

# *Household Universal Waste Generation in California*

*August 2002*

STATE OF CALIFORNIA

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Governor

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# Executive Summary

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## ***Background***

In June 2001, the California Integrated Waste Management Board (CIWMB or Board) contracted with a management consulting firm to conduct a study of the generation and collection of household universal waste (u-waste). (Universal wastes are hazardous wastes commonly produced by industry, businesses, and households.) Interest in this study was spurred by (1) emergency regulations approved March 6, 2000, that classified hazardous waste lamps, batteries, and thermostats as universal waste and (2) permanent regulations approved February 8, 2002, that give California households a four-year exemption from the standards for managing universal waste. This exemption allows for disposal of the wastes in household trash; beginning in 2006, residents must take these wastes to a household hazardous waste (HHW) facility or event or to an authorized universal waste handler. As a result, the CIWMB expects marked increases in fluorescent lamp, battery, and thermostat volumes collected by HHW facilities or events in 2006.

## ***Study Purpose and Focus***

The primary purpose of this study was to collect data relative to county HHW collection infrastructures to help understand the impact of changing regulations. Specifically, the consultant's scope of work included:

- An examination of the current capacity of HHW programs to handle specific types of universal waste ("current" refers to the State's 2000–01 fiscal year [FY]—July 1, 2000–June 30, 2001).
- An examination of the current cost to handle specified universal waste and the cost of handling the expected volume of u-waste in 2006.
- Surveys of fluorescent lamp, battery, and thermostat manufacturers or manufacturers' trade associations in order to assist in projecting 2006 universal waste generation volumes.
- A statewide survey of households in order to understand Californians' behavior relative to awareness of and participation in HHW collection efforts.

## ***Findings and Considerations***

Because the Board was interested in county-specific HHW collection infrastructure data, individual profiles were built for each responding county. From the individual county survey responses, data were summarized to provide an overview of the issues faced across counties that responded to the HHW facilities survey. Data reported by the counties revealed the following:

- Although three survey respondents reported being at or near capacity, no respondents reported a current capacity shortfall. In other words, counties that responded to the survey concluded that sufficient capacity exists to handle the current volume of universal waste being collected by their facilities. Two notable factors likely contributed to this response:
  1. FY 2000–01 collections are very low and represent less than 1 percent of 2001 sales of household fluorescent lamps, batteries, and thermostats.
  2. The sense that current capacity is sufficient is reinforced in part by a notion of "contracted capacity"—that is, physical capacity constraints do not exist because, for many counties, contractors either handle the entire HHW operation, or haul away collected u-waste when storage capacity is reached.

- Universal waste collection volumes in 2006 could be hundreds of times greater than current collection volumes. For lamps, responding counties reported collecting almost 19,000 lamps in FY 2000–01, while the 2006 collection projections for those counties total almost 10 million lamps. The volume collections for batteries for FY 2000–01 and 2006 are 163,000 pounds and 34.3 million pounds respectively. Obtaining data on collection of thermostats is difficult because counties tend to view thermostats as a component of mercury-containing waste rather than as a discrete waste type.

The total handling cost for all three universal waste types could reach almost \$42 million in 2006 for the counties represented in the survey. At just over \$31 million, batteries could represent the largest portion of the total cost. Fluorescent lamps and thermostats could account for roughly \$10 million and \$700,000 of the total cost respectively. In the course of conducting research and surveying manufacturers, HHW facilities, and households, several interesting facets of issues surrounding u-waste collections were revealed.

For example:

- Many counties do not view their HHW collections as capacity-constrained because of a notion of “contracted capacity.” In other words, counties perceive no physical constraints on their operations because contracted haulers simply haul away collected u-waste when storage limits are reached. Because hauling costs will rise commensurately with the increased generation predicted for 2006, counties may find that the process of contracting to haul u-waste is unworkable.
- There is little commonality in u-waste data collection and reporting measures. For example, some counties reported their fluorescent lamp collections as a number of units, while others used pounds or lineal feet as a measurement. As mentioned previously, measuring thermostat collection is also difficult because counties tend to view thermostats as a component of mercury-containing waste, rather than as a discrete waste type.
- Householders could generally identify household hazardous waste, but were less aware of HHW opportunities in their community. Almost 75 percent of Californians surveyed provided a correct answer when asked, “When you think of household hazardous waste, what comes to mind?” Fifty-six percent of the 128 households surveyed (72 respondents) indicated they had heard of an HHW facility or an HHW collection event. However, only 40 percent of **all** respondents were familiar with whether a specific facility or event was available in their community.

# Introduction

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In June 2001, the California Integrated Waste Management Board (CIWMB or Board) contracted with a management consulting firm to conduct a study of the generation and collection of specified universal waste (u-waste) generated by households. (Universal wastes are hazardous wastes commonly produced by industry, businesses, and households).

## **Background**

In 1995, the U.S. Environmental Protection Agency promulgated the federal Universal Waste Rule (UWR [Title 40, Code of Federal Regulations, Part 273]) to simplify the management requirements for universal wastes, those hazardous wastes commonly produced by industry, businesses, and households. The federal UWR set up alternative streamlined management standards for handlers and transporters of universal wastes.

On March 6, 2000, California's Office of Administrative Law approved State emergency regulations that established a State UWR for hazardous waste batteries, thermostats, and lamps. The regulations conditionally exempt these items from classification as hazardous wastes, provided that generators comply with special standards for managing universal wastes, with householders receiving an exemption from these standards.\*

Permanent State regulations, finalized February 8, 2002, provided a timeframe for the household exemption, allowing residents to manage universal waste as household trash for four years after the effective date of the regulations. This four-year exemption provides time for HHW collection solutions to fully develop. After this time period, households must comply with the special standards for universal waste management.

In other words, householders will have to divert their fluorescent lamps, batteries, and thermostats to a household hazardous waste (HHW) facility or event or to an authorized recycler of universal waste beginning February 9, 2006. Because of this timeline, the CIWMB expects HHW facilities or events to see moderate increases in fluorescent lamp, battery, and thermostat collections until February 9, 2006 and significant increases thereafter.

## **Scope of Services**

The purpose of this study is to provide the Board with data about California's HHW collection infrastructure as it relates to the impact of new Universal Waste Rule requirements. Specifically, the scope of work included:

- An examination of the current capacity of HHW programs to handle specific types of household universal waste ("current" refers to the State's 2000–01 fiscal year [FY]).
- An examination of the current cost to handle household universal waste and the cost of handling the expected volume of u-waste in 2006.

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\* Universal waste represents a category of hazardous waste that is regulated under a section of the State's hazardous waste regulations (Title 22, California Code of Regulations, Division 4.5) that deals with high volume, low-risk wastes such as batteries, fluorescent lamps, and thermostats. This report considers only the regulatory change that classified hazardous waste lamps, batteries, and thermostats as universal wastes.

- Surveys of fluorescent lamp, battery, and thermostat manufacturers in order to assist in projecting 2006 universal waste generation volumes.
- A statewide survey of households in order to understand Californians' behavior relative to awareness of and participation in HHW collection efforts. This element in the scope of work was prescribed because of the Board's desire to understand the public's behavior relative to HHW, as well as its awareness of and participation in HHW collection efforts.

### **Focus is on Household-Generated Fluorescent Lamps, Batteries, and Thermostats**

The new State UWR includes all mercury-containing lamps, including street lamps. However, because the Board's primary interest is in understanding the impact of the State UWR on households specifically, the study focuses only on one category of these lamps, fluorescent lamps. The study also examines the other household-generated waste cited in the rule—batteries and mercury thermostats.

### **Focus is on Household Hazardous Waste Facilities and Events**

Because the Board seeks to understand HHW collection infrastructure needs, both currently and after the household exemption expires in 2006, data about the generation of u-waste is specific to u-waste collected at HHW facilities and at collection events that were administered by waste management agencies of local governments.

The consultant and CIWMB staff recognize that other outlets currently exist and will continue to exist for proper u-waste disposal. Retail take-back programs, such as those run through national retailers such as Radio Shack and Wal-Mart, and rechargeable battery take-back programs, such as those operated by the Rechargeable Battery Recycling Corporation (RBRC), offer outlets for consumers to channel their used and rechargeable batteries to recyclers. Similarly, the Thermostat Recycling Corporation (TRC), a nonprofit corporation owned by three National Electrical Manufacturers Association (NEMA) member companies, facilitates the collection of used, wall-mounted mercury-switch thermostats from contractors so the mercury can be purified for reuse; heating, ventilation, and air conditioning (HVAC) wholesalers collect the items. However, for purposes of this study, the Board wished to focus solely on HHW facilities and events.

# Methodology

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To generate data for this report, the following three principal tasks were undertaken:

1. Fluorescent lamp, battery, and thermostat manufacturers and a manufacturers' trade association were surveyed and interviewed to project 2006 sales of fluorescent lamps, batteries, and thermostats. Sales figures were then used as a proxy for 2006 levels of universal waste.
2. HHW jurisdictions were surveyed through their county-level sponsor agencies to collect data relative to counties' current universal waste handling infrastructures and projected needs.
3. California households were surveyed to better understand current awareness of and participation in HHW collection events and programs.

This section details the research steps taken to derive data for the report.

## ***2006 Projections of Universal Waste Generation***

Household sales projections for 2006 were used to estimate the volume of u-waste that may be collected by California HHW facilities or events in 2006. Several approaches were used to collect household-specific sales data for fluorescent lamps, batteries, and thermostats.

### **Industry Estimates**

The consultant distributed surveys directly to manufacturers of fluorescent lamps and batteries. In addition, surveys for all three u-waste types were sent to the National Electrical Manufacturers Association (NEMA). CIWMB staff provided contact information. The three survey instruments—one each for lamps, batteries, and thermostats—are in Appendix A.

#### ***Lamps***

All lamp manufacturers that received the survey are members of NEMA. At the request of these manufacturers, NEMA provided a single consolidated response to the household fluorescent lamp survey. As a result, for household fluorescent lamps, the consultant relied on one coordinated response representing NEMA members' sales. In their response, NEMA indicated that sales by its members account for 90 percent of all household fluorescent lamp sales. Information supplied by NEMA was the sole source of household market sales estimates for lamps.

#### ***Batteries***

For household batteries, one manufacturer completed a survey. In addition, a representative from NEMA offered sales estimates based on expert opinion. While this input should not be viewed as an official NEMA response, it is a reliable estimate appropriate for use in this study.

#### ***Thermostats***

The NEMA representative also provided an unofficial response to requests for household thermostat sales data. Interestingly, mercury switch thermostat sales are declining in sales at a rate of 10 percent per year. Because no surveys were sent directly to thermostat manufacturers, the unofficial NEMA response offered the only thermostat data available and was therefore approved for inclusion in this study.

## Assumptions Regarding Manufacturer Sales Data

To project 2006 collection through HHW facilities and events by using 2006 manufacturer sales data, the following important assumptions were made:

1. That for every lamp, battery, and thermostat sold in a given year, a lamp, battery, and thermostat is disposed.
2. That population distribution represents sales and disposal distribution.
3. That every lamp, battery, and thermostat that is disposed of in 2006 will be collected by an HHW facility or event, not discharged into the trash. This assumption is based on the following considerations:
  - a. In 2006 it will be illegal for households to dispose of u-waste in their trash. In other words, compliance with the law assumes 100 percent collection through entities such as HHW facilities.
  - b. By assuming 100 percent collection through HHW facilities or events, the study presents a “greatest impact” scenario.

Based on these assumptions, manufacturer sales data was converted into statewide household universal waste generation figures for 2006. Table 1 presents the projected 2006 generation volume next to 2001 sales for comparison purposes.

**Table 1**  
**2006 California Generated Volume by U-Waste Type**

U-Waste Type	2001 Sales Volume	Projected 2006 Generated Volume
Fluorescent Lamps	15,555,556 lamps	17,444,444 lamps
Batteries	507,259,000 batteries	593,864,218 batteries
Thermostats	618,609 thermostats	365,282 thermostats

## County Estimates Regarding Generation

The consultant provided each county with its projected 2006 generated u-waste volume. The generation estimates for each county were derived by distributing the national sales projection data for each of the three u-waste types according to population distribution for the state and then for its counties. California Department of Finance 2001 population figures were used for purposes of this allocation.

## Capacity, Volume, and Cost

To gauge HHW facilities' capacity and cost to handle current and future volumes of u-waste, HHW facilities were surveyed through their sponsor agency—a county-level entity often responsible for collecting and reporting HHW facility or event data to CIWMB. Appendix B contains a copy of the survey.

### List Compiled By CIWMB

Because the Board was interested in a county-level needs assessment, rather than a facility-by-facility examination, CIWMB staff identified 62 sponsor agencies that would act as the collection points for HHW facility data. In 52 of the state's 58 counties, one representative was identified to

respond to the survey by collecting data from all HHW facilities in that county. In Los Angeles, Marin, and Monterey Counties, two representatives from each county were identified to respond for a designated portion of the county's HHW facilities. Data collection from HHW facilities in Contra Costa County was divided among three representatives. A single contact was responsible for responding with data from both Sutter and Yuba Counties.

Before the survey was conducted, CIWMB staff verified the contacts by calling each county to ensure that the proper contact would receive the survey. Appendix C contains a copy of the contact list.

### **Profile of HHW Facilities Survey Respondents**

Thirty-two responses—a 51.6 percent response rate—were received in time for inclusion in the study. Respondents represented roughly 57.7 percent of the state's population across a wide geographic distribution. Responses from northern, central, and southern California as well as coastal and inland counties were included in the review. Additionally, some of the state's most populous counties, such as Los Angeles County, and some of its least populous ones, such as Modoc County, participated in the survey. Listed below are the 32 survey respondents included in the study.

#### ***HHW Collection Infrastructure Survey Respondents (counties or portions of counties)***

Amador County  
Contra Costa County—Delta Diablo Sanitation District  
Contra Costa County—West Contra Costa IWMA  
Del Norte County  
El Dorado County  
Fresno County  
Glenn County  
Humboldt County  
Imperial County  
Inyo County  
Kings County \*  
Lake County  
Los Angeles County  
Los Angeles County—City of Los Angeles  
Marin County—City of Novato  
Mariposa County  
Merced County  
Modoc County  
Monterey County—Regional Waste Management District  
Orange County  
Placer County  
Sacramento County  
San Francisco County  
San Luis Obispo County  
San Mateo County  
Santa Barbara County

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\* Although Kings County did return the survey, the survey contained no data. A fuller explanation of the county's response can be found in its profile that follows.

Santa Cruz County  
Stanislaus County  
Tehama County  
Trinity County  
Yolo County  
Yuba/Sutter County

Five survey responses were received after the stated deadline, and therefore the consultant was unable to use data from these responses. However, in some cases, written comments provided by late respondents reinforced conclusions drawn from data provided by surveys received on time. As a result, some of the remarks included with late survey responses were included in the report's qualitative analysis for illustrative purposes.

### **Capacity, Volume, and Cost Data Collected for Present and Future**

The capacity, volume, and cost data used to construct this report were all provided by HHW facilities and reported by their sponsor agencies through responses to the written HHW facilities survey. In the survey, "current" data was defined as that pertaining to the State's 2000–01 fiscal year (FY) to mirror the timeframe in which HHW facilities report similar data to CIWMB. Data collected for FY 2000–01 include:

- Handling capacity—the maximum volume a county is able to handle through its HHW facilities and events.
- Volume collected—the amount of each universal waste type collected at all county HHW facilities and events.
- Handling cost—the amount expended handling each universal waste type.

For calendar year 2006, each county was provided a projected volume (based on manufacturer survey responses) of universal waste expected for its county in 2006. As noted above, 2006 universal waste volumes were derived by applying a county's population percent to projected manufacturer sales figures.

Based on the projected 2006 volume, survey recipients were asked to estimate the associated *increase* in handling costs. In other words, the amounts specified in tables referring to 2006 costs represent the *additional* cost of handling the projected 2006 volume of u-wastes.

### **Units of Measure**

The survey introduced different units of measure depending on the u-waste type and the time period of the data. For FY 2000–01 data, the survey attempted to request the most commonly used unit of measure for a particular u-waste type, based on CIWMB staff's recommendation. Consequently, data on fluorescent lamps and thermostats were requested in number of units, while batteries were asked for by weight in pounds. In the case of 2006 data, the survey provided recipients with estimated quantities of 2006 u-waste, by u-waste type. This data was provided in number of units, the same manner in which it was provided to the consultant by the manufacturer associations.

### **Responses Converted Where Necessary**

When respondents reported data in a unit of measure other than that requested in the survey, the consultant used a conversion factor to standardize all responses. While the consultant found that there were no commonly shared conversion factors for fluorescent lamps, batteries, and thermostats, the consultant was able to obtain conversion factors from various sources, including

CIWMB staff. Additionally, CIWMB staff reviewed and approved conversion factors derived from outside sources. Table 2 displays conversion factors that were applied to some respondents' data.

**Table 2**  
**Conversion Factors**<sup>\*</sup>

U-Waste Type	Conversion Factor
<b>Fluorescent Lamps</b>	1 unit = .625 pounds
<b>Batteries</b>	1 unit = .1011 pounds
<b>Thermostats</b>	1 unit = .0062 pounds (of mercury)

These conversion factors were also supplied directly to survey recipients upon request.

