

2008 DEER MEASURE COST DOCUMENTATION

REVISION 3

Submitted by:

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1 OVERVIEW OF DATA COLLECTION AND ANALYSIS METHODOLOGY

The following document provides an update to the DEER phase 1 cost reported April 14, including a general overview of the data collection, analysis methodologies, and parameter definitions used to develop the DEER cost delivery summary. It should be noted that this is a work in progress, and will be updated with new information and findings throughout the review process expected to be complete by May 30, 2008. Upon completion, Summit Blue will provide all final documentation to the California Public Utilities.

1.1 Data Collection Methods and Sources

This section provides an overview of the methods used to collect measure cost data for the 2008 Measure Cost Study update. Several different data collection strategies were employed to accommodate the large number of measures involved in the study and the variety of technologies being priced, including:

- Retail in-store surveys of 73 appliance and lighting retailers
- Program Data, including cost data from 7 direct installation contracts
- Cost data from technical advisory groups (TAG) on lighting and HVAC equipment
- Contractor, distributor, and manufacturer cost data for HVAC equipment and motors, including 1200+ catalog price points from 6 motor manufacturers
- Program evaluation data
- Web / Secondary Sources

In general, the data collection methods employed in the 2008 cost study are similar to those developed and utilized for the 2001 and 2005 Measure Cost Studies with a few notable exceptions:

- The cost and energy teams worked closely from the beginning of the projects to develop clear measure specification prior to initiating data collection.
- Expanded use of program data, particularly data from direct installation lighting and upstream lighting programs.

After measure specifications were established, various data collection instruments were created to ensure a full range of equipment features was captured during the data collection process. Appendix A provides an example of the web data collection form used to input feature data on CFLs.

In some cases data collected from the various sources was used directly in developing costs, while in other instances data was used to assess whether costs being reported were reasonable. For example, cost data obtained from contractors associated with direct installation lighting programs was used to establish costs for lighting projects delivered through direct installation programs, and also used to assess the reasonableness of cost data obtained from lighting contractors not associated with a specific program. A second example includes the use of point-of-sale data provided by the 2007 RMST study to assess if retail CFL costs collected during on-site surveys were representative. For many measure categories, a range of data sources was used to produce the costs presented in DEER, as shown in Exhibit 1-2.

Exhibit 1-2: DEER Measure Category Cost Sources

Measure Category	Retail In-Store Surveys	Program Data	TAG	Contractor / Distributor Data	Manufacturer Data	Program Evaluation Data	Web / Secondary Sources
Linear Fluorescent		x	x				x
HID to Fluorescent		x	x				x
HID Fixtures		x	x				x
Exit Signs		x	x				x
Non-residential CFLs		x	x				x
Residential screw-in CFL		x				x	x
Packaged AC				x			x
Res Split AC-HP				x			x
Appliances	x						x
Residential Modular CFL	x						x
Motors			x		x		
Chillers			x				
Insulation	x			x			x
DHW	x			x			x
Res Windows	x		x				
Showerheads & Aerators	x						x
T-stats	x						x

1.2 Summary of Analysis Methods

The analysis methods employed in the 2008 Measure Cost Study are generally similar to those developed and utilized for the 2001 and 2005 Measure Cost Studies with a few notable exceptions:

- The use of a Technical Advisory Groups (TAG) to review recommended DEER cost values to ensure that costs are reasonable for a specific market condition or program delivery method.
- Expanded use of precision and r-squared statistics to assess quality of data sets and results.

In the preparation of the cost data, the raw cost data were submitted to one of four different analytic methods, including;

- Simple average: The simple average method takes all cost observations for a particular measure and averages them discarding outliers in some cases where a particular observation appeared drastically out of line.
- Weighted average: The weighted average uses one or more observed market variables (market share of a particular model, cost based on specific volume purchase, etc.) to derive the average cost.
- Regression cost model: Regression modeling was employed for many measures. Relevant performance factors were incorporated as independent variables in the cost model for each measure.
- Custom cost estimates: This approach was typical of engineered and/or technically complex types of measure. Custom cost estimates were employed where a unique equipment or system configuration needed to be defined by the project team and a cost estimate built up for the specific technical details of the measure.

