INTO TABLE] During the 2006-2008 period did you sell non-specialty Energy Star CFL bulbs in California that **did not** receive discounts from the Upstream Lighting Program?

    a) [IF YES] Are the bulb types and packages different from those you sell through the California Upstream Lighting Program?

        a. [IF YES] How so?

    b) [IF YES] Why didn't you sell these bulbs through the California Upstream Lighting Program?

6. [IF THEY DIDN'T FILL IN NON-ULP DATA INTO TABLE] During the 2006-2008 period did you sell non-specialty non-Energy Star CFL bulbs in California that **did not** receive discounts from the Upstream Lighting Program?

    a) [IF YES] What sorts of bulb types and packages were these non-specialty, non-Energy Star bulbs?

7. When discounts from the Upstream Lighting Program **were not** available, due to delays in program startup or product allocations for discounted CFLs running out, did you sell non-specialty Energy Star CFL bulbs in California?

    a) [IF YES] Were the bulb types and packages different from those you sell through the California Upstream Lighting Program?

        a. [IF YES] How so?

8. [IF THEY DIDN'T COMPLETE THE TABLE] Please provide your best estimate of what % of non-specialty CFL bulbs that you sold in California during the 2006-2008 period fit into the following categories:

First consider the non-specialty CFL bulbs that were discounted by the California Upstream Lighting Program (ULP). About what % non-specialty CFL bulbs that you sold in California during the 2006-2008 period did these account for?	__%
Next consider the non-specialty CFL bulbs that met Energy Star specifications but were not discounted by the program. About what % non-specialty CFL bulbs that you sold in California during the 2006-2008 period did these account for?	__%
Finally consider the non-specialty bulbs that did not meet Energy Star specifications. About what % non-specialty CFL bulbs that you sold in California during the 2006-2008 period did these account for?	__%
Total non-specialty CFL bulbs sold in California during the 2006-2008 period	**100%**

9. Do you sell non-specialty CFLs that you believe exceed Energy Star specifications? [IF NECESSARY, REMIND INTERVIEWEE OF ENERGY STAR SPECIFICATIONS]

   a) [IF YES] In what ways do these bulbs exceed Energy Star specification?

   b) [IF YES] What types (wattages, brands) of non-specialty CFL bulbs are these?

   c) [IF YES] Why do you offer such non-specialty bulbs that exceeded Energy Star specifications?

   d) [IF YES] About what percentage of the non-specialty CFL bulbs that you sold in California during the 2006-2008 period did these account for?

10. [IF THEY SOLD NON-SPECIALTY CFLS IN CALIFORNIA IN 2006-2008 THAT DID NOT RECEIVE CALIFORNIA UPSTREAM LIGHTING PROGRAM DISCOUNTS]. The California Public Utilities Commission and the California investor-owned utilities have

sales data for the CFL products that your company sold through the California Upstream Lighting Program. However, they are also very interested in learning about prices and sales volumes for CFL products that were not sold through Upstream Lighting. If we provided assurances to protect the confidentiality of these sales data, would you be willing to share these data?

a) [IF YES] What would be the next step for getting these data?

C. **Specialty CFL Bulbs** [IF THEY SOLD SPECIALTY CFL BULBS ELSE SKIP TO III. D]. Next I'm going to ask you some similar questions but this time about your sales of specialty CFL bulbs, both Energy Star and non-Energy Star. By "specialty" CFL bulbs I mean bulbs that have special functions or features such as reflectors, dimmability, three-way light levels, or flood lighting. [REPEAT QUESTIONS B1. – B10 EXCEPT SUBSTITUTE WORD "Specialty" for "Non-Specialty"]

D. **CFL Fixtures** [IF THEY SOLD CFL FIXTURES ELSE SKIP TO III. E.] Next I'm going to ask you some similar questions but this time about your sales of Energy Star-qualified CFL fixtures. [REPEAT QUESTIONS B1. – B10 EXCEPT SUBSTITUTE WORDS "CFL fixtures" for "Non-Specialty CFL bulbs"]

E. Recent trends, policies for the California Upstream Lighting Program

1. Are there certain types of CFL or LED bulbs or fixtures that the California Upstream Lighting Program has been encouraging your company to sell more than others?

   a) [IF YES] Which products are these?

   b) Have there been differences between the California investor-owned utilities involved in this program in terms of which lighting products they have been encouraging?

      a. [IF YES] What are these differences?

   c) [IF YES] Do you agree with an emphasis on these products?

      a. Why do you say this?

   d) Are there certain types of the energy-efficient lighting products that you think the California Upstream Lighting Program should be promoting that they are not currently promoting?