### **FY 2000–01 Capacity and Volume Compared to Ascertain Existence of Current Gap**

The survey tested whether HHW collection infrastructures have the capacity to handle the u-waste that is *currently* received. The consultant compared counties' self-reported FY 2000–01 capacity against their self-reported FY 2000–01 volume of collections to determine whether a gap currently exists between the two.

### **Costs Associated With 2006 Volume Calculated to Determine Future Needs**

To quantify the impact of the projected 2006 u-waste on counties' HHW collection infrastructures, survey recipients were asked what it would cost to *increase* their current capacity to accommodate the 2006 estimated amount of each u-waste type. Therefore, as stated previously, 2006 cost figures represent the *additional* cost of handling universal waste in 2006. Survey recipients were asked to report these additional costs for each universal waste type under the following categories:

- Personnel/Labor
- Equipment/Materials
- Site Conditions/Storage
- Hauling/Transportation
- Recycling/Disposal
- Other Costs

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<sup>\*</sup> Conversion factors for fluorescent lamps were provided by CIWMB. Figures for batteries and thermostats were provided by a representative from NEMA, based on expert opinion, but do not constitute an official NEMA response.

## ***Household Behavior***

### **Households Surveyed to Understand Californians' Awareness and Use of HHW Facilities and Events**

The Board was also interested in better understanding Californians' knowledge and use of HHW facilities and events. The consultant worked with a public opinion and market research firm to conduct a telephone survey of a random sample of 100 residents throughout the state.

The research firm developed the survey instrument in consultation with the consultant and CIWMB and pre-tested the instrument among a random sample of respondents selected in the same manner as were the respondents for the actual survey.

The sample for the survey was a random digit dialing (RDD) telephone sample designed to represent all households in the state. RDD, the most sophisticated strategy for telephone survey sampling, ensures the inclusion of unlisted, erroneously listed, and newly listed households in the sample. In all, a total of 128 interviews were completed. Thus, the margin of error for the survey at the 95 percent confidence level was +/- 8.7 percent.

Appendix D contains the research firm's survey report.

# Summary HHW Collection Infrastructure Data and Findings

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Understanding the impact of changing regulations on HHW collection infrastructures was at the heart of this study. For that reason, the Board was interested in collecting a great deal of county-specific data relative to collections, capacity, and handling costs. The data received from HHW facilities survey respondents are presented in two ways:

1. Individual county profiles were created for each survey respondent. Those profiles offer a more detailed look at each county’s current and future HHW collection infrastructure needs and are found in Appendix E.
2. Survey respondents’ data were compiled and summarized to provide an overview of the issues faced across counties that responded to the HHW facilities survey.

This section presents the summary data and findings derived from the HHW facilities survey. This data represents survey responses only and should not be misunderstood to represent the entire state. A discussion of implications of these data and factors for the Board to consider may be found in the next section of this report.

## ***No Current Capacity Shortfall Reported***

Many counties do not view their handling capacity as constrained. In fact, when asked to compare their FY 2000–01 volume of collections against their FY 2000–01 capacity, no county reported a current shortfall in capacity. Although three survey respondents reported being at or near capacity, all survey respondents indicated sufficient capacity exists to handle the current volume of universal waste being collected by their facilities. This could be the result of very low current collection volumes (see Table 4) and HHW facilities’ perceptions of “contracted capacity” (discussed in the “Further Considerations” section).

## ***Universal Waste Volumes to Increase Dramatically in 2006***

Universal waste generation volumes are expected to increase dramatically in 2006. As reported by HHW programs, current fluorescent lamp collections are roughly 19,000 units. Based on manufacturers’ sales data, the 2006 volume of lamps collected by these same programs could reach almost 10,000,000 units—more than 500 times the current collections. A similar comparison for batteries reveals that 2006 collections could be 200 times greater than current collections. Table 3 depicts projected volumes for 2006.

**Table 3**  
**Projected 2006 Collected Volume by U-Waste Type**

U-Waste Type	FY 2000–01 Collected Volume	Projected 2006 Collected Volume
Fluorescent lamps	18,814 lamps	9,989,097 lamps
Batteries	162,509 lb	34,380,127 lb
Thermostats*	N/A (not applicable)	N/A

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\* Due to the incomparability of units of measurement used to report thermostats, volume cannot be summed across counties.

These significant jumps can be attributed to two factors. First, householders are not currently required to divert their universal waste from their trash, and as a result FY 2000–01 collections from households are low. As Table 4 shows, FY 2000–01 collections represent less than 1 percent of 2001 sales for the 32 respondents.

**Table 4**  
**FY 2000–01 Collections as a Percent of 2001 Sales**

U-Waste Type	FY 2000–01 Collection Volume	2001 Sales for 32 Respondents	FY 2000–01 Collections as a Percent of 2001 Sales for 32 Respondents
<b>Fluorescent Lamps</b>	18,814 lamps	8,968,280 lamps	.21%
<b>Batteries</b>	162,509 pounds	29,566,818 pounds	.55%
<b>Thermostats*</b>	N/A	356,648 thermostats	N/A

Second, as explained in the “Methodology” section, this report assumes 100 percent collection of universal waste generated in 2006. In other words, the 2006 generation figures represent a “greatest impact” scenario.

### **Total Handling Costs Increase Commensurately**

The massive potential increase in collection volume has a related impact on counties’ handling costs. As a result, large increases in handling costs are projected for all three universal waste types examined in this study.

HHW survey respondents reported both current handling costs and the *additional* cost of handling projected increases in universal waste. Total 2006 handling costs for all the counties responding to the survey are calculated by combining reported current and additional costs. For example, counties that responded to the survey reported spending roughly \$200,000 in 2000–01 to handle lamps, batteries, and thermostats. Those same counties reported that an *additional* \$41.7 million would be necessary to handle the estimated 100 percent collection volume presented in 2006. This totals to roughly \$41.9 million of total universal waste handling costs for the responding counties in 2006.

Table 5 presents survey respondents’ current handling costs and total projected handling costs for each u-waste type. Specific gaps in survey responses and assumptions used in survey methodology may result in reported costs being either understated or overstated. Total costs may be slightly understated because in cases where costs were cited as “unknown” to the survey respondent, and the consultant had insufficient data to build a cost, no cost was provided. Therefore, total cost estimates only reflect costs that were actually reported by respondents. On the other hand, reported costs may be overstated because of the assumptions that:

- For every lamp, battery, and thermostat sold, householders dispose of one of the same items.
- In 2006, 100 percent of u-waste will be collected through an HHW facility or event.

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\* Due to the incomparability of units of measurement used to report thermostats, volume cannot be summed across counties.

The impact of these variances—or the extent to which understatements and overstatements offset reported handling costs—is unknown.

**Table 5**  
**Total 2006 Projected Handling Cost by U-Waste Type**

U-Waste Type	FY 2000–01 Total Handling Cost	2006 Projected Additional Handling Cost	2006 Total Projected Handling Cost
<b>Fluorescent Lamps</b>	\$20,078	\$10,040,900	\$10,060,978
<b>Batteries</b>	\$172,560	\$30,900,200	\$31,072,760
<b>Thermostats*</b>	\$11,030	\$700,710	\$711,740
<b>Total Costs</b>	<b>\$203,668</b>	<b>\$41,695,210<sup>†</sup></b>	<b>\$41,898,878</b>

Tables 5 and 6 present costs in current dollars. Using the U. S. Department of Labor’s 2001 consumer price index of 2.7 percent per year as a cost inflator, the estimate of \$41,898,878 total handling costs becomes \$46,610,544 in 2006 dollars. The “future dollar” figure is significant especially if counties plan to handle increased collection volume through increased shipping. These hauling costs are borne at the time of use (in 2006 and beyond) and thus will use future dollars, as opposed to the case with facilities’ construction costs, which could be paid for in current dollars or financed over time.

The next table provides a glimpse of the cost issue for each survey respondent. It provides a snapshot of all respondents’ FY 2000–01 costs, the estimated increase in cost associated with handling the projected 2006 volume of u-waste, and a sum of these costs to present the total estimated cost of handling u-waste in 2006.

**Table 6**  
**Total 2006 Projected Handling Cost for County Survey Respondents**

County (or Portion)	FY 2000–01 Total Handling Cost	2006 Additional Handling Cost	2006 Total Handling Cost
<b>Amador</b>	\$450	\$12,200	\$12,650
<b>Contra Costa—Delta Diablo District</b>	\$320	\$469,000	\$469,320
<b>Contra Costa—West Contra Costa Integrated Waste Management Authority</b>	\$19,430	\$746,000	\$765,430

\* Survey recipients were provided 2006 thermostat data in common units and all respondents reported their anticipated handling costs in dollars. As a result, costs could be summed across counties. However, it’s not known to what extent the differences in thermostat and mercury measures used by counties impacted their future cost estimates.

† An amount of \$53,400 was included in the total cost to reflect Inyo County’s 2006 estimate that was not broken out by u-waste type.

County (or Portion)	FY 2000–01 Total Handling Cost	2006 Additional Handling Cost	2006 Total Handling Cost
Del Norte	\$805	\$24,700	\$25,505
El Dorado	\$960	\$186,000	\$186,960
Fresno	\$1,250	\$1,300,000	\$1,301,250
Glenn	\$1,000	\$252,000	\$253,000
Humboldt	\$4,400	\$132,110	\$136,510
Imperial	0	\$262,270	\$262,270
Inyo	0	\$53,400	\$53,400
Kings*	--	--	--
Lake	\$1,340	\$116,000	\$117,340
Los Angeles	\$53,680	\$20,722,500	\$20,776,180
Marin—Novato Sanitary District	\$4,600	\$170,100	\$174,700
Mariposa	\$100	\$1,000	\$1,100
Merced	\$3,013	\$202,700	\$205,713
Modoc	\$1,500	\$42,000	\$43,500
Monterey—Monterey Regional Waste Management District	\$7,430	\$102,530	\$109,960
Orange	\$14,800	\$3,669,000	\$3,683,800
Placer	\$1,700	\$957,000	\$958,700
Sacramento	\$4,000	\$1,884,000	\$1,888,000
San Francisco	\$26,590	\$2,690,000	\$2,716,590
San Luis Obispo	\$300	\$813,300	\$813,600
San Mateo	\$11,110	\$2,041,700	\$2,052,810
Santa Barbara	\$21,880	\$3,500,000	\$3,521,880
Santa Cruz	\$3,760	\$267,400	\$271,160
Stanislaus	\$6,500	\$495,800	\$502,300
Tehama	0	\$213,000	\$213,000
Trinity	\$770	\$14,906	\$15,676
Yolo	\$9,180	\$237,000	\$246,180
Yuba/Sutter	\$2,800	\$117,600	\$120,400
<b>Total Costs</b>	<b>\$203,668</b>	<b>\$41,695,210</b>	<b>\$41,898,878</b>

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\* Although Kings County did return the survey, the survey contained no data. A fuller explanation of the county's response can be found in its profile in Appendix E.

# Further Considerations

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The primary purpose of this study was to better understand the impact of changing regulations by collecting data relative to county HHW collection infrastructures' ability to handle household generated fluorescent lamps, batteries, and thermostats. This data, presented in the previous section, quantifies the nature of current and future HHW collection infrastructures. However, in the course of surveying manufacturers, HHW facilities, and households and conducting other research-related activities the consultant discovered nuances not revealed by the numbers. This section presents broad findings and considerations relative to the full volume of work conducted. Included is a brief report on householders' current awareness and use of HHW facilities and events.

## ***HHW Programs Perceive “Contracted Capacity”***

As noted earlier, no county reported a universal waste capacity shortfall in FY 2000–01. Current capacity may not be an issue because few residents currently bring these items to HHW facilities. As indicated in Table 4, current collections represent less than 1 percent of 2001 household sales of fluorescent lamps, batteries, and thermostats. The volume of collections is so minimal that facilities can accommodate them. However, another dynamic appears to be at play as well—one that has implications for the expected increase in 2006 collections.

The sense that current capacity is sufficient is reinforced in part by a notion of “contracted capacity”—that is, physical capacity constraints do not exist because, for many counties, contractors either handle the entire HHW operation, or haul away collected u-waste when storage capacity is reached. Consequently, when asked to quantify their capacity to handle a specific type of universal waste, counties commonly responded that capacity was unknown or contracted. For example, one county responded to all capacity inquiries by noting that “as collection increases, so does shipping.” This particular county shipped u-waste every time it filled a certain number of 55-gallon drums of batteries.

Under this notion of “contracted capacity,” counties, in essence, assume that 2006 collection volumes can simply be absorbed with accelerated pick-ups. Therefore, processing constraints on future HHW collections would be driven by the capacity to *pay* for more frequent hauling, rather than storage or labor capacity. As one respondent noted, “Please be aware that...our HHW program operates out of two HHW storage container trailers and we ship once we are full. Therefore our transportation/disposal costs would obviously increase with an increase in hazwaste but our facility operational costs would not.” At some point, the cost of contracting for additional hauling may exceed budget limits. In other words, it seems unlikely that counties will always have the necessary funds to continuously handle increasing volumes of u-waste through contracted haulers.

However, as mentioned previously, when reporting their current capacity, few survey respondents concluded that site conditions and storage represented constraints on their future needs. Only 13 respondents across all universal waste types assigned any cost to the “site conditions/storage” category included in questions regarding improvements needed to meet the projected 2006 volume of waste. Of those responses, some allocations were less than \$100, while two respondents cited needs as high as \$80,000. Glenn County included a note stating that its current facility would be inadequate to handle the projected increase in waste, but it did not provide a cost estimate for the needed improvements.

Although many counties view “contracted capacity” as obviating the need for site conditions and storage improvements, a more comprehensive set of solutions may be necessary to handle the

massive increases in u-waste volume projected for 2006. The Board may wish to probe further regarding counties' budget constraints for additional hauling, constraints that haulers may have regarding the number of hauls and volume they can accommodate, and the price of overcoming those constraints.

## **Broader Waste Collection Practices May Impact Universal Waste Collections**

The Board may also wish to consider capacity constraints and opportunities across a wider range of waste types. For instance, one county interviewed by the consultant indicated that it was planning to open a new antifreeze, battery, oil, and paint (ABOP) facility. The county commented that this might allow them to shift paint collections—currently a large collection item—to another facility, thus freeing up space for more items such as fluorescent lamps. By increasing capacity in areas outside the scope of this study, counties may be able to alleviate some of the pressure that could come from increases in universal waste collection. However, new waste types have been added to the list of universal wastes, including cathode ray tubes (CRTs) that were not looked at in this study but contribute to capacity constraints. The CIWMB is conducting a separate survey on CRT waste to better understand local government information needs and cost burdens. In addition, an earlier CIWMB-contracted study looks at CRT waste processing, capacity, and the projected volume of CRTs for 2006 (*Selected E-Waste Diversion in California: A Baseline Study* [CIWMB pub. #610-01-008, [www.ciwmb.ca.gov/publications/default.asp?pubid=933](http://www.ciwmb.ca.gov/publications/default.asp?pubid=933)]).

Finally, understanding what drives these capacity decisions at the local level will help to inform the Board's policy decisions. For example, the Board may wish to survey local jurisdictions on these questions:

- Which waste type causes the greatest capacity problem?
- Which waste type is the most expensive to handle?

Dialoguing with HHW jurisdictions will enhance the CIWMB's ability to assist local jurisdictions in prioritizing and costing out these capacity alternatives in an environment of finite resources.

## **Lamp and Battery Data Collection and Reporting Lack Consistency**

During the course of surveying HHW programs, the consultant encountered multiple units of measure being used for the same universal waste type. For example, based on input from CIWMB staff, survey respondents were asked to report their fluorescent lamp data as a specific number of units. Many survey respondents did so; however, some counties reported their collections in pounds or lineal feet. Moreover, based on a limited number of invoices that were received in survey follow-up, it appears contracted haulers commonly charge for fluorescent lamps by the lineal foot.

Batteries proved to be less problematic, as it appears they are routinely collected in 55-gallon drums and measured in pounds. Despite the common use of pounds, there may still be some differences in the way counties measure their batteries. For instance, one county showed FY 2000–01 battery collections totaling 60 gallons and weighing 690 pounds. However, the Form 303\* conversion rate equating 1 gallon and 8.5 pounds suggests that 60 gallons be reported as 510 pounds. It is unclear whether all survey respondents reported actual weights, or whether some relied on conversions (either their own, their contracted hauler's, or the CIWMB's).

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\* CIWMB Form 303 must be completed yearly by all public agencies that sponsored an HHW program.

Given the number of ways in which fluorescent lamp and battery collection volumes can be measured and manipulated, the CIWMB may wish to consider adopting or revising common units of measure and common conversion rates specific to fluorescent lamps and household batteries. By doing so, the CIWMB will likely receive more accurate reports of u-waste collection activities, potentially resulting in decisions that more significantly impact collection.

### ***Thermostats Not Handled as a Discrete Waste Type***

Understanding thermostats as a discrete type of waste proved challenging for many counties. Anecdotal evidence collected during the surveys suggests that many, if not all, counties do not collect and track thermostats as distinct units. Rather, counties collect all mercury-containing items in one receptacle. One survey recipient—who did not complete a survey, but did send a note in response—indicated that “mercury is a category that includes all mercury.”