Exhibit 1-3 shows the primary analytic method used for measure categories being reported. Note that each measure category may include a large number of different measures, and some of the measures may have been analyzed using a method other than the primary method noted.

Exhibit 1-3: Primary Analysis Methodologies Employed for Reported Measure Categories

Measure Category	Regression Cost Model	Weighted Average	Simple Average	Custom Cost Estimates
Linear Fluorescent			x	
HID to Fluorescent			x	
HID Fixtures			x	
Exit Signs			x	
Non-residential CFLs	x			
Residential screw-in CFL	x	x		
Packaged AC	x			
Res Split AC-HP	x			
Appliances	x			
Residential Modular CFL			x	
Motors	x			
Chillers	x			x
Insulation			x	
DHW	x			
Res Windows	x			
Showerheads & Aerators			x	
T-stats			x	

For high priority measures and measures for which there was uncertainty about costs due to measure complexity or limited data availability, internal team members or TAG participants would review the preliminary findings to assess whether the costs presented were representative of a specific market segment or delivery channel. This process was frequently iterative and adjustments were made based on this review. Exhibit 1-4 provides an example of the cost for curves developed for residential CFLs that has been reviewed by DEER team members and TAG participants - serving as the basis for the reported CFL costs. And whenever possible, finalized cost observations from previous cost studies were re-analyzed for the following purposes:

- Utilize documented pricing contacts and sources to provide updates for past measures included through the most recent DEER cost update effort.
- Assess differences in measure costs between the previous and present DEER cost update study.
- Utilize documented pricing contacts and sources to provide data for new measures included through this round of the DEER cost update effort.
- Identify and correct, whenever applicable, past errors.

It should be noted that for select HVAC and refrigeration measures where primary cost data was difficult to obtain, cost observations from previous cost studies were reviewed and used when deemed relevant to a current measure specification. Moreover, these cost observations were adjusted using a specific inflation index to estimate current costs for the past cost observation. Analysis findings were presented to TAG members to provide a basis for discussion on whether costs were representative for a specific

measure permutation. Exhibit 1-5 provides a cost curve for packaged HVAC systems where past cost observations have been re-analyzed – presenting the basis for the reported packaged HVAC system costs.