2. Are there certain types of retailers that the California Upstream Lighting Program has been encouraging lighting manufacturers to partner with more than other retailer types?

    a) [IF YES] Which types of retailers?

    b) [IF YES] Do you agree with an emphasis on these retailer types?

        a. Why do you say this?

    c) Are there certain types of retailers that you think the California Upstream Lighting Program should be focusing on more to encourage their sales of energy-efficient lighting products?

        a. Why do you say this?

3. Before now were you aware that the California Upstream Lighting Program currently has a bulk purchase limit on how many CFLs, CFL fixtures, LED night lights or holiday lights can be included in a single customer purchase?

    a) What is your opinion on these bulk purchase limits?

    b) [IF WERE AWARE OF BULK LIMITS] What, if anything, is your company doing to try to enforce these bulk limits?

        a. [IF INVOLVED IN POLICING OF BULK LIMITS] The main purpose of the bulk purchase limits is to reduce the chance of CFL products discounted by the Upstream Lighting Program being sold outside of California. Have you discovered any of your CFL products being sold outside of California?

            i. [IF YES] How do you think this happened?

    c) Before now were you aware that lighting manufacturers who participate in the California Upstream Lighting Program are helping to enforce this rule by monitoring retailers for evidence of bulk sales?

IV. Free Ridership and In-State Spillover

A. My next questions are about the impact that the 2006-2008 California Upstream Lighting Program may have had on your California CFL products sales.

1. Do you think your company would have been selling CFL products during this 2006-2008 time period if the discounts of $0.50-$2.75 per bulb from this program had not been available?

2. Has the availability of these rebates had any influence on your stocking or packaging decisions, such as the amount of shelf space devoted to CFL's or number of CFL bulbs sold per package?

B. Free Ridership

1. Non-Specialty CFL bulbs [ASK IF THEY SAID YES TO IV. A. AND THEY SELL NON-SPECIALTY CFL BULBS ELSE SKIP TO IV.B.2.] According to our records in the 2006-2008 period you received California Upstream Lighting Program manufacturer buydown discounts of $0.50-$2.75 per bulb for the sale of the following types of non-specialty CFL bulbs [NAME TYPES]. If these manufacturer buydown discounts and program promotional materials had not been available during this 2006-2008 period, do you think your sales of these types of non-specialty Energy Star CFL bulbs would have been about the same, lower, or higher?

a) [IF HIGHER] Why do you say this? [RECORD RESPONSE AND THEN SKIP TO NEXT RETAILER CATEGORY]

b) [IF LOWER] By what percentage do you estimate your sales of non-specialty Energy Star CFL bulbs would be lower during this 2006-2008 period if these manufacturer buydowns and program promotional materials for non-specialty CFLs had not been available? [RECORD % DECREASE]

a. I want to make sure I understand you correctly. You estimate that your sales would have been [PERCENTAGE FROM QUESTION IV.B.1. b.] % lower without the manufacturer buydowns. So if you actually sold 100 non-specialty CFLs in a given week, you think you'd have sold only about [100 – (PERCENTAGE FROM QUESTION IV.B.1. b. * 100)] in that period if the manufacturer buydowns hadn't been available? [IF RESPONSE IS ≠ YES THEN CLARIFY ESTIMATED SALES DECREASE]

c) **Retailer add-on rebates:** When the California Upstream Lighting Program was providing manufacturer buydown discounts for non-specialty bulbs during the 2006-2008 period, did your company ever provide any of its own price discounts in addition to those provided by the Upstream Lighting Program?

a. [IF NO] Why not?

b. [IF YES] What were your reasons for providing these additional price discounts?

c. [IF YES] What was the typical range of these additional discounts on a $ per bulb basis?

d. [IF YES] Were there particular types of bulbs that you were more likely to offer these additional discounts on?

i. [IF YES] What types of bulbs were these?

e. Using a scale of 0 to 10 where 10 equals "very likely" and 0 equals "not likely at all," how likely were you to offer these additional price discounts if the manufacturer buydown rebates had not also been available?