Actual survey responses reflect the difficulty in apportioning a specific product from a larger category of waste. Some survey respondents provided thermostat data as an estimated number of units. Others, citing their only available data, provided a weight for all of their commingled mercury collections (for example, a collection receptacle including thermostats, thermometers, and medical equipment containing mercury.)

As noted in the data collection discussion on lamps and batteries in the previous section, this allocation issue is significant to the extent that errors could result every time data is estimated, converted, or apportioned. Based on the frustrations voiced by one survey recipient, coupled with difficulties concerning units of measure that survey respondents faced, it is also possible that the CIWMB may begin to face resistance to data reporting if the issue is not resolved.

The CIWMB will need to rectify this disparity between what it intends to measure and the way data is collected in the field—either by changing the desired element to be measured or by standardizing the methods and units of measure used by HHW collection programs. For example, the CIWMB could require HHW programs to list their thermostat collections as a separate item to be measured. Alternatively, the CIWMB could continue to collect data on mercury as a category and develop a methodology for allocating a number or weight of thermostats as a component of this total.

### ***Cost Allocation Is Difficult***

Survey recipients were asked to report their universal waste handling expenses both by universal waste type and by cost type. Specifically, for each universal waste type, counties were asked to assign cost under the following categories:

- Personnel/Labor
- Equipment/Materials
- Site Conditions/Storage
- Hauling/Transportation
- Recycling/Disposal
- Other Costs

Because contracted haulers appear to provide detailed invoices to HHW programs, it seems that counties could report their contracted disposal costs associated with each universal waste type with relative ease. However, assigning a portion of other expenses, such as labor, to a specific

universal waste type proved more complicated. In the case of labor, HHW programs incur both the direct labor cost of county or city employees who may staff the HHW facility or event and an hourly labor charge from their contracted hauler.

Counties each approached these allocation challenges differently. Some counties assigned costs based on a specific waste's percentage of all waste weight. For example, if fluorescent lamps represented 0.3 percent of all HHW collected (by weight), then counties assigned 0.3 percent of the total labor and site costs to fluorescent lamps. However, it is not clear if this method accurately reflects the actual labor effort applied or storage space assigned.

Most counties, citing an inability to accurately assign costs to specific categories, simply reported their FY 2000–01 and 2006 costs under one category, such as “Recycling/Disposal.” Accordingly, Table 6 presents total, not itemized costs.

### ***Lack of Current Experience Hinders Counties' Projections***

Approximately half the survey respondents reported no thermostat collections, and roughly a third of the survey respondents reported no fluorescent lamp collections in FY 2000–01. A handful of survey respondents indicated no battery collections for the same period. Lacking a budget reference, several survey respondents indicated they were unable to make predictions about future costs or future impacts to their HHW programs. Because of this widespread inexperience with fluorescent lamps, batteries, and thermostats, the CIWMB may wish to examine what specific education tools counties will need to understand the costs and methods for handling these items.

### ***Household Survey Shows Awareness of Waste and Facilities***

As discussed in the “Methodology” section of this report, the projected quantities of collected u-waste used in the report are based on an assumption that all households will comply with the new universal waste regulations, and that all fluorescent lamps, batteries, and thermostats will be collected through HHW facilities or events starting February 2006. Implicit in this assumption of compliance is that households will *know* about the regulation and know *where* to dispose of these items appropriately. If residents are not aware of this change in regulation, or know about it but continue to dispose of these items in the trash, the volume of waste collected by HHW facilities or events will be less than the estimates suggest. The phone survey conducted of 128 Californians provides some data on residents' current knowledge of and behavior regarding household hazardous waste. Appendix D contains the research firm's report from the phone survey, including the survey instrument, data and cross-tabulations, findings, conclusions, and recommendations.

#### **Respondents Who Could Identify Household Hazardous Waste**

The majority of household survey respondents were, in fact, cognizant of what constitutes household hazardous waste. Close to three-quarters of the survey respondents (72 percent of the 128 households surveyed) gave a correct answer when they were asked, “What comes to mind when you think of household hazardous waste?” Another 10 percent gave answers that included a mix of correct and incorrect examples of household hazardous waste. When asked what they would consider to be hazardous waste, more than 9 out of 10 respondents correctly identified used motor oil, paint, and dead batteries.

#### **Respondents Who Had Heard of HHW Opportunities**

Fifty-six percent of the 128 households surveyed (72 respondents) indicated they had heard of either an HHW facility or an HHW collection event. Seventy-one percent of the 61 respondents

who had heard of an HHW facility knew of one in their community (43 respondents). Seventy percent of the 43 respondents who had heard of an HHW event knew of one in their community (30 respondents). This finding means that about 40 percent of the 128 respondents were familiar with whether a specific facility or event was available in their community.

### **Respondents Who Had Taken HHW to a Facility or Event**

Fifty-six percent of the 61 respondents who had heard of an HHW facility stated that they had taken their HHW to a facility (34 respondents, or 27 percent\* of the 128 households surveyed). Fifty-one percent of the 43 respondents who had heard of an HHW event indicated they had taken their HHW to an event (22 respondents, or 17 percent of the 128 households surveyed). These responses do not reflect how often householders have taken HHW to a facility or an event, nor do they explain what volume or types of HHW they may have dropped off. In other words, these responses represent either single-occasion drop-offs or regular participation.

### **Factors Affecting Householders' Motivation To Follow New Requirements**

A majority of the 128 households surveyed knew what constitutes HHW. Also, more than half of these 128 households had heard of an HHW facility or event. These facts appear to reflect a relatively well-informed population. However, less than a third of all respondents (34 respondents out of the 128 households surveyed) had ever taken their waste to an HHW facility.

Once it becomes a requirement that householders take fluorescent lamps, batteries, and thermostats to an HHW facility or event, there should be an increase in the percent of householders who do so. The expected increase would likely be due to factors such as the following:

- How widely and consistently the requirements are made known.
- How clear it is to the public that certain wastes are hazardous.
- How convenient householders find it to take their wastes to an HHW facility or event.
- Generally how inclined householders are to follow requirements.

Quantifying behavior after the new requirements take effect could be a goal of a future survey.

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\* Results of CIWMB's annual data collection from HHW facilities indicate a current participation rate for householders to be approximately 4 percent of the statewide population. This rate is based on a calculation that includes the number of householders participating in relation to the statewide population. The rate is not directly comparable to the survey result indicating 27 percent of households have taken HHW to a facility. For comparison purposes, CIWMB staff used Census 2000 data from the U.S. Census Bureau and converted the survey result to 9.2 percent of the statewide population who have taken HHW to a facility.



# Appendix A

## Manufacturers' Surveys



## **Fluorescent Lamp Survey**

<i>Please Identify Yourself</i>	
<b>Company name</b>	
<b>Name and title</b>	
<b>Phone</b>	
<b>Fax</b>	
<b>Email</b>	

- This survey focuses on California-specific data. However, if California data is unavailable, please provide U.S. data and indicate in your response that U.S. figures are supplied.
- This survey focuses on households. However, if household data is unavailable, please provide total sales data and estimate the percentage of sales to households.
- Please use estimates where actual figures are unavailable.

### **Questions 1 through 3 apply to calendar year 2001**

1. What was the total industry volume of household fluorescent lamps sold in California in calendar year 2001?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
2. What volume of household fluorescent lamps did your company sell in California in calendar year 2001?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
3. What percent of the California market do your 2001 sales represent?
  - Market share percent \_\_\_\_\_

**Questions 4 through 7 ask you to make projections about calendar year 2006**

4. What do you predict the total industry volume of household fluorescent lamps sold in California will be for calendar year 2006?

- Volume \_\_\_\_\_
- Unit of measurement (e.g. pounds, units) \_\_\_\_\_

5. What volume of household fluorescent lamps does your company expect to sell in California in calendar year 2006?

- Volume \_\_\_\_\_
- Unit of measurement (e.g. pounds, units) \_\_\_\_\_

6. What percent of the total market will your 2006 sales represent?

- Market share percent \_\_\_\_\_

7. Are there technologies or changes to the market that you predict will abnormally impact the number of household fluorescent lamps sold in California in the future? If so, what is the technology and how do you expect it to impact sales?

*(e.g. We expect CFL purchases to increase 30% per year as Californians respond to the energy crisis .)*

- Technology or Market Change  
\_\_\_\_\_
- Increasing or decreasing sales \_\_\_\_\_
- How/Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Thank you for taking the time to answer these questions. Your participation is helping California tackle important waste issues.

## **Battery Survey**

<i>Please Identify Yourself</i>	
<b>Company name</b>	
<b>Name and title</b>	
<b>Phone</b>	
<b>Fax</b>	
<b>Email</b>	

- This survey focuses on California-specific data. However, if California data is unavailable, please provide U.S. data and indicate in your response that U.S. figures are supplied.
- This survey focuses on households. However, if household data is unavailable, please provide total sales data and estimate the percentage of sales to households.
- Please use estimates where actual figures are unavailable.

### **Questions 1 through 3 apply to calendar year 2001**

1. What was the total industry volume of household batteries sold in California in calendar year 2001?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
2. What volume of household batteries did your company sell in California in calendar year 2001?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
3. What percent of the California market do your 2001 sales represent?
  - Market share percent \_\_\_\_\_

**Questions 4 through 7 ask you to make projections about calendar year 2006**

4. What do you predict the total industry volume of household batteries sold in California will be for calendar year 2006?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
5. What volume of household batteries does your company expect to sell in California in calendar year 2006?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
6. What percent of the total market will your 2006 sales represent?
  - Market share percent \_\_\_\_\_
  
7. Are there technologies or changes to the market that you predict will abnormally impact the number of household batteries sold in California in the future? If so, what is the technology and how do you expect it to impact sales?  
*(e.g. We expect battery purchases to stay relatively flat for the next 2 years as consumers use up the remainder of their Y2K stockpiles .)*
  - Technology or Market Change  
\_\_\_\_\_
  - Increasing or decreasing sales \_\_\_\_\_
  - How/Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Thank you for taking the time to answer these questions. Your participation is helping California tackle important waste issues.

## **Thermostat Survey**

<i>Please Identify Yourself</i>	
<b>Company name</b>	
<b>Name and title</b>	
<b>Phone</b>	
<b>Fax</b>	
<b>Email</b>	

- This survey focuses on California-specific data. However, if California data is unavailable, please provide U.S. data and indicate in your response that U.S. figures are supplied.
- This survey focuses on households. However, if household data is unavailable, please provide total sales data and estimate the percentage of sales to households.
- Please use estimates where actual figures are unavailable.

### **Questions 1 through 3 apply to calendar year 2001**

1. What was the total industry volume of household wall-mounted mercury thermostats sold in California in calendar year 2001?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
2. What volume of household wall-mounted mercury thermostats did your company sell in California in calendar year 2001?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
3. What percent of the California market do your 2001 sales represent?
  - Market share percent \_\_\_\_\_

**Questions 4 through 7 ask you to make projections about calendar year 2006**

4. What do you predict the total industry volume of household wall-mounted mercury thermostats sold in California will be for calendar year 2006?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
5. What volume of household wall-mounted mercury thermostats does your company expect to sell in California in calendar year 2006?
  - Volume \_\_\_\_\_
  - Unit of measurement (e.g. pounds, units) \_\_\_\_\_
  
6. What percent of the total market will your 2006 sales represent?
  - Market share percent \_\_\_\_\_
  
7. Are there technologies or changes to the market that you predict will abnormally impact the number of household wall-mounted mercury thermostats sold in California in the future? If so, what is the technology and how do you expect it to impact sales?  
*(e.g. We expect mercury switch thermostat sales to remain relatively flat for the next 3 years as digital thermostat purchases gain popularity among Californians responding to the energy crisis .)*
  - Technology or Market Change  
\_\_\_\_\_
  - Increasing or decreasing sales \_\_\_\_\_
  - How/Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Thank you for taking the time to answer these questions. Your participation is helping California tackle important waste issues.

# **Appendix B**

## **HHW Infrastructure Survey**



## **Letter Regarding Survey From CIWMB Executive Director to Jurisdictions**

February 11, 2002

Dear:

RE: SURVEY OF LOCAL JURISDICTIONS' HHW FACILITIES AND PROGRAMS

Over the next four years, California's Household Hazardous Waste (HHW) facilities will see a marked increase in the amount of fluorescent tubes, batteries, and mercury thermostats coming from households. In 2006, householders will no longer be able to dispose of these three types of universal waste in the trash. Instead, householders will need to take their tubes, batteries, and thermostats to alternative collection programs, such as HHW collection facilities.

This regulatory change has the potential to significantly impact HHW programs. To understand the impacts that may result, the California Integrated Waste Management Board (Board) is conducting a survey of HHW facilities and programs. The Board has contracted with MGT of America, Inc. to identify what local jurisdictions will need to manage the additional waste. We are interested in understanding more about your county's current and expected handling of fluorescent tubes, household batteries, and wall-mounted mercury thermostats.

One representative from each county is being asked to complete the attached survey. You have been selected as the point person to collect data from all HHW jurisdictions in \_\_\_\_\_ County. This involves compiling all jurisdictions' information into a single countywide response, and returning the survey to MGT. More details are provided on the survey.

We need your input! Please help us understand the status and needs of your county's HHW infrastructure by responding to the enclosed survey.

There are two **easy ways to respond**:

- Via fax (916) 443-1766, Attention: Tim Lynch
- Via mail to:

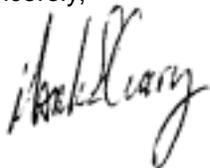
MGT of America  
455 Capitol Mall, #600  
Sacramento, CA 95814

Please call MGT of America toll-free at (877) 617-5693

should you have any questions or need any assistance with your survey.

We ask that you respond by March 5, 2002. Thank you for your assistance.

Sincerely,



Mark Leary  
Executive Director

Enclosures

## ***HHW Infrastructure Survey***

### **The Survey**

The survey consists of 2 parts:

- **Part 1** is to assess the amount and cost of household fluorescent tubes, batteries, and thermostats (u-waste) that your county managed in Fiscal Year 2000–01 (July 1, 2000 to June 30, 2001).
- **Part 2** is to determine the cost of the resources your county will need to manage the estimated amount of u-waste that you will receive in 2006.

**Attachment A** provides an estimated number of household fluorescent tubes, batteries, and thermostats that each county will receive in 2006. Your county's volume projections are derived directly from manufacturers' sales projections.

Please refer to this attachment when answering survey questions in Part 2.

- In cases where precise data is unavailable, please provide your best estimates.
- In order to compile a countywide response, you may need to contact other jurisdictions in your county for their HHW program and facility data.

### **Survey Assistance**

Should you have any questions or need any assistance with your survey, please call Tim Lynch or Karin Bloomer at MGT of America toll-free at **(877) 617-5693**.

### **The Deadline**

Please return your survey by Tuesday, March 5, 2002.

- **Via Fax\***

(916) 443-1766

Attention: Tim Lynch

- **Via Mail**

MGT of America

455 Capitol Mall, #600

Sacramento, CA 95814

\*If you fax, remember the survey is double-sided

Thank you for assisting the Board in assessing counties' u-waste management needs.

**PART 1: Fiscal Year 2000–01 Data**

<b>Household Fluorescent Tubes</b>	
<p><b>1a.</b> In FY 2000–01, how many (number of units) household fluorescent tubes did the HHW facilities and programs in your county handle?</p>	<p>units</p>
<p><b>1b.</b> In FY 2000–01, how much did HHW facilities in your county expend handling household fluorescent tubes? Please use the categories listed below.</p> <p style="text-align: center;"><b>Cost Categories</b></p> <ul style="list-style-type: none"> <li>• Personnel/Labor</li> <li>• Equipment/Materials</li> <li>• Site conditions/Storage</li> <li>• Hauling/Transportation</li> <li>• Recycling/Disposal</li> <li>• Other Costs (please explain)</li> <li>• <i>Grand Total</i></li> </ul>	<p>\$</p> <hr/> <p>\$</p> <hr/> <p>\$</p> <hr/> <p>\$</p> <hr/> <p>\$</p> <hr/> <p>\$</p> <hr/> <p>\$</p>
<p><b>1c.</b> In FY 2000–01, what was the maximum capacity (maximum number of units) of household fluorescent tubes that your county’s HHW facilities could handle?</p>	<p>units</p>
<p><b>1d.</b> If your county’s current collection exceeds your maximum capacity, what is the cost of the improvements that would be necessary to increase your county’s HHW facilities’ capacity to meet your current needs? Please use the categories listed below.</p> <p style="text-align: center;"><b>Cost Categories</b></p> <ul style="list-style-type: none"> <li>• Personnel/Labor</li> </ul>	<p>\$</p>



2d. If your county's current collection exceeds your maximum capacity, what is the cost of the improvements that would be necessary to increase your county's HHW facilities' capacity to meet your current needs? Please use the categories listed below.