2. **Specialty CFL bulbs** [ASK IF THEY SAID YES TO IV. A. AND SOLD SPECIALTY CFL BULBS OTHERWISE SKIP TO IV.B.3.] [REPEAT QUESTIONS IV. B. 1. a) – c) BUT SUBSTITUTE APPROPRIATE PRODUCT NAME AND REBATE LEVELS.]

3. **CFL fixtures** [ASK IF THEY SAID YES TO IV. A. AND SOLD CFL FIXTURES OTHERWISE SKIP TO V.B.4.] [REPEAT QUESTIONS IV. B. 1. a) – c) BUT SUBSTITUTE APPROPRIATE PRODUCT NAME AND REBATE LEVELS.]

4. Effects of other California IOU programs/efforts

a) Besides the discounts and the promotional materials, do you think the California Upstream Lighting Program does anything else that helps you sell non-specialty Energy Star CFL bulbs?

a. [IF YES] What else does the program do?

b) California also has a program called Flex Your Power that does mass advertising for CFL products and other energy efficient measures. Please indicate how significant you think this program is as a driver of increased CFL product sales in California in the 2006-2008 period. Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant. [RECORD RATING]

a. Why do you give this rating?

c) In addition to the Upstream Lighting Program and the Flex Your Power Program some California utilities have also been involved in other campaigns to promote sales of CFL products such as the Energy Star Change-a-Light promotion. Please indicate how significant you think these promotions have been as a driver of increased CFL product sales in the 2006-2008 period. Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant. [RECORD RATING]

a. Why do you give this rating?

C. **Program Effects on Non-discounted CFLs Sold in California in 2006-2008** [IF THEY SOLD NON-SPECIALTY CFLS IN CALIFORNIA IN 2006-2008 THAT DID NOT RECEIVE CALIFORNIA UPSTREAM LIGHTING PROGRAM DISCOUNTS ELSE SKIP TO SECTION V.]

1. You said earlier that you also sold CFL bulbs or fixtures in California in the 2006-2008 that did not receive discounts from the California Upstream Lighting Program. What effects, if any, do the program-discounted CFL bulbs or fixtures have on your sales levels of these non-program-discounted CFL bulbs or fixtures? [IF MECHANISM FOR THESE EFFECTS IS NOT EXPLAINED, PROBE FOR MECHANISM]

a) Would these effects vary depending on the type of CFL product?

a. [IF YES] How so?

b) Have these effects changed at all over this 2006-2008 period?

a. [IF YES] How so and about what time period did these effects change?

2. Does your company ever sell program-discounted CFL bulbs or fixtures and non-program-discounted CFL bulbs or fixtures at the same time?

a) [IF YES] Would you say this happens always, very often, sometimes, or not very often?

b) [IF YES] Do you promote these non-program-discounted CFL bulbs or fixtures differently than you do the program-discounted CFL bulbs or fixtures?

a. [IF YES] How are your promotional efforts different?

c) [IF YES] Do you think increased shopper foot traffic due to program-discounted CFL bulbs and fixtures has any impact on the sales of non-program discounted CFL bulbs or fixtures that are being sold at the same time?

a. [IF YES] Why do you say this?

3. What effects do you think program-discounted CFL bulbs or fixtures have on consumer expectations regarding prices of non-discounted CFL bulbs or fixtures?

4. You indicated that you sold the following types of non-specialty CFL bulbs in California during the 2006-2008 period that you did not sell through the ULP Program: [READ PRODUCT TYPES. IF THEY FILLED OUT THE TABLE, DIRECT THEM TO SPECIFIC ROW]. Do you think your sales of these types of non-specialty non-program-discounted CFL bulbs would be about the same, lower, or higher if the California Upstream Lighting program – with its manufacturing buydowns and promotional materials – did not exist during this time period?

a) [IF HIGHER] Why do you say this?

b) [IF HIGHER] By what percentage do you estimate your sales of these non-specialty non-program-discounted CFL bulbs would be higher during this period if the California Upstream Lighting Program did not exist during this 2006-2008 time period? [RECORD % INCREASE]

a. I want to make sure I understand you correctly. You estimate that your sales would have been [PERCENTAGE FROM QUESTION IV. D. 4. b.] % higher without the manufacturer buydowns. So if you actually sold 100 of these non-specialty CFLs in a given week, you think you'd have sold about [100 + (PERCENTAGE FROM QUESTION IV. D. 4. b. * 100)] in that period if the California Upstream manufacturer buydowns hadn't been available? [IF RESPONSE IS ≠ YES THEN CLARIFY ESTIMATED SALES INCREASE]

c) [IF LOWER] Why do you say this?

d) [IF LOWER] By what percentage do you estimate your sales of these non-specialty CFL bulbs through [RETAILER

CATEGORY] stores would be lower during this period if the California Upstream Lighting Program did not exist during this time period? [RECORD % DECREASE]

a. I want to make sure I understand you correctly. You estimate that your sales of non-program-discounted bulbs would have been [PERCENTAGE FROM QUESTION IV. D. 4. d.] % lower without the manufacturer buydowns. So if you actually sold 100 of these non-specialty CFLs in a given week, you think you'd have sold about [100 - (PERCENTAGE FROM QUESTION IV. D. 4. d. * 100)] in that period if the California Upstream Lighting Program did not exist during this time period? [IF RESPONSE IS ≠ YES THEN CLARIFY ESTIMATED SALES DECREASE]

e) [IF SAME] Why do you say this?

f) [IF THEY INDICATED IN IV B. 1. THAT EFFECTS OF PROGRAM ON NON-PROGRAM NON_SPECIALTY CFLS HAS CHANGED OVER 2006-2008 PERIOD, PROBE FOR HOW THESE SALES EFFECTS WOULD VARY OVER THE 2006-2008 PERIOD]

5. [REPEAT SEQUENCE IV. D. 4 FOR SPECIALTY CFLS OR CFL FIXTURES IF RELEVANT, MAKING SURE TO CHANGE PRODUCT DESCRIPTION IN QUESTIONS.]

V. Early, Cumulative Effects of California Lighting Rebate Programs – Up until now we have been talking about the effect of the California Upstream Lighting Program on CFL bulbs and products that you sold in California during the 2006-2008 period. Now I want you to think about the earlier and cumulative effects that the years of California lighting rebate and discount programs might have had on your company's sales of CFL products.

A. Have the years of California lighting rebate and discount programs had any effects on the types of CFL products you sell or the way that you sell them?

1. [IF YES] How so?

B. [IF THEY SAID THAT THEY HADN'T BEEN SELLING CFL PRODUCTS IN CALIFORNIA BEFORE BECOMING INVOLVED IN CA LIGHTING REBATE PROGRAMS – E.G. II. E = "NO"] Earlier you said that your company was not selling CFL products in California before getting involved with any California lighting rebate or discount programs.

How significant was the existence of the California lighting rebate or discount programs in your company's decision to enter the California lighting market? Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant.

C. [IF THEY SAID THAT THEY HADN'T BEEN SELLING CFL PRODUCTS IN CALIFORNIA BEFORE BECOMING INVOLVED IN CA LIGHTING REBATE PROGRAMS – E.G. II. E = "YES"] Earlier you said that your company sold CFL products in California before getting involved with any of these California lighting rebate or discount programs. Do you have California CFL product sales data for this period before you became involved with the California lighting rebate or discount programs?

    a) [IF YES] If we provided assurances to protect the confidentiality of these sales data, would you be willing to share these data?

        a. [IF YES] What would be the next step for getting these data?

D. Does your company sell CFL bulbs or fixtures in states other than California?

    1. [IF YES] Does your company sell CFL bulbs or fixtures in any states that **do not** have utilities or state energy efficiency programs that offer manufacturer buydowns or point of sale rebates for these kind of lighting products?

        a) [IF YES] Are you familiar with your company's CFL bulb or fixture sales activities in these states?

            a. [IF YES] In these states without utility or state energy efficiency program rebates, do you promote your CFL products differently than you do in California?

                i. [IF YES] How is this promotion different?

            b. [IF YES] On a per-bulb basis, on average, how much lower are the prices of the California program-discounted CFL than the CFL bulbs that you sell in states that do not offer rebates or discounts from utilities or state energy efficiency programs?

b) [IF YES] If we provided assurances to protect the confidentiality of your data, would you be willing to share recent CFL product sales data for states other than California?

a. [IF YES] What would be the next step for getting these data?

c) [IF NO] Who would be another person at your company who is familiar with the sales of these CFL products in states that do not have utilities or state energy efficiency programs offering CFL product rebates or discounts? [RECORD NAME AND CONTINUE TO NEXT QUESTION]

E. California energy efficiency programs have been offering rebates and discounts on CFL bulbs for many years. Do you think these California programs have influenced the level of sales of CFLs in other states?