**Cost Categories**

- Personnel/Labor
- Equipment/Materials
- Site conditions/Storage
- Hauling/Transportation
- Recycling/Disposal
- Other Costs (please explain)
- *Grand Total*

	\$
	\$
	\$
	\$
	\$
	\$
	\$

**Household Thermostats**

<p><b>3a.</b> In FY 2000–01, how many (number of units) household thermostats did the HHW facilities and programs in your county handle?</p>	units
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<p><b>3b.</b> In FY 2000–01, how much did HHW facilities in your county expend handling household thermostats? Please use the categories listed below</p> <p style="text-align: center;"><b>Cost Categories</b></p> <ul style="list-style-type: none"> <li>• Personnel/Labor</li> <li>• Equipment/Materials</li> <li>• Site Conditions/Storage</li> <li>• Hauling/Transportation</li> <li>• Recycling/Disposal</li> <li>• Other Costs (please explain)</li> <li>• <i>Grand Total</i></li> </ul>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">\$</td></tr> </table>	\$	\$	\$	\$	\$	\$	\$
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<p><b>3c.</b> In FY 2000–01, what was the maximum capacity (maximum number of units) of household thermostats that your county’s HHW facilities could handle?</p>	units
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<p><b>3d.</b> If your county’s current collection exceeds your maximum capacity, what is the cost of the improvements that would be necessary to increase your county’s HHW facilities’ capacity to meet your current needs? Please use the categories listed below.</p> <p style="text-align: center;"><b>Cost Categories</b></p> <ul style="list-style-type: none"> <li>• Personnel/Labor</li> <li>• Equipment/Materials</li> <li>• Site Conditions/Storage</li> </ul>	\$
--	----

<ul style="list-style-type: none"> <li>• Hauling/Transportation</li> </ul>	\$
<ul style="list-style-type: none"> <li>• Recycling/Disposal</li> </ul>	\$
<ul style="list-style-type: none"> <li>• Other Costs (please explain)</li> </ul>	\$
<ul style="list-style-type: none"> <li>• <i>Grand Total</i></li> </ul>	\$
	\$
	\$
	\$

**PART 2: 2006 Data**

The following questions are to determine what resources would be needed to handle the increased volumes of universal waste projected for 2006.

Please refer to **Attachment A** for the estimated amount of household fluorescent tubes, batteries and thermostats that your county will receive in 2006. Your county's volume projections are derived directly from manufacturers' sales projections.

<b>Household Fluorescent Tubes</b>	
<p><b>4.</b> What would it cost to increase your county's current capacity (FY 2000–01) in order to accommodate the 2006 estimated amount of fluorescent tubes? Please use the categories listed below.</p>	
<b>Cost Categories</b>	
• Personnel/Labor	\$
• Equipment/Materials	\$
• Site Conditions/Storage	\$
• Hauling/Transportation	\$
• Recycling/Disposal	\$
• Other Costs (please explain)	\$
• <i>Grand Total</i>	\$
	\$

<b>Household Batteries</b>	
<p><b>5.</b> What would it cost to increase your county's current capacity (FY 2000–01) in order to accommodate the 2006 estimated amount of batteries? Please use the categories listed below.</p>	
<b>Cost Categories</b>	
• Personnel/Labor	
• Equipment/Materials	\$
• Site Conditions/Storage	\$

• Hauling/Transportation	\$
• Recycling/Disposal	\$
• Other Costs (please explain)	\$
• <i>Grand Total</i>	\$
	\$

<b>Household Thermostats</b>	
<p><b>6.</b> What would it cost to increase your county's current capacity (FY 2000–01) in order to accommodate the 2006 estimated amount of thermostats? Please use the categories listed below.</p> <p style="text-align: center;"><b>Cost Categories</b></p> <ul style="list-style-type: none"> <li>• Personnel/Labor</li> <li>• Equipment/Materials</li> <li>• Site Conditions/Storage</li> <li>• Hauling/Transportation</li> <li>• Recycling/Disposal</li> <li>• Other Costs (please explain)</li> <li>• <i>Grand Total</i></li> </ul>	<p style="text-align: center;">\$</p> <hr/> <p style="text-align: center;">\$</p>

Your Contact Information	
Name	
Title	
Organization	
Address	
Telephone and E-Mail	

PLEASE RETURN YOUR SURVEY BY **MARCH 5** TO THE CONTACT LISTED ON PAGE 1.  
THANK YOU FOR ASSISTING THE BOARD IN ASSESSING COUNTIES' U-WASTE  
MANAGEMENT NEEDS.

**Attachment A**

This table provides the estimated number of household fluorescent lamps, batteries, and thermostats (in number of units) that your county will receive in 2006. Please use this data to estimate your future resource needs in Part 2 of the survey.

<b>County</b>	<b>Sponsor</b>	<b>Attention</b>	<b><u>2006 LAMPS (number of units)</u></b>	<b><u>2006 BATTERIES (number of units)</u></b>	<b><u>2006 THERMOSTATS (number of units)</u></b>
ALAMEDA	Alameda Co. HHW Division	Bill Polluck	741,047	25,227,575	15,517
ALPINE	Alpine Co. Dept. of Public Works	Leonard Turnbeaugh	611	20,808	13
AMADOR	Amador Co. General Services	Dennis Grady	17,736	603,783	371
BUTTE	Butte Co. Dept. of Public Works	Bonnie Low	103,108	3,510,131	2,159
CALAVERAS	Calaveras Dept. of Public Works	Jennifer Barr	20,592	701,003	431
COLUSA	Colusa County	Jaime Filva	9,619	327,476	201
CONTRA COSTA 1	Delta Diablo Sanitation District	Amanda Wong	121,758	4,145,042	2,550
CONTRA COSTA 2	Central Contra Costa Sanitary District	Elaine Jacobs	243,517	8,290,084	5,099
CONTRA COSTA 3	West Contra Costa Integrated Waste Mgmt. Authority	Steve Devine	121,758	4,145,042	2,550
DEL NORTE	Del Norte Solid Waste Mgmt. Agency	Ted Ward	14,078	479,274	295
EL DORADO	El Dorado Co. Dept. of Env. Mgmt.	George Sanders	80,012	2,723,848	1,675
FRESNO	Fresno Co. Dept. of Public Works	Marion Miller	412,784	14,052,464	8,644
GLENN	Glenn Co. Dept. of Public Works	Tom Varga	13,427	457,102	281
HUMBOLDT	Humboldt Co. Dept. of Env. Health	Peter Bloom	64,029	2,179,761	1,341
IMPERIAL	City of El Centro	Steve Hogan	75,603	2,573,755	1,583
INYO	Inyo Co. Dept. of Env. Health	Robert Hurd	9,093	309,567	190
KERN	Kern Co. Waste Mgmt. District	Lyn Beurmann	343,594	11,697,026	7,195
KINGS	Kings Co. Waste & Recycling Authority	Danny Gonzales	68,188	2,321,326	1,428

<b>County</b>	<b>Sponsor</b>	<b>Attention</b>	<b><u>2006 LAMPS (number of units)</u></b>	<b><u>2006 BATTERIES (number of units)</u></b>	<b><u>2006 THERMOSTATS (number of units)</u></b>
LAKE	Lake Co. Public Services Dept.	Caroline Chavez	29,710	1,011,423	622
LASSEN	Lassen Co. Dept .of Public Works	Shirley Johnson-Wright	17,986	612,312	377
LOS ANGELES COUNTY	LA Co. Public Works Env. Division	Malinda Bassett	3,006,121	102,337,891	62,947
LOS ANGELES (CITY)	City of Los Angeles	Fernando Gonzales	1,905,198	64,858,969	39,894
MADERA	Madera Co. Dept of Env. Health	Phil Hudecek	64,831	2,207,050	1,358
MARIN COUNTY	City of San Rafael	Brad Marks	101,054	3,440,201	2,116
MARIN – CITY OF NOVATO	Novato Sanitary District	Dee Johnson	24,399	830,629	511
MARIPOSA	Mariposa Co. Dept. of Public Works	Thomas Starling	8,617	293,364	180
MENDOCINO	Mendocino Co. Solid Waste Mgmt. Agency	Mike Sweeney	43,738	1,488,991	916
MERCED	Merced Co. Env. Health Dept.	Bill Peeler	108,569	3,696,042	2,273
MODOC	Modoc Co. Dept. of Public Works	Rich Hironymous	4,810	163,738	101
MONO	Mono Co. Dept of Env. Health	Evan Nikirk	6,689	227,698	140
MONTEREY 1	Regional Waste Mgmt. Agency, Monterey Regional Waste Mgmt. District	Rizky Ross	102,908	3,503,309	2,155
MONTEREY 2	Salinas Valley Solid Waste Authority	Kurt Hunter	102,908	3,503,309	2,155
NAPA	Napa Co. Dept. of Env. Mgmt.	John Kara	63,228	2,152,471	1,324
NEVADA	Nevada Co. Dept. of Transportation & Sanitation	Steve Porter	47,095	1,603,267	986
ORANGE	Orange Co. Integrated Waste Mgmt. District	Sue Gordon	1,465,810	49,900,830	30,694
PLACER	Western Placer Waste Mgmt. Agency	Eric Oddo	129,011	4,391,928	2,701

<b>County</b>	<b>Sponsor</b>	<b>Attention</b>	<b><u>2006 LAMPS (number of units)</u></b>	<b><u>2006 BATTERIES (number of units)</u></b>	<b><u>2006 THERMOSTATS (number of units)</u></b>
PLUMAS	Plumas Co. Dept. of Public Works	Tom Hunter	10,571	359,882	221
RIVERSIDE	Riverside Co. Dept. of Env. Health	Sandy Bunchek	806,328	27,449,976	16,884
SACRAMENTO	Sacramento Co. Dept. of Waste Mgmt. & Recycling	Kevin Smith	630,573	21,466,720	13,204
SAN BENITO	San Benito Co. Dept. of Public Works	Mandy Rose	27,656	941,493	579
SAN BERNARDINO	San Bernardino Co. Fire Dept HHW Program	Ione Wallace	883,935	30,091,955	18,509
SAN DIEGO	San Diego Dept. of Env. Services	Traci Anderson	1,444,718	49,182,771	30,252
SAN FRANCISCO	SF City & Co. Dept. of Administrative Services	Marjaneh Zarrehparvar	397,653	13,537,372	8,327
SAN JOAQUIN	San Joaquin Co. Dept. of Public Works	Alison Hudson	292,441	9,955,605	6,124
SAN LUIS OBISPO	SLO Integrated Waste Mgmt. Agency	William Worrell	126,305	4,299,825	2,645
SAN MATEO	San Mateo Co. Dept. of Env. Health	Dermont Casey	360,779	12,282,048	7,555
SANTA BARBARA	Santa Barbara Co. Solid Waste Mgmt.	Dana Green	204,864	6,974,211	4,290
SANTA CLARA	Santa Clara Co. Dept. of Env. Health	Rob Darcy	863,594	29,399,480	18,083
SANTA CRUZ	Santa Cruz Co. Dept. of Public Works	Kasey Kolassa	130,163	4,431,157	2,726
SHASTA	Shasta Co. Dept. of Resource Mgmt.	Christina Schlosser	83,018	2,826,184	1,738
SIERRA	Sierra Co. Dept of Public Works	Tim Beals	1,784	60,719	37
SISKIYOU	Siskiyou Co. Dept. of Public Works	Roger Cummins	22,195	755,582	465
SOLANO	Solano County	Narcisa Untal	202,108	6,880,403	4,232
SONOMA	Sonoma Co. Waste Mgmt. Agency	Lesli Daniel	234,874	7,995,867	4,918

<b>County</b>	<b>Sponsor</b>	<b>Attention</b>	<b><u>2006 LAMPS (number of units)</u></b>	<b><u>2006 BATTERIES (number of units)</u></b>	<b><u>2006 THERMOSTATS (number of units)</u></b>
STANISLAUS	Stanislaus Co. Dept. of Env. Resources	Jim Simpson	230,415	7,844,069	4,825
SUTTER / YUBA (see Yuba/Sutter)	Yuba/Sutter Reg. Waste Mgmt. Agency	Keith Martin			
TEHAMA	Tehama Co. Sanitary Landfill Agency	Allen Abbs	28,457	968,783	596
TRINITY	Trinity County	Barbara Rapinac	6,538	222,581	137
TULARE	Tulare Co. Env. Health	Mark Bairstow	189,132	6,438,652	3,960
TUOLUMNE	Tuolumne Co. Dept. of Public Works	Mark Rappaport	27,656	941,493	579
VENTURA	Ventura Co. Solid Waste Mgmt. Dept.	Peter Kaiser	387,533	13,192,840	8,115
YOLO	Yolo Co. Dept. of Public Works	Sara Kittle	86,926	2,959,221	1,820
YUBA / SUTTER	Yuba/Sutter Regional Waste Mgmt. Agency	Keith Martin	70,993	2,416,840	1,487

**Appendix C**  
**HHW Infrastructure Survey Contact List**



# Appendix C

## *HHW Infrastructure Survey Contact List*

County	Sponsor	Attention	Address	City	State	Zip
Alameda	Alameda County HHW Division	Bill Polluck	1131 Harbor Bay Pkwy., MS 30470	Alameda	CA	94502
Alpine	Alpine County Dept. of Public Works	Leonard Turnbeaugh	50 Diamond Valley Road	Markleeville	CA	96120
Amador	Amador County General Services	Dennis Grady	12200 Airport Road	Jackson	CA	95642
Butte	Butte County Dept. of Public Works	Bonnie Low	7 County Center Drive	Oroville	CA	95965
Calaveras	Calaveras Dept. of Public Works	Jennifer Barr	891 Mountain Ranch Road	San Andreas	CA	95249
Colusa	Colusa County	Jaime Filva	P. O. Box 610	Colusa	CA	95932
Contra Costa	Delta Diablo Sanitation District	Amanda Wong	2500 Pittsburg-Antioch Highway	Antioch	CA	94509-1373
Contra Costa	Central Contra Costa Sanitary District	Elaine Jacobs	4797 Imhoff Place	Martinez	CA	94553
Contra Costa	West Contra Costa Integrated Waste Management Authority	Steve Devine	One Alvarado Square	San Pablo	CA	94806
Del Norte	Del Norte Solid Waste Management Agency	Ted Ward	391 Front Street	Crescent City	CA	95531
El Dorado	El Dorado County Dept. of Environmental Management	George Sanders	2850 Fairlane Court, Building C	Placerville	CA	95667
Fresno	Fresno County Dept. of Public Works	Marion Miller	2220 Tulare Street, 6th Floor	Fresno	CA	93721
Glenn	Glenn County Dept. of Public Works	Tom Varga	777 N. Colusa Street	Willows	CA	95988

<b>County</b>	<b>Sponsor</b>	<b>Attention</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>
Humboldt	Humboldt County Dept. of Environmental Health	Peter Bloom	100 H Street, Suite 100	Eureka	CA	95501
Imperial	City of El Centro	Steve Hogan	1275 Main Street	El Centro	CA	92243
Inyo	Inyo County Dept of Environmental Health	Robert Hurd	P. O. Box 427	Independence	CA	93526
Kern	Kern County Waste Management District	Lyn Beurmann	2700 M Street, Suite 500	Bakersfield	CA	93301
Kings	Kings County Waste and Recycling Authority	Danny Gonzales	7803 Hanford-Armona Road	Hanford	CA	93230
Lake	Lake County Public Services Dept.	Caroline Chavez	333 Second Street	Lakeport	CA	95453
Lassen	Lassen County Dept. of Public Works	Shirley Johnson-Wright	70 Nevada Street	Susanville	CA	96130
Los Angeles	Los Angeles County Public Works Environmental Division	Malinda Bassett	900 S. Fremont Avenue	Alhambra	CA	91803
Los Angeles	City of Los Angeles	Fernando Gonzales	433 S. Spring St., Ste. 500	Los Angeles	CA	90013
Madera	Madera County Dept of Environmental Health	Phil Hudecek	216 W. 6 <sup>th</sup> Street	Madera	CA	93637
Marin	Novato Sanitary District	Dee Johnson	500 Davidson Street	Novato	CA	94945
Marin	City of San Rafael	Brad Marks	1039 C Street	San Rafael	CA	94901
Mariposa	Mariposa County Dept. of Public Works	Thomas Starling	5320 Highway 49 North, P. O. Box 5	Mariposa	CA	95338
Mendocino	Mendocino County Solid Waste Mgmt. Agency	Mike Sweeney	P. O. Box 123	Ukiah	CA	95482

<b>County</b>	<b>Sponsor</b>	<b>Attention</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>
Merced	Merced County Environmental Health Dept.	Bill Peeler	777 W. 22nd Street	Merced	CA	95340
Modoc	Modoc County Dept of Public Works	Rich Hironymous	202 W. 4th Street	Alturas	CA	96101
Mono	Mono County Dept of Environmental Health	Evan Nikirk	P. O. Box 476	Bridgeport	CA	93517
Monterey	Regional Waste Mgmt. Agency, Monterey Regional Waste Mgmt. District	Rizky Ross	P. O. Box 1670	Marina	CA	93933
Monterey	Salinas Valley Solid Waste Authority	Kurt Hunter	337 Melody Lane	Salinas	CA	93901
Napa	Napa County Department of Environmental Mgmt.	John Kara	1195 Third Street Room 101	Napa	CA	94559-3082
Nevada	Steve Porter	Nevada County Dept of Trans & Sanitation	950 Maidu Avenue	Nevada City	CA	95959
Orange	Orange County Integrated Waste Mgmt District	Sue Gordon	320 N. Flower Street, Suite 400	Santa Ana	CA	92703
Placer	Western Placer Waste Mgmt. Agency	Eric Oddo	3033 Fiddymment Road	Roseville	CA	95747
Plumas	Plumas County Dept. of Public Works	Tom Hunter	1834 E. Main Street	Quincy	CA	95971
Riverside	Riverside County Dept. of Environmental Health	Sandy Bunchek	4065 County Circle Drive	Riverside	CA	92503
Sacramento	Sacramento County Dept. of Waste Mgmt. & Recycling	Kevin Smith	9850 Goethe Road	Sacramento	CA	95827
San Benito	San Benito County Dept. of Public Works	Mandy Rose	3220 Southside Road	Hollister	CA	95023