1. Why do you say this?

a) [IF NOT EXPLAINED IN THEIR ANSWER TO E1] How do the California lighting rebate programs influence the level of sales of CFLs in other states?

2. [IF YES] How significant has been the influence of these years of California rebate programs on the price of CFLs in these states? Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant.

F. For years California lighting rebate and discount programs have been working to improve the performance of CFLs as well as their acceptability as substitutes for incandescent bulbs. For example, these programs have long required Energy Star compliance and offered larger rebates for higher lumen levels at a given wattage level. What influences, if any, have these program requirements had on the performance of the CFLs that you sell?

G. If the California lighting rebate and discount programs had not existed, do you think the performance improvements that have been made to the CFLs you sell would have happened sooner, later, or about the same time as they actually did?

1. [IF LATER] How much later would you have made these performance improvements?

H. Have the California lighting rebate and discount programs influenced the way that you market your CFLs in other states?

1. [IF YES] How so?

I. State or utility rebate and discount programs are only some of the factors that may be encouraging sales of CFL bulbs and fixtures. I'm going to name a number of possible drivers of increased CFL bulbs and fixtures. For each one I identify, please indicate how significant you think it is as a driver of increased CFL product sales during the 2006-2008 period. Please use a 0 to 10 scale, where 0 is not at all significant and 10 is extremely significant.

1. State or utility rebate and discount programs? [RECORD RATING]

    a) Why do you give this rating?

2. The Energy Star program including its Change-a-Light campaign? [RECORD RATING]

    a) Why do you give this rating?

3. CFL promotion campaigns by some large retailers such as Wal-Mart, Home Depot, and Lowe's that are being done independently of any state or utility energy efficiency programs? [RECORD RATING]

    a) Why do you give this rating?

4. Media stories promoting the use of CFLs? [RECORD RATING]

    a) Why do you give this rating?

5. Reductions in CFL production costs and price points due to lower-cost overseas manufacturing and increases in CFL production capacity? [RECORD RATING]

    a) Why do you give this rating?

6. Growing consumer awareness about global warming? [RECORD RATING]

    a) Why do you give this rating?

7. Higher energy costs? [RECORD RATING]

    a) Why do you give this rating?

J. Have you seen any evidence that that some lighting products receiving discounts from the California Upstream Lighting Program are being sold out-of-state or through out-of-state buyers through the Internet?

1. [IF YES]. What evidence have you seen?

K. What do you think should be done to minimize the occurrence of out-of-state sales of lighting products receiving discounts from the California Upstream Lighting Program?

VI. **Supply Chain Characterization and Stocking Practices**

A. Now I would like to ask you some questions about your supply chain. Of the CFL products that you sell in California, where are most of them manufactured?

1. Are your CFL products that are discounted through the ULP-program manufactured in different places than those that are not discounted through the program? [IF YES, IDENTIFY DIFFERENT SOURCES]

B. How long does it typically take from the time that you place an order with the manufacturer or distributor and the time that you receive delivery of this order in your stores?

1. Approximately how much of this time is for manufacture?

2. Approximately how much of this time is for shipment?

3. Approximately how much of this is for temporary warehousing and storage by the manufacturer or distributor?

4. Approximately how much of this is for your own company's warehousing and storage?

C. Are there any types of CFL products for which it takes significantly longer than this to receive after your order them?

1. [IF YES] Which products?

D. What other factors could cause variations in these delivery times?

E. Are your delivery times for CFL products that you sell through the Upstream Lighting Program different than those for other CFL products that you sell?

1. [IF YES] How so?

F. At what point in the supply chain are the stickers and packages for the California Upstream Lighting Program applied?

G. How are the sizes of shipments of program-discounted CFLs to your stores determined?

H. Have your stores ever received shipments of program-discounted CFLs from manufacturers that were larger than you expected or ordered?

    1. [IF YES] Has this happened frequently, occasionally, or rarely?

I. Have your stores ever received shipments of program-discounted CFLs from manufacturers that came at an unexpected time?

    1. [IF YES] Has this happened frequently, occasionally, or rarely?

J. Is your process for ordering shipments of program-discounted CFLs different from your process for ordering shipments of other lighting products?

    1. [IF YES] How is it different?

K. Do your stores stock CFLs that are discounted by the California Upstream Lighting Program year round?

    1. [IF YES] Do your stores stock approximately the same number of program-discounted CFLs year round?

        a) [IF NO] Why not?

L. [IF THEY SELL SPECIALTY CFLS] Are your stocking practices for specialty CFLs such as dimmable, 3-way, or reflector CFLs any different than those for non-specialty CFLs?

        a) [IF YES] How so?

M. [IF THEY SELL CFL FIXTURES] Are your stocking practices for CFL fixtures any different than those for non-specialty CFLs?

        a) [IF YES] How so?

N. How long will typical shipments of program-discounted non-specialty CFLs last in one of you stores before being sold out?

O. [IF THEY SELL SPECIALTY CFLs] How long will typical shipments of program-discounted specialty CFLs last in one of you stores before being sold out?

P. [IF THEY SELL CFL FIXTURES] How long will typical shipments of program-discounted specialty CFLs last in one of you stores before being sold out?

Q. [IF THEY SELL NON-PROGRAM-DISCOUNTED CFL PRODUCTS] Do the CFLs bulbs that are discounted by the Upstream Lighting Program sell quicker, slower, or at about the same pace as other light bulbs that your store sells?

R. If the supply of program-discounted non-specialty CFLs in your store sells out, what do you typically do?

S. Is this process any different for specialty CFLs or CFL fixtures?

   1. [IF YES] How so?

T. If one of your stores has program-discounted CFLs that remain unsold after a long period of time, what typically happens to these products?

   1. [IF MANUFACTURER/SUPPLIER RETAKES BULBS] Is this done as a condition of your contract with the manufacturer?

U. Would this unsold inventory ever be sold out of California?

   1. [IF YES] How might this happen?

   2. [IF YES] How would you know this?

V. As noted earlier, there is evidence that some lighting products receiving discounts from the California Upstream Lighting Program are being sold out-of-state or through out-of-state buyers through the Internet. At what point in the supply and distribution chain do you think this might be happening?

W. Do you track CFL products that you sell through the California Upstream Lighting Program that are lost due to breakage and other damage?

   1. [IF YES] Do you just track damage/breakage to CFL products before they reach the retailer or also after?

   2. [IF YES] If we gave your company assurances of confidentiality, would you be willing to share information about your loss and breakage rates?

VII. Pricing

A. How much influence does your company have over the prices of the CFL products that you receive from manufacturers? Would you say that your company is very influential, somewhat influential, or not very influential?

B. Some retailers use something called "keystone pricing" where the retail price is set at twice what the wholesale price is. Is this how you determine the retail price for the California Upstream Lighting Program CFLs products that you sell?

    1. [IF NO] How do you determine the retail price for the program-discounted CFLs you sell?

C. Some manufacturers participating in the California Upstream Lighting Program have been more aggressive than others and have offered their products to certain retailers for free. Have you ever received program-discounted CFLs for free?

    1. [IF YES] How do you determine the retail price for these "free" CFLs?

D. California CFL product prices have been declining in the last 10 years. Do you think this trend will continue, or will prices level off or even increase?

    1. What factors are causing you to make this prediction?

E. [IF THEY SELL NON-PROGRAM-DISCOUNTED CFLS ALSO] You said earlier that you also sell CFL products in California that do not receive buydown discounts from the California Upstream Lighting Program. Are the program-discounted CFL products typically sold at a lower retail price, a higher retail price, or at the same retail prices as the non-program-discounted bulbs?

    1. On a per-bulb basis, on average, how much [LOWER/HIGHER] are the prices of the program-discounted CFL bulbs than the other CFL bulbs that you sell?

    2. On a per-fixture basis, on average, how much [LOWER/HIGHER] is the price on the program-discounted CFL fixtures than the other CFL fixtures that you sell?