<b>County</b>	<b>Sponsor</b>	<b>Attention</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>
San Bernardino	San Bernardino County Fire Dept., HHW Program	Ione Wallace	2824 East "W" Street	San Bernardino	CA	92415
San Diego	San Diego Dept. of Environmental Services	Traci Anderson	9305 Hazardous Way	San Diego	CA	92123
San Francisco	San Francisco City & County Dept. of Administrative Services	Marjaneh Zarreparvar	1145 Market Street, Suite. 401	San Francisco	CA	94103
San Joaquin	San Joaquin County Dept. of Public Works	Alison Hudson	P. O. Box 1810	Stockton	CA	95201
San Luis Obispo	San Luis Obispo Integrated Waste Mgmt. Agency	William Worrell	870 Osos Street	San Luis Obispo	CA	93401
San Mateo	San Mateo County Dept. of Environmental Health	Dermont Casey	455 County Center	Redwood City	CA	94063
Santa Barbara	Santa Barbara County Solid Waste Mgmt.	Dana Green	109 E. Victoria	Santa Barbara	CA	93101
Santa Clara	Santa Clara County Dept. of Environmental Health	Rob Darcy	P. O. Box 28070	San Jose	CA	95159
Santa Cruz	Santa Cruz County Dept. of Public Works	Kasey Kolassa	701 Ocean Street, Room 410	Santa Cruz	CA	95020
Shasta	Shasta County Dept. of Resource Mgmt.	Christina Schlosser	1855 Placer Street, Suite 200	Redding	CA	96001
Sierra	Sierra County Dept. of Public Works	Tim Beals	P. O. Box 98	Downieville	CA	95936
Siskiyou	Siskiyou County Dept. of Public Works	Roger Cummins	305 Butte Street	Yreka	CA	96097
Solano	Solano County	Narcisa Untal	601 Texas Street	Fairfield	CA	94533

<b>County</b>	<b>Sponsor</b>	<b>Attention</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>
Sonoma	Sonoma County Waste Mgmt. Agency	Lesli Daniel	2300 County Center Drive, Suite B100	Santa Rosa	CA	95403
Stanislaus	Stanislaus County Dept. of Environmental Resources	Jim Simpson	3800 Cornucopia Way, Suite. C	Modesto	CA	95358-9492
Tehama	Tehama County Sanitary Landfill Agency	Allen Abbs	P. O. Box 8549	Red Bluff	CA	96080
Trinity	Trinity County	Barbara Rapinac	P. O. Box 2700	Weaverville	CA	96093-2700
Tulare	Tulare County Environmental Health	Mark Bairstow	5957 S. Mooney Boulevard.	Visalia	CA	93277
Tuolumne	Tuolumne County Dept. of Public Works	Mark Rappaport	2 South Green Street	Sonora	CA	95370
Ventura	Ventura County Solid Waste Mgmt Dept.	Peter Kaiser	800 S. Victoria Avenue/L1650	Ventura	CA	93009
Yolo	Yolo County Dept. of Public Works	Sara Kittle	292 W. Beamer Street	Woodland	CA	95695
Yuba/Sutter	Yuba/Sutter Reg. Waste Mgmt. Agency	Keith Martin	2100 B Street	Marysville	CA	95901



# **Appendix D**

## **Household Survey Report**



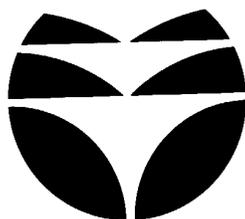
# STATE OF CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

## MGT OF AMERICA

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### SURVEY OF CALIFORNIA RESIDENTS

### **FINAL REPORT**



JD FRANZ RESEARCH, INC.  
**Public Opinion and Marketing Research**

D-3

Formatting and pagination in this CIWMB appendix differ from original report.

**Jennifer D. Franz, Ph.D.**

**March, 2002**

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- III. FINDINGS..... D-9
- IV. CONCLUSIONS AND RECOMMENDATIONS..... D-17

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- APPENDIX C: CROSSTABULATIONS ..... D-33

# I. INTRODUCTION

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The research findings presented in this report derive from a survey of residents of the state of California that was commissioned by MGT of America on behalf of the California Integrated Waste Management Board (IWMB) and conducted by JD Franz Research, Inc., of Sacramento. Encompassing 128 completed interviews, the survey was implemented between February 10 and February 24, 2002.

The primary purpose of the survey was to determine whether residents are aware of household hazardous waste facilities and events. Specific areas of inquiry were as follows:

- What comes to respondents' minds when they think of household hazardous waste
- Whether respondents view various types of household waste as hazardous
- Awareness of household hazardous waste facilities and events
- The extent to which those who are aware believe such facilities and events exist in their communities
- The extent to which those who are aware have ever taken any household hazardous waste to a facility or event

Following this Introduction, the report is divided into three additional sections. **Section II** contains a detailed discussion of the **Research Methods** used in conducting the survey, while **Section III** presents and discusses the **Findings**. Finally, **Section IV** contains the research firm's **Conclusions and Recommendations**.

For reference, there are also three appendices. **Appendix A** contains a copy of the **Survey Instrument** that was used in conducting the research, and **Appendix B** includes **Detailed Data Tabulations** for all of the survey questions. **Crosstabulations** of the data can be found in **Appendix C**.

## **II. RESEARCH METHODS**

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### **Instrument Design**

The survey instrument that was used in conducting this research was designed by the President of JD Franz Research in consultation with MGT of America, which in turn consulted with the Integrated Waste Management Board. The final draft was then pretested among a random sample of respondents selected in the same manner as the survey sample would be selected. Following the pretest, the research firm President consulted with MGT concerning the results, which indicated that no modifications to the instrument were necessary.

### **Sample Selection**

The sample for the survey was a random digit dialing (RDD) telephone sample designed to represent all households in state. RDD, the most sophisticated strategy for telephone survey sampling, ensures the inclusion of unlisted, erroneously listed, and newly listed households in the sample.

Area codes and prefixes for the sample were determined by Survey Sampling, Inc., the nation's leading supplier. SSI then randomly appended the final four numbers of a telephone number to the area code/prefix combinations by computer. The resulting numbers were printed out on call record sheets designed to facilitate full sample implementation.

### **Interviewer Training**

All of the interviewers who conducted the survey had undergone intensive training and briefing prior to conducting any actual interviews. Training included instruction in interviewing techniques, orientation to the mechanics of sample selection and recording, and extensive practice with survey instruments as well as with a systematic approach to answering respondents' inquiries.

## **Survey Implementation**

Interviewing for the survey was conducted from the centralized and fully monitored facility at JD Franz Research under the ongoing oversight of full-time supervisors. The research commenced on February 10, 2002 and was concluded on February 24, 2002.

Immediately upon completion of each interview, a supervisor checked it for accuracy, clarity, and completeness so that any problem areas could be discussed with the interviewer while the conversation was still remembered. In the event problems could not be resolved by recall, respondents were called back for clarification or amplification. Interviews that could not be corrected (n=1) were discarded and replaced so there would be no missing data in the database.

In order to ensure that working people were adequately represented in the survey, calling took place only during the evening hours (5 to 9 p.m.) and on weekends (10 a.m. to 6 p.m. on Saturdays and 2 to 9 p.m. on Sundays). Up to four attempts were made to reach an eligible respondent at each number in the sample.

In all, a total of 128 interviews were completed. Thus the margin of error for the survey at the 95 percent confidence level is  $\pm 8.7$  percent.

The cooperation rate for the survey was 69 percent. A cooperation rate of this magnitude, which is generally viewed as being very good, lends considerable credibility to the validity and reliability of the findings.

## **Data Coding, Tabulation, and Analysis**

Data from the survey were key-entered into the data analytic software SPSS for Windows using SPSS Data Entry and computer-checked for accuracy, adherence to the pre-established coding scheme, and internal logic. In addition, preliminary tabulations were reviewed manually to check for errors in areas that could not be programmed. Finally, tabulations, means, and other analyses were prepared using SPSS for Windows.

In order to determine whether awareness is a function of understanding what household hazardous waste is, the awareness question (Question 3) was crosstabulated with the questions about what comes to mind when respondents think of household hazardous waste (Question 1) and the types of waste respondents view as being hazardous (Question 2). Statistically significant results of these crosstabulations ( $p < .05$ ) are discussed in the context of Question 3 on page 11.

It is also worth noting in this regard that there were notable albeit not statistically significant differences in most of the other analyses; lack of significance can therefore probably be attributed to the small sample size. Accordingly, all of the analyses are included in Appendix C.

### III. FINDINGS

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Findings from the survey are presented here in the same order as the questions were posed to respondents. Readers who are interested in the precise phrasing of the inquiries are invited to consult the copy of the survey instrument that can be found in Appendix A.

#### What Comes to Mind When You Think of Household Hazardous Waste? (Question 1)

As shown in Figure 1, when respondents were asked what comes to mind when they think of household hazardous waste, close to three-quarters (72 percent) gave an answer that could be viewed as correct on the basis of a fact sheet with definitions provided by the Board. In addition, more than one in ten (13 percent) gave an answer that was more or less correct. When these two figures are summed, they total by far the majority (84 percent).

#### WHAT COMES TO MIND WHEN YOU THINK OF HOUSEHOLD HAZARDOUS WASTE?

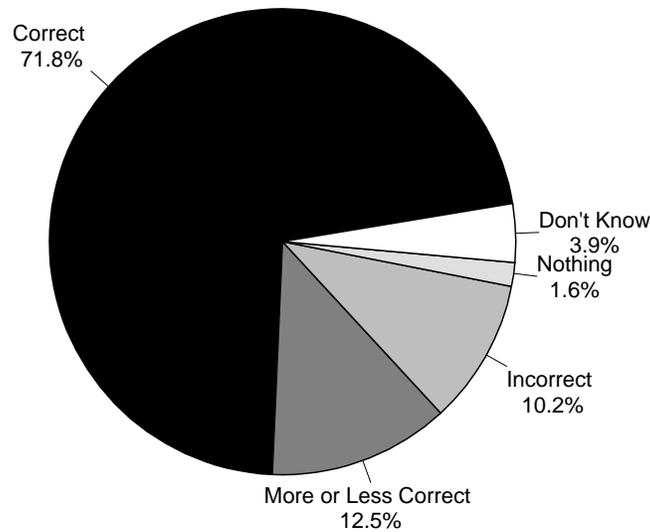


Figure 1

## What Would You Consider to Be Household Hazardous Waste? (Question 2)

Figure 2 demonstrates that respondents were largely able to identify household hazardous waste: 91 percent said used motor oil falls into that category, 92 percent said paint does, and 91 percent said dead batteries do. In addition, most were aware that lawn and garden clippings are not hazardous waste; only about one in five (19 percent) said they are.

### EXTENT TO WHICH RESPONDENTS VIEW VARIOUS THINGS AS BEING HOUSEHOLD HAZARDOUS WASTE

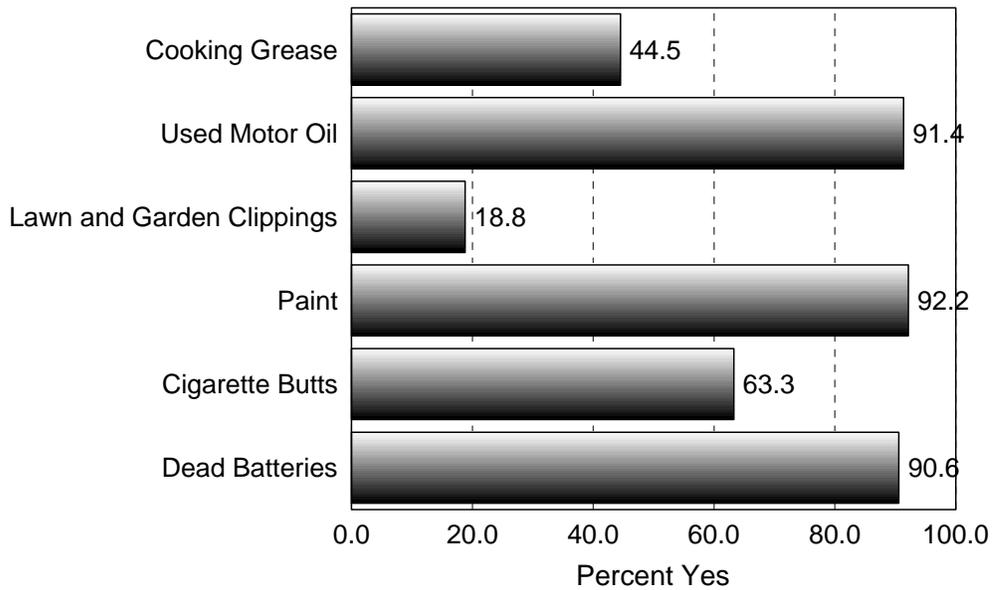


Figure 2

Respondents were less successful in categorizing cooking grease and cigarette butts, however; close to half (45 percent) said the former is hazardous and a majority (63 percent) said the latter is, although in fact neither is.

### Have You Heard of Household Hazardous Waste Facilities or Events? (Question 3a)

As Figure 3 indicates, almost half of respondents (48 percent) said they have heard of a hazardous waste facility and about a third (34 percent) said they have heard of a hazardous waste event. The unduplicated count of those who said they have heard of one or the other is 72 (56 percent).

#### AWARENESS OF HOUSEHOLD HAZARDOUS WASTE FACILITIES AND EVENTS

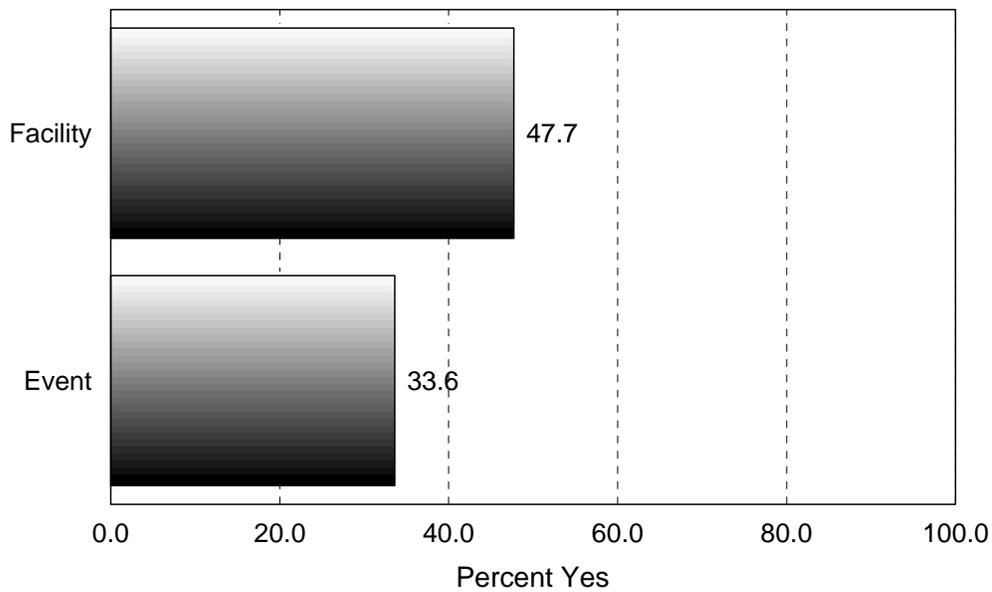


Figure 3

*CIWMB Note:*

*The total number of households asked if they had heard of an HHW facility or event is 128.*

Awareness of household hazardous waste facilities or events (unduplicated count) is apparently related to knowledge of what constitutes this category of waste. The sample size is so small, however, that most of the relationships do not evidence statistical significance. The two that do are displayed in Table 1. As this table indicates, almost all aware respondents said that paint and dead batteries are household hazardous waste. The proportions of unaware respondents who said the same thing are noticeably smaller.

Table 1		
<b>AWARENESS OF HOUSEHOLD HAZARDOUS WASTE FACILITIES OR EVENTS</b>		
	Aware	Unaware
	<b>PERCENT</b>	
Paint Is Household Hazardous Waste	99	86
Dead Batteries Are Household Hazardous Waste	97	82

*CIWMB Note on Table 1:*

*Out of 128 households surveyed, the "Aware" column refers to an unduplicated count of those respondents who had heard of an HHW facility or event (72 respondents). The "Unaware" column refers to those who had not heard of a facility or an event (56 respondents).*

### Are There Facilities or Events in Your Community? (Question 3b)

Figure 4 shows that majorities of aware respondents said there is a household hazardous waste facility in their community (71 percent) and there has been a household hazardous waste event in their community in the past two years (70 percent). Almost all of the remaining answers were “no”; virtually no one said they didn’t know.

#### EXTENT TO WHICH AWARE RESPONDENTS INDICATED THERE ARE HOUSEHOLD HAZARDOUS WASTE FACILITIES AND EVENTS IN THEIR COMMUNITIES

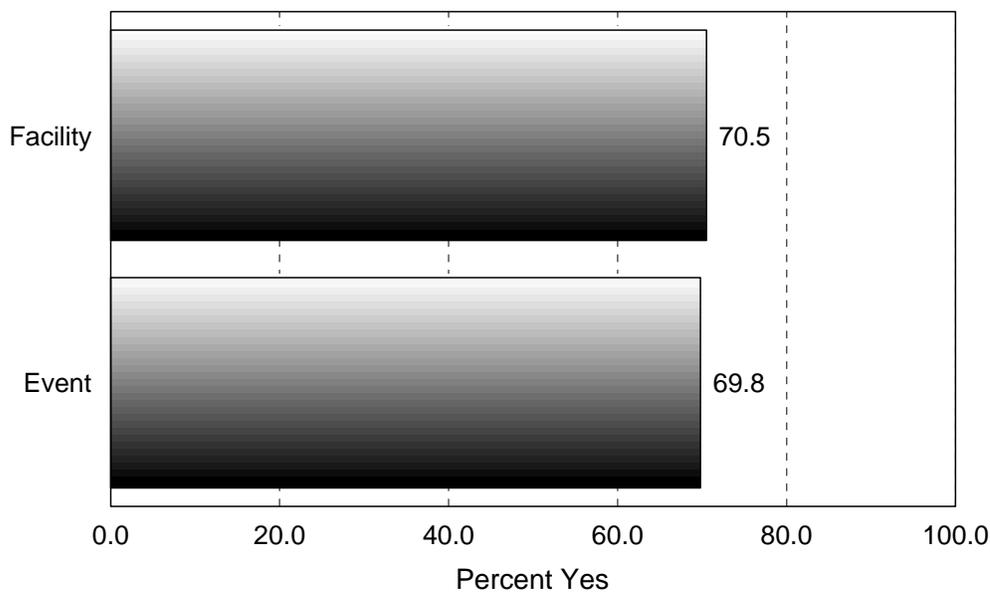


Figure 4

*CIWMB Note:*

*“Aware respondents” refers to those who had heard of an HHW facility or event. (Of the 128 households surveyed, 61 respondents had heard of a facility, and 43 respondents had heard of an event.)*

Figure 5 applies the numbers of aware respondents who indicated there are household hazardous waste facilities and events in their communities to all respondents. As this figure indicates, assuming no unaware respondents know of facilities or events [CIWMB addition: *in their communities*], 34 percent of all respondents said there are household hazardous waste facilities in their communities and 23 percent said there are household hazardous waste events.

**PROPORTIONS OF ALL RESPONDENTS WHO INDICATED THERE ARE HOUSEHOLD HAZARDOUS WASTE FACILITIES AND EVENTS IN THEIR COMMUNITIES**

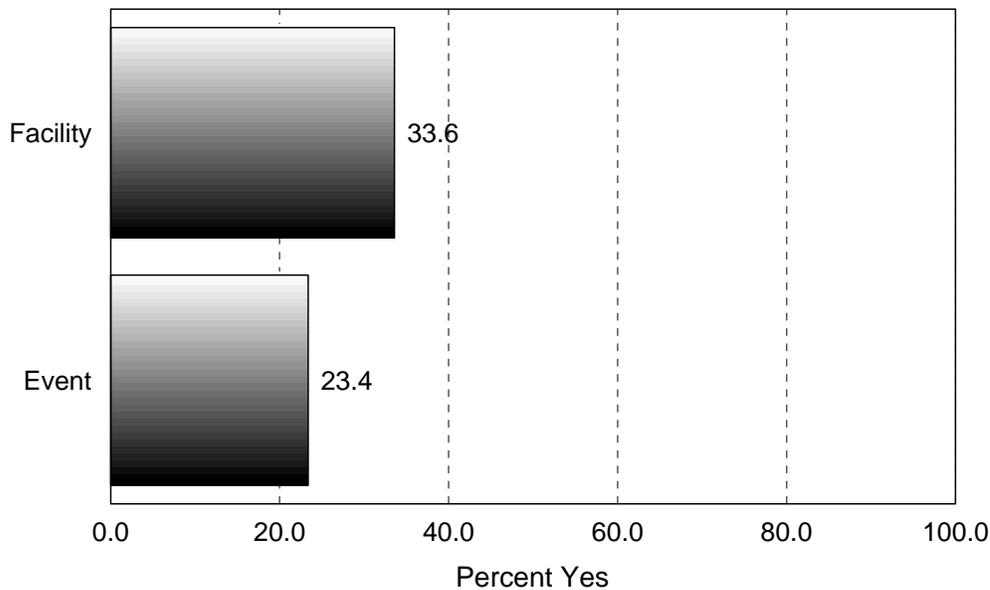


Figure 5

*CIWMB Note:*

*“Aware respondents” refers to those who had heard of an HHW facility or event. (Of all 128 households surveyed, 61 respondents had heard of a facility, and 43 respondents had heard of an event.) “Unaware respondents” refers to those respondents who had not heard of an HHW facility or event. (Of the 128 households surveyed, 67 respondents had not heard of a facility, and 85 respondents had not heard of an event.)*

### Have You Taken Household Hazardous Waste to a Facility or Event? (Question 3c)

As Figure 6 illustrates, the majority of aware respondents (56 percent) said they have taken household hazardous waste to a facility. In addition, slightly over half (51 percent) said they have taken such waste to an event.

#### EXTENT TO WHICH AWARE RESPONDENTS SAID THEY HAVE TAKEN HOUSEHOLD HAZARDOUS WASTE TO A FACILITY OR EVENT

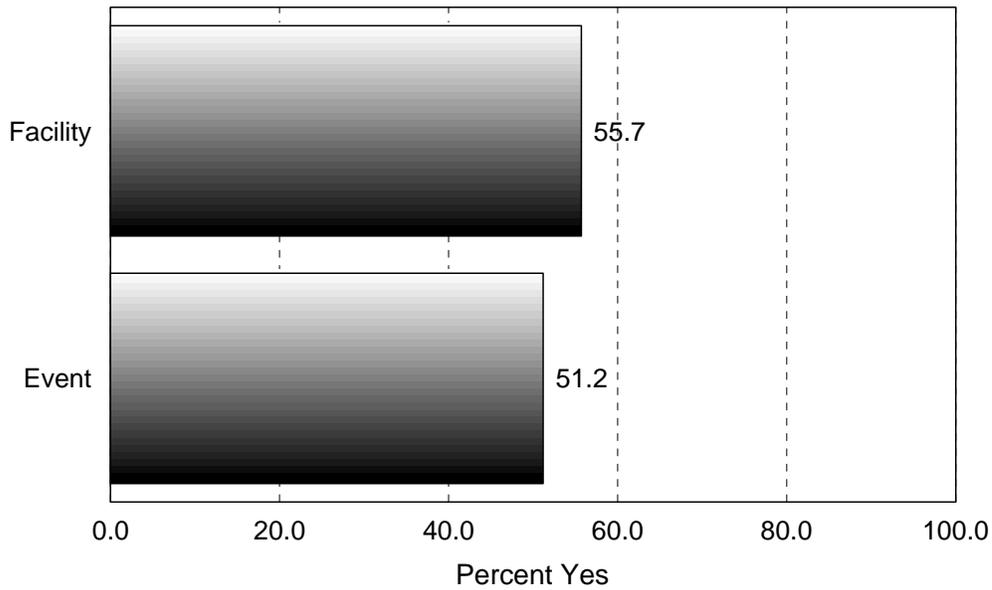


Figure 6

*CIWMB Note:*

*“Aware respondents” refers to those who had heard of an HHW facility or event. (Of the 128 households surveyed, 61 respondents had heard of a facility, and 43 respondents had heard of an event.)*

Figure 7 applies the numbers of aware respondents who said they have taken household hazardous waste to facilities or events to all respondents. As this figure demonstrates, assuming no unaware respondents have used facilities or events, 27 percent of all respondents said they have used household hazardous waste facilities and 17 percent said they have used household hazardous waste events.

**PROPORTIONS OF ALL RESPONDENTS WHO SAID THEY HAVE TAKEN HOUSEHOLD HAZARDOUS WASTE TO A FACILITY OR EVENT**

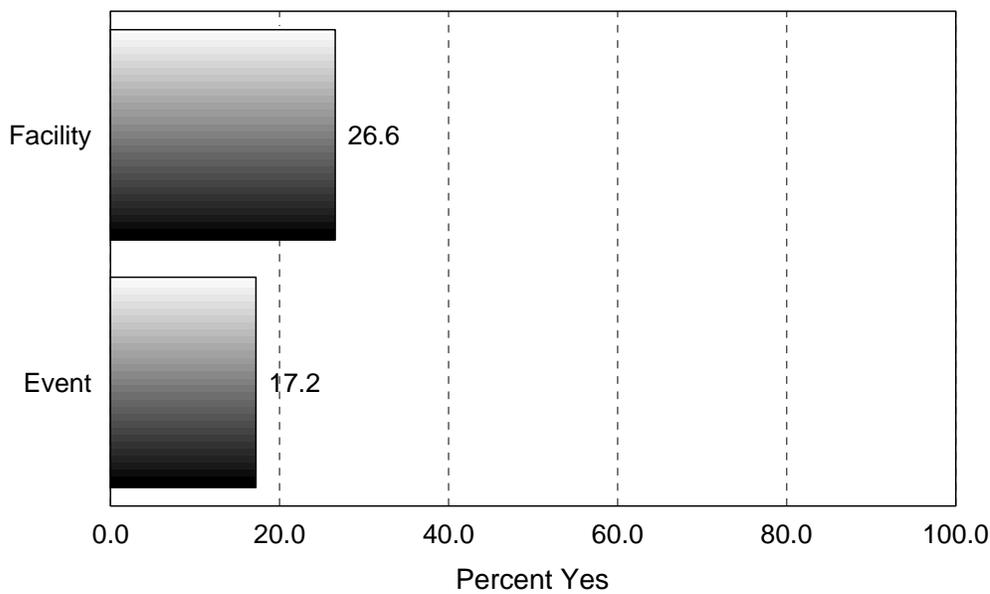


Figure 7

*CIWMB Note:*

*“Aware respondents” refers to those who had heard of an HHW facility or event. (Of all 128 households surveyed, 61 respondents had heard of a facility, and 43 respondents had heard of an event.) “Unaware respondents” refers to those respondents who had not heard of an HHW facility or event. (Of the 128 households surveyed, 67 respondents had not heard of a facility, and 85 respondents had not heard of an event.)*

## **IV. CONCLUSIONS AND RECOMMENDATIONS**

---

From the results of this research, it is clear that the majority of Californians are aware of household hazardous waste facilities or events, although not necessarily of both. It is also interesting to note that facilities are more likely to be recognized than events.

Perhaps even more impressive is the fact that strong majorities of residents recognize that certain kinds of household waste are in fact hazardous. Used motor oil, paint, and dead batteries were all identified as being hazardous by more than nine in ten people.

The converse, however, is not necessarily the case; people were inclined to view non-hazardous cooking grease and cigarette butts as hazardous waste, although with substantially lesser frequency. Because both of these are sources of stormwater pollution and the latter is a key component of litter, these findings suggest the possibility of consumer confusion in terms of various “pollution prevention” campaigns. Accordingly, as overall awareness of the need to prevent pollution increases, it may be appropriate and even necessary to distinguish more clearly among the different kinds of waste we generate.

In a related vein, it seems important to note that awareness of facilities or events is related to the knowledge that various types of waste are hazardous. Although the nature of the relationships remains tenuous because of the limited scope of this research, it nevertheless seems reasonable to suggest that identification of hazardous substances strengthens awareness, or vice versa. This in turn reinforces the suggestion that differentiation among substances may be important.



# **APPENDIX A**

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## ***Survey Instrument***

Interviewer:	Checked by:	Re-checked by:	Corrected by:	Correction Checked by:	Coded by:	Coding Checked by:
--------------	-------------	----------------	---------------	---------------------------	-----------	-----------------------

**JDFR #205  
FINAL**

**STATE OF CALIFORNIA**  
**INTEGRATED WASTE MANAGEMENT BOARD**



MGT OF AMERICA  
SURVEY OF CALIFORNIA RESIDENTS

**Introduction**

Hello, this is YOUR FULL NAME calling for the State of California. We are doing a survey this (morning) (afternoon) (evening) about an important public policy issues and would like to include the opinions of your household.

**Screening**

I would like to interview someone in your household who is responsible for deciding how your trash, garbage, and other household waste will be disposed of. Would that be you?

PERSON IS ON PHONE - CONTINUE

PERSON COMES TO PHONE - REPEAT INTRODUCTION AND CONTINUE

PERSON NOT AVAILABLE - SCHEDULE AND RECORD CALLBACK TIME

Interview ☎ Start Time: \_\_\_\_ : \_\_\_\_ : \_\_\_\_

1. Now thinking about **hazardous** waste ... When you think of **household** hazardous waste, what comes to mind? PROBE FOR CLARITY AND SPECIFICS. RECORD VERBATIM. SUPERVISORS CODE.

---



---

CORRECT ANSWER.....1  
 MORE OR LESS CORRECT ANSWER.....2  
 INCORRECT ANSWER .....3

2. Would you consider \_\_\_\_\_ to be household hazardous waste? How about \_\_\_\_\_? START WITH STATEMENT CHECKED .

	YES	NO	Don't Know
<input type="checkbox"/> <sub>a</sub> cooking grease	1	2	9
<input type="checkbox"/> <sub>b</sub> used motor oil	1	2	9
<input type="checkbox"/> <sub>c</sub> lawn and garden clippings	1	2	9
<input type="checkbox"/> <sub>d</sub> paint	1	2	9
<input type="checkbox"/> <sub>e</sub> cigarette butts	1	2	9
<input type="checkbox"/> <sub>f</sub> dead batteries	1	2	9

- 3A. Have you ever heard of a \_\_\_\_\_? How about a \_\_\_\_\_?

**☛ IF YES, ASK:**

- 3B. As far as you know, (is there one of these facilities in your community) (has there been one of these events in your community in the past two years)?

- 3C. Have you ever taken any of your household hazardous waste to one of these (facilities) (events)?

	3A		3B		3C	
	Yes	No	Yes	No	Yes	No
household hazardous waste facility	1	2	1	2	1	2
household hazardous waste event	1	2	1	2	1	2

**THANK RESPONDENT!**

TIME ENDED: \_\_\_\_ : \_\_\_\_

ELAPSED TIME: \_\_\_\_\_

DATE: \_\_\_\_ / \_\_\_\_ /02

INT ID #: \_\_\_\_\_

REP: \_\_\_\_\_

PAGE: \_\_\_\_\_

LINE: \_\_\_\_\_



PHONE #: (     ) \_\_\_\_\_ - \_\_\_\_\_

## **APPENDIX B**

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### ***Detailed Data Tabulations***

Q1 WHEN THINK HAZARDOUS WASTE, WHAT COMES TO MIND

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
CORRECT ANSWER	1	92	71.9	71.9	71.9
MORE OR LESS CORRECT	2	16	12.5	12.5	84.4
INCORRECT ANSWER	3	13	10.2	10.2	94.5
NOTHING	7	2	1.6	1.6	96.1
DON'T KNOW	9	5	3.9	3.9	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 128 Missing cases 0

-----

Q2A CONSIDER COOKING GREASE HAZARDOUS WASTE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	57	44.5	44.5	44.5
NO	2	59	46.1	46.1	90.6
DON'T KNOW	9	12	9.4	9.4	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 128 Missing cases 0

-----

Q2B            CONSIDER USED MOTOR OIL HAZARDOUS WASTE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	117	91.4	91.4	91.4
NO	2	8	6.3	6.3	97.7
DON'T KNOW	9	3	2.3	2.3	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases      128      Missing cases      0

-----

Q2C            CONSIDER LAWN/GARDEN CLIPPINGS HAZARDOUS WASTE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	24	18.8	18.8	18.8
NO	2	100	78.1	78.1	96.9
DON'T KNOW	9	4	3.1	3.1	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases      128      Missing cases      0

-----

Q2D            CONSIDER PAINT HAZARDOUS WASTE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	118	92.2	92.2	92.2
NO	2	9	7.0	7.0	99.2
DON'T KNOW	9	1	.8	.8	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases      128      Missing cases      0

-----

Q2E            CONSIDER CIGARETTE BUTTS HAZARDOUS WASTE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	81	63.3	63.3	63.3
NO	2	34	26.6	26.6	89.8
DON'T KNOW	9	13	10.2	10.2	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases      128      Missing cases      0

-----

Q2F            CONSIDER DEAD BATTERIES HAZARDOUS WASTE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	116	90.6	90.6	90.6
NO	2	12	9.4	9.4	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases      128      Missing cases      0