    3. Are your pricing strategies for the products with California Upstream Lighting Program buydowns handled differently than non-program products?

        a) [IF YES] How are these different?

VIII. Market Characterization

A. How would you characterize the current market for CFL products in California in terms of retailer market share? For example, are there a few major retailers responsible for the major share of product sales? Or are there a large number of major players?

B. Where would you characterize your firm in terms of market share for the California CFL market?

C. Are there factors inherent in the manufacturing, importing or distributing processes that have restricted the production and supply of CFL products in the past year or so? Please describe: [IF RESPONDENT CAN'T THINK OF ANYTHING, PROMPT WITH EXAMPLES SUCH AS SHORTAGES OF INPUTS USED IN MANUFACTURING PROCESSES (LABOR, CAPITAL, RAW MATERIALS), INADEQUATE INFRASTRUCTURE TO PRODUCE OR IMPORT PRODUCTS, OR BRING THEM TO MARKET, ETC.]

1. To what degree have these production and supply restrictions varied with the type of CFL product?

2. How do these supply-side barriers compare to those for non-CFL products?

3. [IF SUPPLY BARRIERS IDENTIFIED] Has there been any progress recently to reduce these barriers?

   a) [IF YES] What factors lead to the reduced barriers?

   b) [IF NOT ALREADY MENTIONED] Did the 2006-2008 California Upstream Lighting Progarm play a role in reducing these barriers?

      a. [IF YES] What role did it play?

   c) Are there any supply-side barriers that have been increased due to the structure or timing of the California lighting rebate programs?

      a. [IF YES] What are these?

      b. [IF YES] How did/does the California programs create or increase these barriers?

4. [IF SUPPLY BARRIERS IDENTIFIED] What, if anything, needs to happen to overcome the remaining supply-side restrictions?

D. What are the most important factors that are limiting customer demand for CFL products? Please explain. [IF RESPONDENT CAN'T THINK OF ANYTHING, PROMPT WITH EXAMPLES SUCH AS LACK OF AWARENESS, PRODUCT PRICING, AND PERCEPTIONS REGARDING PRODUCT PERFORMANCE, BULB FIT, APPEARANCE, EARLY BURN-OUT,ETC. RECORD WHETHER ONE HAD TO PROMPT AND RANDOMLY ROTATE THE EXAMPLES USED IN THE PROMPT.]

1. To what degree have these demand barriers varied with the type of CFL product?

2. [IF DEMAND BARRIERS IDENTIFIED] Has there been any progress recently to reduce these barriers?

   a) [IF YES] What factors lead to the reduced barriers?

   b) [IF NOT ALREADY MENTIONED] Did the 2006-2008 California Upstream Lighting Program play a role in reducing these barriers?

      a. [IF YES] What role did it play?

   c) Are there any demand-side barriers that have been increased due to the structure or timing of the California lighting rebate programs?

      a. [IF YES] What are these?

      b. [IF YES] How did/does the California programs create or increase these barriers?

3. [IF DEMAND BARRIERS IDENTIFIED] What needs to happen to overcome these demand-side barriers?

E. Are you aware that in 2007 a federal Energy Bill was passed that requires new efficiency standards for light bulbs?

1. [IF YES] What do you think will be the impact of this 2007 Energy Bill on CFL sales and prices?

F. What are your expectations for U.S. CFL product sales in 2008 and beyond?

1. Why do you say that?

G. If California eliminated its CFL rebate and discount programs starting in 2009 what effects would this have on the sales levels of CFL products in California?

H. Do you sell CFL products in other countries besides the United States?

1. [IF YES] Are you familiar with your company's international sales trends?

a) [IF NO] Who would be another person at your company who is familiar with your company's international sales of CFL products? [RECORD NAME AND CONTACT INFORMATION AND SKIP TO SECTION IX]

b) [IF YES] How do your international sales trends for CFL products compare to those in the United States?

c) [IF YES] What do you think are driving these international sales trends?

IX. Product Quality, Recycling

A. Do you think the quality of CFL products in recent years has been increasing, decreasing, or staying about the same?

1. [IF THEY THINK QUALITY IS DECREASING] What factors do you think might be leading to the production of lower quality CFL products?