-----

Q3A1            HEARD OF HAZARDOUS WASTE FACILITY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	61	47.7	47.7	47.7
NO	2	67	52.3	52.3	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases      128      Missing cases      0

-----

Q3B1 HAZARDOUS WASTE FACILITY IN COMMUNITY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	43	33.6	70.5	70.5
NO	2	17	13.3	27.9	98.4
DON'T KNOW	9	1	.8	1.6	100.0
	.	67	52.3	Missing	
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 61 Missing cases 67

-----

Q3C1 TAKEN WASTE TO ONE OF THESE FACILITES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	34	26.6	55.7	55.7
NO	2	27	21.1	44.3	100.0
	.	67	52.3	Missing	
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 61 Missing cases 67

Q3A2 HEARD OF HAZARDOUS WASTE EVENT

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	43	33.6	33.6	33.6
NO	2	85	66.4	66.4	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 128 Missing cases 0

-----

Q3B2 HAZARDOUS WASTE EVENT IN COMMUNITY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	30	23.4	69.8	69.8
NO	2	12	9.4	27.9	97.7
DON'T KNOW	9	1	.8	2.3	100.0
	.	85	66.4	Missing	
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 43 Missing cases 85

-----

Q3C2 TAKEN HAZARDOUS WASTE TO ONE OF THESE EVENTS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	22	17.2	51.2	51.2
NO	2	21	16.4	48.8	100.0
	.	85	66.4	Missing	
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 43 Missing cases 85

-----  
 ELAPSED ELAPSED TIME

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	46	35.9	35.9	35.9
	2	58	45.3	45.3	81.3
	3	13	10.2	10.2	91.4
	4	7	5.5	5.5	96.9
	5	2	1.6	1.6	98.4
	6	2	1.6	1.6	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 128 Missing cases 0

-----

DATE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	210	16	12.5	12.5	12.5
	211	22	17.2	17.2	29.7
	212	1	.8	.8	30.5
	213	12	9.4	9.4	39.8
	216	18	14.1	14.1	53.9
	217	5	3.9	3.9	57.8
	218	16	12.5	12.5	70.3
	219	6	4.7	4.7	75.0
	220	10	7.8	7.8	82.8
	221	6	4.7	4.7	87.5
	222	1	.8	.8	88.3
	223	10	7.8	7.8	96.1
	224	5	3.9	3.9	100.0
		-----	-----	-----	
	Total	128	100.0	100.0	

Valid cases 128 Missing cases 0

-----



# **APPENDIX C**

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## ***Crosstabulations***

AWARENESS by Q1 WHEN THINK HAZARDOUS WASTE, WHAT COMES TO MIND

Q1 Page 1 of 1

Count	Q1			Row
Row Pct	CORRECT	MORE OR	INCORRECT	
Col Pct	ANSWER	LESS COR	ANSWER	Row
	1	2	3	Total
AWARENESS				
1	57	8	5	70
AWARE	81.4	11.4	7.1	57.9
	62.0	50.0	38.5	
2	35	8	8	51
UNAWARE	68.6	15.7	15.7	42.1
	38.0	50.0	61.5	
Column	92	16	13	121
Total	76.0	13.2	10.7	100.0

Chi-Square	Value	DF	Significance
Pearson	3.04478	2	.21819
Likelihood Ratio	3.01492	2	.22147
Mantel-Haenszel test for linear association	3.01941	1	.08227

Minimum Expected Frequency - 5.479

Number of Missing Observations: 7

AWARENESS by Q2A CONSIDER COOKING GREASE HAZARDOUS WASTE

Q2A

Page 1 of 1

	Count	Q2A			Row
	Pct	YES	NO	DON'T	
	Col Pct	KNOW			Row
		1	2	9	Total
AWARENESS					
	1	31	34	7	72
AWARE		43.1	47.2	9.7	56.3
		54.4	57.6	58.3	
	2	26	25	5	56
UNAWARE		46.4	44.6	8.9	43.8
		45.6	42.4	41.7	
Column		57	59	12	128
Total		44.5	46.1	9.4	100.0

Chi-Square	Value	DF	Significance
Pearson	.14711	2	.92909
Likelihood Ratio	.14707	2	.92910
Mantel-Haenszel test for linear association	.04989	1	.82326

Minimum Expected Frequency - 5.250

Number of Missing Observations: 0

AWARENESS by Q2B CONSIDER USED MOTOR OIL HAZARDOUS WASTE

Q2B Page 1 of 1

	Count			Row Total
	Row Pct	YES	NO	
	Col Pct			Row
		1	2	Total
AWARENESS				
	1	69	2	71
AWARE		97.2	2.8	56.8
		59.0	25.0	
	2	48	6	54
UNAWARE		88.9	11.1	43.2
		41.0	75.0	
Column		117	8	125
Total		93.6	6.4	100.0

Chi-Square	Value	DF	Significance
Pearson	3.52238	1	.06055
Continuity Correction	2.27386	1	.13157
Likelihood Ratio	3.56355	1	.05906
Mantel-Haenszel test for linear association	3.49420	1	.06158
Fisher's Exact Test:			
One-Tail			.06614
Two-Tail			.07519

Minimum Expected Frequency - 3.456  
 Cells with Expected Frequency < 5 - 2 OF 4 ( 50.0%)

Number of Missing Observations: 3

AWARENESS by Q2C CONSIDER LAWN/GARDEN CLIPPINGS HAZARDOUS

Q2C Page 1 of 1

	Q2C		Row
	1	2	
Count	16	53	69
Row Pct	23.2	76.8	55.6
Col Pct	66.7	53.0	
-----+-----+-----+			
AWARENESS	1	2	Total
	16	53	69
AWARE	23.2	76.8	55.6
	66.7	53.0	
+-----+-----+			
	8	47	55
UNAWARE	14.5	85.5	44.4
	33.3	47.0	
+-----+-----+			
Column	24	100	124
Total	19.4	80.6	100.0

Chi-Square	Value	DF	Significance
-----	-----	----	-----
Pearson	1.46469	1	.22619
Continuity Correction	.96330	1	.32636
Likelihood Ratio	1.49458	1	.22151
Mantel-Haenszel test for linear association	1.45288	1	.22807

Minimum Expected Frequency - 10.645

Number of Missing Observations: 4

AWARENESS by Q2D CONSIDER PAINT HAZARDOUS WASTE

Q2D Page 1 of 1

	Count	Q2D		Row
	Row Pct	YES	NO	
	Col Pct			
		1	2	Total
AWARENESS				
	1	70	1	71
AWARE		98.6	1.4	55.9
		59.3	11.1	
	2	48	8	56
UNAWARE		85.7	14.3	44.1
		40.7	88.9	
Column		118	9	127
Total		92.9	7.1	100.0

Chi-Square	Value	DF	Significance
Pearson	7.88447	1	.00499
Continuity Correction	6.05003	1	.01391
Likelihood Ratio	8.54767	1	.00346
Mantel-Haenszel test for linear association	7.82239	1	.00516
Fisher's Exact Test:			
One-Tail			.00612
Two-Tail			.01032

Minimum Expected Frequency - 3.969

Cells with Expected Frequency < 5 - 1 OF 4 ( 25.0%)

Number of Missing Observations: 1

AWARENESS by Q2E CONSIDER CIGARETTE BUTTS HAZARDOUS WASTE

Q2E

Page 1 of 1

	Count	Q2E			Row
	Pct	YES	NO	DON'T	
	Col Pct	KNOW			Row
		1	2	9	Total
AWARENESS					
	1	49	15	8	72
AWARE		68.1	20.8	11.1	56.3
		60.5	44.1	61.5	
	2	32	19	5	56
UNAWARE		57.1	33.9	8.9	43.8
		39.5	55.9	38.5	
Column		81	34	13	128
Total		63.3	26.6	10.2	100.0

Chi-Square	Value	DF	Significance
Pearson	2.77414	2	.24981
Likelihood Ratio	2.75959	2	.25163
Mantel-Haenszel test for linear association	.01063	1	.91789

Minimum Expected Frequency - 5.688

Number of Missing Observations: 0

AWARENESS by Q2F CONSIDER DEAD BATTERIES HAZARDOUS WASTE

Q2F Page 1 of 1

	Count		Row Pct	NO	Total
	1	2			
AWARENESS	-----+-----+-----+				
	1	70	2		72
AWARE		97.2	2.8		56.3
		60.3	16.7		
	+-----+-----+				
	2	46	10		56
UNAWARE		82.1	17.9		43.8
		39.7	83.3		
	+-----+-----+				
Column	116	12			128
Total	90.6	9.4			100.0

Chi-Square	Value	DF	Significance
-----	-----	----	-----
Pearson	8.43058	1	.00369
Continuity Correction	6.74913	1	.00938
Likelihood Ratio	8.81839	1	.00298
Mantel-Haenszel test for linear association	8.36471	1	.00383

Minimum Expected Frequency - 5.250

Number of Missing Observations: 0

-----

AWARENESS by Q1 WHEN THINK HAZARDOUS WASTE, COMES TO MIND

Q1 Page 1 of 1

	Count			
	Row Pct	CORRECT	INCORRECT	
	Col Pct	ANSWER	ANSWER	Row
		1	3	Total
AWARENESS				
	1	57	13	70
AWARE		81.4	18.6	57.9
		62.0	44.8	
	2	35	16	51
UNAWARE		68.6	31.4	42.1
		38.0	55.2	
Column		92	29	121
Total		76.0	24.0	100.0

Chi-Square	Value	DF	Significance
Pearson	2.65316	1	.10334
Continuity Correction	1.99718	1	.15759
Likelihood Ratio	2.62724	1	.10504
Mantel-Haenszel test for linear association	2.63123	1	.10478

Minimum Expected Frequency - 12.223

Number of Missing Observations: 7



# **Appendix E**

## **County Profiles**

# County Profiles

---

To provide a more detailed look at each county's current and future HHW infrastructures, an individual profile was created for each survey respondent. The following section summarizes each county's response to the HHW infrastructure survey. Each county's responses are profiled to present data for both FY 2000–01 and calendar year 2006.

To minimize differences in data collection and reporting, a number of conversions are displayed in this section. In many cases these conversions allow for comparisons between current and future periods, and comparisons between counties. However, as noted earlier, in the case of thermostats, finding a common unit of measure is difficult. As such, several units of measurement for thermostats and mercury are used:

- “thermostats”—number of thermostats (count).
- “lb thermostats”—weight of all mercury thermostats collected.
- “lb thermostat mercury”—weight of mercury capsules contained in thermostats.
- “lb commingled items”—weight of all mercury waste items collected.

Total costs may be slightly understated because in cases where costs were cited as “unknown” to the survey respondent, and the consultant had insufficient data to build a cost, no cost was provided. Therefore, total cost estimates reflect only costs that were actually reported by respondents.

## Amador County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	< 6 lamps	Unknown	0 <sup>*</sup>
<b>Batteries</b>	200 lb	1000 lb	\$450
<b>Thermostats</b>	0	0	0
<b>Total</b>			\$450

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	17,736	11,085 lb	\$6,500
<b>Batteries</b>	603,783	61,043 lb	\$5,700
<b>Thermostats</b>	371	2 lb thermostat mercury	Unknown <sup>†</sup>
<b>Total</b>			\$12,200

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<sup>\*</sup> The respondent noted that due to the small quantity of lamps collected, there is no discernable cost to handle them.

<sup>†</sup> Amador County representatives explained that they did not provide an estimate for future handling costs because they have no current experience on which to base projections.

## Contra Costa County

Because no single entity collects and retains data for Contra Costa County, three of the county's sponsor agencies were responsible for collecting data from the entire county. Responses were received from the Delta Diablo Sanitation District and the West Contra Costa Integrated Waste Management Agency. The Central Contra Costa Sanitary District did not respond. Survey results were not compiled into a single countywide response, as no reliable estimate of the missing facility data is available.

### Delta Diablo Sanitation District

Delta Diablo noted in interviews that a new HHW facility would soon be built in its district.

#### Fiscal Year 2000-01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	478 lamps	500 lamps	\$310
<b>Batteries</b>	80 lb <sup>*</sup>	Contracted	\$10 <sup>†</sup>
<b>Thermostats</b>	0	-	0
<b>Total</b>			\$320

#### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	121,758	76,099 lb	\$49,000
<b>Batteries</b>	4,145,042	419,064 lb	\$420,000
<b>Thermostats</b>	2,550	16 lb thermostat mercury	Unknown <sup>‡</sup>
<b>Total</b>			\$469,000

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<sup>\*</sup> This volume represents only rechargeable batteries collected through a Rechargeable Battery Recycling Corporation program.

<sup>†</sup> This cost represents only those associated with rechargeable batteries collected through a Rechargeable Battery Recycling Corporation program.

<sup>‡</sup> Representatives explained that they did not provide an estimate for future handling costs because they have no current experience on which to base projections.

**West Contra Costa Integrated Waste Management Authority**

**Fiscal Year 2000–01 Infrastructure Profile**

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	1,704 lamps	Contracted	\$850
<b>Batteries</b>	17,885 lb	Contracted	\$18,000
<b>Thermostats</b>	141 lb commingled items	Contracted	\$580
<b>Total</b>			\$19,430

**Calendar Year 2006 Infrastructure Profile**

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost</b>
<b>Fluorescent Lamps</b>	121,758	76,099 lb	\$6,000
<b>Batteries</b>	4,145,042	419,064 lb	\$730,000
<b>Thermostats</b>	2,550	16 lb thermostat mercury	\$10,000
<b>Total</b>			\$746,000

**Del Norte County**

**Fiscal Year 2000-01 Infrastructure Profile**

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	20 lamps	Contracted	\$5
<b>Batteries</b>	2,000 lb	Contracted	\$800
<b>Thermostats</b>	0	-	0
<b>Total</b>			\$805

**Calendar Year 2006 Infrastructure Profile**

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost<sup>*</sup></b>
<b>Fluorescent Lamps</b>	14,078	8,799 lb	\$3,700
<b>Batteries</b>	479,274	48,455 lb	\$21,000
<b>Thermostats</b>	295	2 lb thermostat mercury	Unknown
<b>Total</b>			\$24,700 <sup>†</sup>

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<sup>\*</sup> The consultant projected 2006 additional handling costs based on current data provided by County representatives. Insufficient data existed to make a similar projection for thermostats.

<sup>†</sup> Representatives explained that they did not provide and estimate for future handling costs because they have no current experience on which to base projections.

## El Dorado County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	31 lamps	1,000 lamps	\$80
<b>Batteries</b>	1,828 lb	4,000 lb	\$650
<b>Thermostats</b>	10 thermostats	50 thermostats	\$230
<b>Total</b>			\$960

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	80,012	50,007 lb	\$51,000
<b>Batteries</b>	2,723,848	275,381 lb	\$97,000
<b>Thermostats</b>	1,675	10 lb thermostat mercury	\$38,000
<b>Total</b>			\$186,000

## Fresno County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	370 lamps	Contracted	\$180
<b>Batteries</b>	1,200 lb	Contracted	\$970
<b>Thermostats</b>	Unknown	Contracted	\$100
<b>Total</b>			\$1,250

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	412,784	257,990 lb	\$200,000
<b>Batteries</b>	14,052,464	1,420,704 lb	\$1,100,000
<b>Thermostats</b>	8,644	54 lb thermostat mercury	Unknown *
<b>Total</b>			\$1,300,000

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\* The county was unable to provide a 2006 cost estimate for thermostats due to conversion issues.

## Glenn County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	0	48 lamps	0
<b>Batteries</b>	250 lb	750 lb	\$1,000
<b>Thermostats</b>	0	Unknown	0
<b>Total</b>			\$1,000

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	13,427	8,392 lb	\$94,000
<b>Batteries</b>	457,102	46,213 lb	\$64,000
<b>Thermostats</b>	281	2 lb thermostat mercury	\$94,000
<b>Total</b>			\$252,000

The county representative indicated that their estimated future costs do not include the cost of building new facilities that will likely be needed to accommodate the increase in collected waste.

## Humboldt County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	500 lamps	500 lamps	\$400
<b>Batteries</b>	6,000 lb	6,000 lb	\$4,000
<b>Thermostats</b>	15 thermostats	12,000 thermostats	0
<b>Total</b>			\$4,400

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	64,029	40,018 lb	\$77,000
<b>Batteries</b>	2,179,761	220,374 lb	\$55,000
<b>Thermostats</b>	1,341	8 lb thermostat mercury	\$110
<b>Total</b>			\$132,110

## Imperial County

### Fiscal Year 2000–01 Infrastructure Profile \*

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	0	0	0
<b>Batteries</b>	0	0	0
<b>Thermostats</b>	0	0	0
<b>Total</b>			0

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	75,603	47,252 lb	\$62,000
<b>Batteries</b>	2,573,755	260,207 lb	\$200,000
<b>Thermostats</b>	1,583	10 lb thermostat mercury	\$270
<b>Total</b>			\$262,270

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\* Imperial County's HHW program began in January 2001; therefore, there were no figures to provide for FY 2000–01.

## Inyo County

### Fiscal Year 2000–01 Infrastructure Profile<sup>\*</sup>

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	0	500 lamps	0
<b>Batteries</b>	0	0	0
<b>Thermostats</b>	0	0	0
<b>Total</b>			0

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	9,093	5,683 lb	--
<b>Batteries</b>	309,567	31,297 lb	--
<b>Thermostats</b>	190	1 lb thermostat mercury	--
<b>Total</b>			\$53,400 <sup>†</sup>

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<sup>\*</sup> Inyo County's HHW program was established in September 2001; therefore, there were no figures to provide for SFY 2000–01. The respondent did note, however, that the program's capacity at the time of the survey could accommodate 500 fluorescent lamps.

<sup>†</sup> The respondent reported only a total projected cost for handling all three u-waste types.

## **Kings County**

Although Kings County did return the survey, the survey contained no data. In a follow-up interview, an HHW representative noted that residents do not generally bring u-waste items, and few other hazardous items, to HHW facilities. Because of this environment, the representative had no current figures to provide. Moreover, he was skeptical that regulatory requirements around u-waste would bring about a change in this disposal behavior, given that few residents were currently bringing regulated items, such as paint and oil, to the facilities.

## Lake County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	1,515 lamps	Contracted	\$790
<b>Batteries</b>	550 lb	Contracted	\$550
<b>Thermostats</b>	0	Contracted	0
<b>Total</b>			\$1,340 <sup>*</sup>

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	29,710	18,569 lb	\$16,000
<b>Batteries</b>	1,011,423	102,255 lb	\$100,000
<b>Thermostats</b>	622	4 lb thermostat mercury	Unknown <sup>†</sup>
<b>Total</b>			\$116,000 <sup>‡</sup>

According to a Lake County representative, Lake County shared a joint grant with Mendocino County to purchase hazmobile equipment. In this arrangement, Lake County pays Mendocino County for any waste collected in Lake County. That cost is then passed on to household solid refuse collectors working in Lake County. In essence, in order to do business in Lake County, a refuse collector must be willing to absorb the cost associated with any waste collected through the hazmobile up to a maximum of \$60,000. According to the representative, hazmobile costs totaled \$40,000 last year; therefore, capacity still exists to collect more waste under the \$60,000 cap. Additional capacity may be available under a subsequent agreement with refuse collectors.

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\* All cost figures are understated, as they represent unit costs only. These do not include labor, transportation, and overhead costs.

† Because no thermostats are collected currently, the respondent had no frame of reference for estimating the cost of collecting them in 2006.

‡ All cost figures are understated, as they represent unit costs only. These do not include labor, transportation, and overhead costs.

## Los Angeles County

Because no single entity collects and retains data for Los Angeles County, two sponsor agencies were responsible for collecting data for the entire county. Responses were received from both the City of Los Angeles and the Los Angeles County Public Works Environmental Division. Each agency's response is presented individually and then collectively below.

### City of Los Angeles

#### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	1,620 lamps	Contracted	\$1,700
<b>Batteries</b>	17,385 lb	Contracted	\$17,000
<b>Thermostats</b>	450 lb of commingled items	Contracted	\$80
<b>Total</b>			\$18,780

#### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	1,905,198	1,190,748 lb	\$1,500,000
<b>Batteries</b>	64,858,969	6,557,242 lb	\$4,900,000
<b>Thermostats</b>	39,894	247 lb thermostat mercury	\$120,000
<b>Total</b>			\$6,520,000

**Los Angeles County Public Works Environmental Division**

**Fiscal Year 2000–01 Infrastructure Profile**

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	964 lamps	Contracted	\$900
<b>Batteries</b>	24,200 lb	Contracted	\$34,000
<b>Thermostats</b>	0	Contracted	0
<b>Total</b>			\$34,900

**Calendar Year 2006 Infrastructure Profile**

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost</b>
<b>Fluorescent Lamps</b>	3,006,121	1,878,826 lb	\$1,200,000
<b>Batteries</b>	102,337,891	10,346,361 lb	\$13,000,000
<b>Thermostats</b>	62,947	390 lb thermostat mercury	\$2,500
<b>Total</b>			\$14,202,500

**Los Angeles County (compilation of data from City of Los Angeles and Los Angeles County Public Works Environmental Division)**

**Fiscal Year 2000–01 Infrastructure Profile**

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	2,584 lamps	Contracted	\$2,600
<b>Batteries</b>	41,585 lb	Contracted	\$51,000
<b>Thermostats</b>	450 lb commingled items	Contracted	\$80
<b>Total</b>			\$53,680

**Calendar Year 2006 Infrastructure Profile**

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost</b>
<b>Fluorescent Lamps</b>	4,911,319	3,069,574 lb	\$2,700,000
<b>Batteries</b>	75,092,758	16,903,603 lb	\$17,900,000
<b>Thermostats</b>	102,841	637 lb thermostat mercury	\$122,500
<b>Total</b>			\$20,722,500

## Marin County

Because no single entity collects and retains data for Marin County, two sponsor agencies were responsible for collecting data for the entire county. A response was received from only the Novato Sanitary District. Survey results were not compiled into a single countywide response, as no reliable estimate of the missing facility data is available.

## Novato Sanitary District

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	4,616 lamps	Contracted	\$1,700
<b>Batteries</b>	7,900 lb	Contracted	\$2,900
<b>Thermostats</b>	0	Contracted	0
<b>Total</b>			\$4,600

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	24,399	15,250 lb	\$8,300
<b>Batteries</b>	830,629	83,977 lb	\$160,000
<b>Thermostats</b>	511	3 lb thermostat mercury	\$1,800
<b>Total</b>			\$170,100

## Mariposa County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	50 lamps	Unknown <sup>*</sup>	0 <sup>†</sup>
<b>Batteries</b>	500 lb	Unknown	\$100
<b>Thermostats</b>	0	Unknown	0
<b>Total</b>			\$100

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	8,617	5,386 lb	\$500
<b>Batteries</b>	293,364	29,659 lb	\$500
<b>Thermostats</b>	180	3 lb thermostat mercury	Unknown
<b>Total</b>			\$1,000

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<sup>\*</sup> Mariposa County responded to this survey question by reporting that they have no facilities, only collections events.

<sup>†</sup> The respondent noted that due to the small quantity of lamps collected, there is no discernible cost for handling them.

## Merced County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	84 lamps	Unknown	\$13
<b>Batteries</b>	3,041 lb	Unknown	\$3,000
<b>Thermostats</b>	0	Unknown	0
<b>Total</b>			\$3,013

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	108,569	67,856 lb	\$17,000
<b>Batteries</b>	3,696,042	373,670 lb	\$180,000
<b>Thermostats</b>	2,273	14 lb thermostat mercury	\$5,700
<b>Total</b>			\$202,700

In a follow-up interview, the representative for Merced County noted that the number of fluorescent lamps that HHW facilities have collected has increased dramatically since FY 2000–01, as there is an increased effort to keep this u-waste out of landfills.

## Modoc County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	200 lamps	1,000 lamps	\$900
<b>Batteries</b>	25 lb	500 lb	\$400
<b>Thermostats</b>	2 thermostats	100 thermostats	\$200
<b>Total</b>			\$1,500

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	4,810	3,006 lb	\$27,000
<b>Batteries</b>	163,738	16,554 lb	\$12,000
<b>Thermostats</b>	101	1 lb thermostat mercury	\$3,000
<b>Total</b>			\$42,000

## Monterey County

Because no single entity collects and retains data for Monterey County, two sponsor agencies were responsible for collecting data for the entire county. A response was received from only the Monterey Regional Waste Management District. Survey results were compiled up into a single countywide response, as no reliable estimate of the missing facility data is available.

## Monterey Regional Waste Management District

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	3,233 lamps	32,330 lamps*	\$3,300
<b>Batteries</b>	1,800 lb	24,000 lb	\$4,000
<b>Thermostats</b>	42.5 lb commingled items†	Contracted	\$130
<b>Total</b>			\$7,430

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	102,908	64,317 lb	\$88,000
<b>Batteries</b>	3,503,309	354,185 lb	\$14,000
<b>Thermostats</b>	2,155	13 lb thermostat mercury	\$530
<b>Total</b>			\$102,530

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\* While the respondent provided a figure for current capacity to handle fluorescent lamps, it was also noted that this process is contracted; therefore, capacity could be increased by using the disposal service more often.

† The respondent reported collecting one 5-gallon bucket of commingled mercury items. Using the conversion on CIWMB's Form 303 (1 gallon = 8.5 pounds), the consultant converted this to pounds.

## Orange County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	1,200 lamps	42,000 lamps	\$4,900
<b>Batteries</b>	6,800 lb	125,000 lb	\$8,000
<b>Thermostats</b>	500 thermostats	60,000 thermostats	\$1,900
<b>Total</b>			\$14,800

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	1,465,810	916,131 lb	\$1,800,000
<b>Batteries</b>	49,900,830	5,044,974 lb	1,800,000
<b>Thermostats</b>	30,694	190 lb thermostat mercury	\$69,000
<b>Total</b>			\$3,669,000

## Placer County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	Unknown	Contracted	Unknown
<b>Batteries</b>	1,580 lb	Contracted	\$1,700
<b>Thermostats</b>	Unknown	Contracted	Unknown
<b>Total</b>			\$1,700

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	129,011	80,632 lb	\$77,000
<b>Batteries</b>	4,391,928	444,024 lb	\$670,000
<b>Thermostats</b>	2,701	17 lb thermostat mercury	\$210,000
<b>Total</b>			\$957,000

## Sacramento County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	0 <sup>*</sup>	0	0
<b>Batteries</b>	2,765 lb	10,000 lb	\$4,000
<b>Thermostats</b>	0 <sup>†</sup>	0	0
<b>Total</b>			\$4,000

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Total Handling Cost
<b>Fluorescent Lamps</b>	630,573	394,108 lb	\$660,000
<b>Batteries</b>	21,466,720	2,170,285 lb	\$1,200,000
<b>Thermostats</b>	13,204	82 lb thermostat mercury	\$24,000
<b>Total</b>			\$1,884,000

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<sup>\*</sup> Sacramento County did not collect fluorescent lamps in FY 2000–01.

<sup>†</sup> Sacramento County did not collect thermostats in FY 2000–01.

**San Francisco County**

**Fiscal Year 2000–01 Infrastructure Profile**

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	563 lamps	2,000 lamps	\$2,200
<b>Batteries</b>	21,572 lb	Contracted	\$24,000
<b>Thermostats</b>	16 thermostats	Contracted	\$390
<b>Total</b>			\$26,590

**Calendar Year 2006 Infrastructure Profile**

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost</b>
<b>Fluorescent Lamps</b>	397,653	248,533 lb	\$560,000
<b>Batteries</b>	13,537,372	1,368,628 lb	\$2,100,000
<b>Thermostats</b>	8,327	52 lb thermostat mercury	\$30,000
<b>Total</b>			\$2,690,000

**San Luis Obispo County**

**Fiscal Year 2000–01 Infrastructure Profile**

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	200 lamps	20,000 lamps	\$50
<b>Batteries</b>	2,000 lb	20,000 lb	\$100
<b>Thermostats</b>	20 thermostats	20,000 thermostats	\$150
<b>Total</b>			\$300

**Calendar Year 2006 Infrastructure Profile**

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost</b>
<b>Fluorescent Lamps</b>	126,305	78,941 lb	\$80,000
<b>Batteries</b>	4,299,825	434,712 lb	\$730,000
<b>Thermostats</b>	2,645	16 lb thermostat mercury	\$3,300
<b>Total</b>			\$813,300

## San Mateo County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	456 lamps	Unknown	\$680
<b>Batteries</b>	8,585 lb	Unknown	\$10,000
<b>Thermostats</b>	12 thermostats	Unknown	\$430
<b>Total</b>			\$11,110

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	360,779	225,487 lb	\$540,000
<b>Batteries</b>	12,282,048	1,241,715 lb	\$1,500,000
<b>Thermostats</b>	7,555	47 lb thermostat mercury	\$1,700
<b>Total</b>			\$2,041,700

## Santa Barbara County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	258 lamps	258 lamps	\$680
<b>Batteries</b>	12,733 lb	12,733 lb	\$19,000
<b>Thermostats</b>	170 lb thermostats	170 lb thermostats	\$2,200
<b>Total</b>			\$21,880

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	204,864	128,040 lb	\$2,400,000
<b>Batteries</b>	6,974,211	705,093 lb	\$1,100,000
<b>Thermostats</b>	4,290	27 lb thermostat mercury	Unknown <sup>†</sup>
<b>Total</b>			\$3,500,000

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\* Santa Barbara County is at capacity for handling all three u-waste types. In order to relieve pressure on the existing facilities, the county is working to open another facility—specifically, an antifreeze, batteries, oil, and paint (ABOP) facility.

<sup>†</sup> The county was unable to provide a 2006 cost estimate for thermostats due to conversion issues.

## Santa Cruz County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	0	0	0
<b>Batteries</b>	6,840 lb	5,700 lb*	\$3,600
<b>Thermostats</b>	25 thermostats	2,000 thermostats	\$160
<b>Total</b>			\$3,760

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	130,163	81,352 lb	\$45,000
<b>Batteries</b>	4,431,157	447,990 lb	\$220,000
<b>Thermostats</b>	2,726	17 lb thermostat mercury	\$2,400
<b>Total</b>			\$267,400

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\* The Santa Cruz representative reported a FY 2000–01 capacity figure that is lower than the FY 2000–01 volume figure; however, Santa Cruz did not consider this a gap in capacity because the capacity figure represents storage capacity only. In fact, because a contractor is on-call to haul away waste once facilities meet their maximum storage capacity, there is no handling gap.

**Stanislaus County**

**Fiscal Year 2000–01 Infrastructure Profile**

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	0	0	0
<b>Batteries</b>	3,070 lb	10,000 lb	\$4,800
<b>Thermostats</b>	155 lb commingled items	500 lb commingled items	\$1,700
<b>Total</b>			\$6,500

**Calendar Year 2006 Infrastructure Profile**

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost</b>
<b>Fluorescent Lamps</b>	230,415	144,010 lb	\$350,000
<b>Batteries</b>	7,844,069	793,035 lb	\$140,000
<b>Thermostats</b>	4,825	30 lb thermostat mercury	\$5,800
<b>Total</b>			\$495,800

**Tehama County**

**Fiscal Year 2000–01 Infrastructure Profile**

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	0	0	0
<b>Batteries</b>	0	0	0
<b>Thermostats</b>	0	0	0
<b>Total</b>			0

**Calendar Year 2006 Infrastructure Profile**

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost</b>
<b>Fluorescent Lamps</b>	28,457	17,786 lb	\$56,000
<b>Batteries</b>	968,783	97,944 lb	\$110,000
<b>Thermostats</b>	596	4 lb thermostat mercury	\$47,000
<b>Total</b>			\$213,000

## Trinity County

### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	440 lamps	Contracted	\$260
<b>Batteries</b>	690 lb	Contracted	\$330
<b>Thermostats</b>	30 lb commingled items	Contracted	\$180
<b>Total</b>			\$770

### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	6,538	4,086 lb	\$3,900
<b>Batteries</b>	222,581	22,503 lb	\$11,000
<b>Thermostats</b>	137	1 lb thermostat mercury	Unknown*
<b>Total</b>			\$14,906 <sup>†</sup>

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\* The county was unable to provide a 2006 cost estimate for thermostats, due to conversion issues.

<sup>†</sup> Cost figures may be understated, as they represent unit costs only. These do not include labor, transportation, and overhead costs.

## Yolo County

### Fiscal Year 2000–01 Infrastructure Profile

	<b>Amount Collected</b>	<b>Handling Capacity</b>	<b>Total Handling Cost</b>
<b>Fluorescent Lamps</b>	306 lamps	1,000 lamps	\$180
<b>Batteries</b>	9,530 lb	20,000 lb	\$7,600
<b>Thermostats</b>	275 thermostats	300 thermostats	\$1,400
<b>Total</b>			\$9,180

### Calendar Year 2006 Infrastructure Profile

	<b>Amount Collected (Number sold)</b>	<b>Amount Collected (Converted)</b>	<b>Additional Handling Cost</b>
<b>Fluorescent Lamps</b>	86,926	54,328 lb	\$50,000
<b>Batteries</b>	2,959,221	299,177 lb	\$160,000
<b>Thermostats</b>	1,820	11 lb thermostat mercury	\$27,000
<b>Total</b>			\$237,000

### Yuba and Sutter Counties

Because Yuba and Sutter Counties share a single sponsor agency for their waste management, figures for both counties are included in the representative's responses below.

#### Fiscal Year 2000–01 Infrastructure Profile

	Amount Collected	Handling Capacity	Total Handling Cost
<b>Fluorescent Lamps</b>	0	100,000 lamps	0
<b>Batteries</b>	1,500 lb	100,000 lb	\$1,600
<b>Thermostats</b>	400 thermostats	10,000 thermostats	\$1,200
<b>Total</b>			\$2,800

#### Calendar Year 2006 Infrastructure Profile

	Amount Collected (Number sold)	Amount Collected (Converted)	Additional Handling Cost
<b>Fluorescent Lamps</b>	70,993	44,371 lb	\$13,000
<b>Batteries</b>	2,416,840	244,342 lb	\$100,000
<b>Thermostats</b>	1,487	9 lb thermostat mercury	\$4,600
<b>Total</b>			\$117,600