B. What do you think should be done to improve the quality of CFL products?

C. Do you think that CFL product discount programs like the California Upstream Lighting Program, have affected consumer attitudes towards the quality of CFL products in any way?

1. [IF YES] In what way?

D. How important is product quality in deciding what types or brands of CFLs you're selling in your store? Would you say that quality is very important, somewhat important, or not important at all?

1. [IF NOT IMPORTANT AT ALL] Why do you say that?

E. How can you tell whether the CFLs your stores are selling are quality products?

F. Is your company doing anything to assure the quality of the CFL products it sells?

   1. [IF YES] What is your company doing to assure quality?

G. Are there any CFLs you have stopped offering due to customer complaints related to quality?

   1. [IF YES] What types or brands of CFLs did you stop offering due to quality concerns?

H. Energy Star's "CFL Criteria Version 4.0" was released in February 2008 and will become effective in November 2008. What do you think will be the impact of new Energy Star standards on CFL products and prices?

I. The disposal of CFL products has becomes a major issue in recent years. Do you have standard recommendations you give to customers about how to recycle their CFLs?

   1. [IF YES] What are these recommendations?

J. Do you offer CFL recycling on-site in any of your stores?

   1. [IF NO] Have you ever considered doing this?

   2. [IF NO] What factors or barriers might keep you from offering CFL recycling on-site?

X. Program Satisfaction

Finally I would like to find out your level of satisfaction with the California Upstream Lighting Program

A. Rebate Reservation, Program Verification Process

1. Using a scale of 0 to 10 where 10 = very satisfied and 0 = very dissatisfied, how satisfied have you been with the rebate fund reservation process – that is, the process used by the utility to allocate a set amount of rebate dollars to participating stores?

   a) [IF SATISFACTION RATING IS 0-5] Why do you say that?

2. Again using a scale of 0 to 10 where 10 = very satisfied and 0 = very dissatisfied, how satisfied have you been with the program tracking and verification process – that is, the process used by the utility to ensure that the CFL products that they are providing discounts for are being sold by retailers and are properly labeled and promoted?

a) [IF SATISFACTION RATING IS 0-5] Why do you say that?

B. Rebate Levels and Coverage

1. CFL bulbs [ASK ONLY IF THEY SELL CFL BULBS THROUGH THE PROGRAM]
   a) Using this same satisfaction scale, how satisfied have you been with the level of manufacturer buydown rebates for CFL ***bulbs***?
      a. [IF SATISFACTION RATING IS 0-5] Why do you say that? For which bulb types are you unsatisfied with the rebate levels?

   b) If the program, due to fund constraints, had to eliminate a manufacturer buydown rebate for one type of CFL bulb, which one should they choose? Why do say that?

2. CFL fixtures [ASK ONLY IF THEY SELL CFL FIXTURES THROUGH THE PROGRAM]
   a) Using this same satisfaction scale, how satisfied have you been with the levels of manufacturer buydown rebates for CFL ***fixtures***?

      a. [IF SATISFACTION RATING IS 0-5] Why do you say that? For which fixture types are you unsatisfied with the rebate levels?

C. Marketing and Coordination with Retailers

1. Using the same satisfaction scale, how satisfied have you been with the California Upstream Lighting Program's efforts to mass market CFL products?
   a) [ASK ONLY IF SATISFACTION RATING IS 0-5] Why do you say that?

2. Using the same satisfaction scale, how satisfied have you been with the program's efforts to coordinate with retailers on in-store product placement and promotions?

   a) [ASK ONLY IF SATISFACTION RATING IS 0-5] Why do you say that?

3. What effects, if any, does the inclusion of the utility logos have on the sales of your CFL products?

D. Satisfaction with Program Staff and Program As a Whole

1. Using the same satisfaction scale, how satisfied have you been with the program managers and other staff involved in the California Upstream Lighting Program?

a) [ASK ONLY IF SATISFACTION RATING IS 0-5] Why do you say that?

2. Using the same scale, how would you rate your level of satisfaction with the program in general?

   a) [ASK ONLY IF SATISFACTION RATING IS 0-5] Why do you say that?

3. In what way could the program processes be improved?

4. Are you planning to participate in the program going forward?

   a) [IF YES] Why do you say that?

5. Do you have any final suggestions for the California utilities to help them improve the programs they offer and encourage greater sales of CFL programs?