Exhibit 1-4: Cost Curves for Residential CFLs

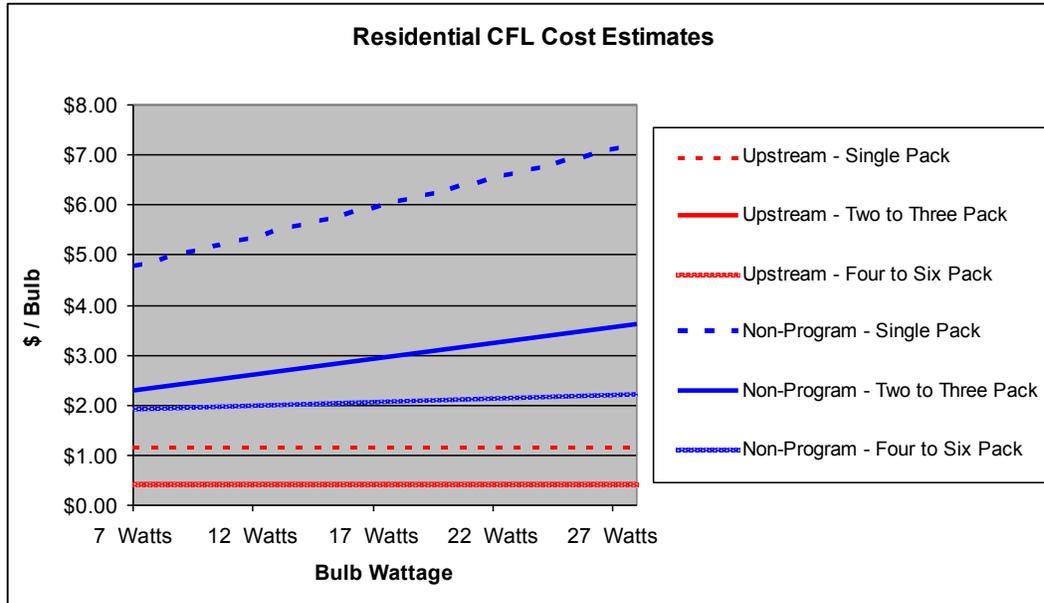
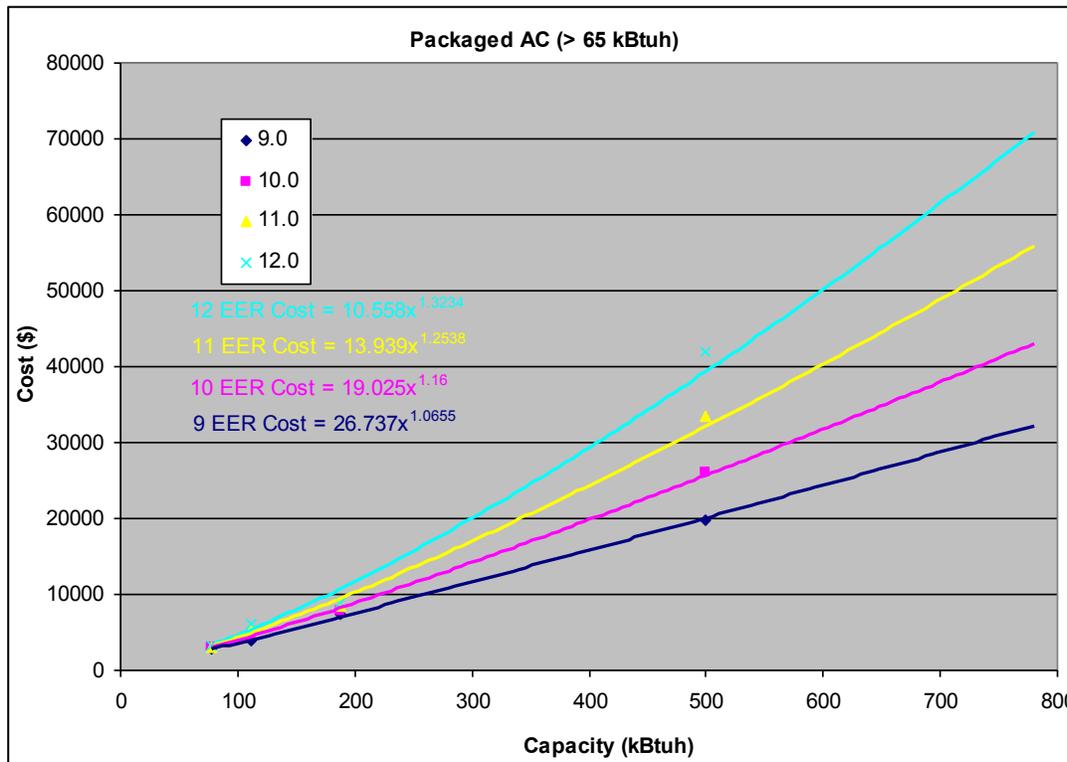


Exhibit 1-5: Cost Curves for Packaged HVAC Systems

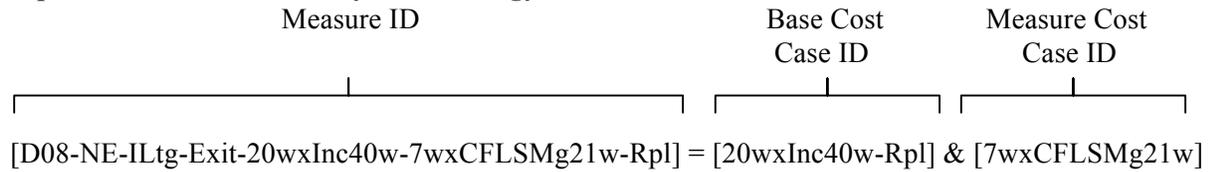


1.3 Changes from 2005 DEER Measure Cost Reporting Format

Changes from the 2005 DEER measure cost reporting format include:

- Assigned a cost case identification to each measure type (customer base, code base, and efficient case) to allow flexibility in combining various measures to develop incremental costs.
- Does not yet include incremental measure costs. Instead, the reporting format consists of cost case identification specific to specific devices that the user can combine to develop incremental measure costs. Ultimately, the completed DEER software will allow users to develop incremental costs by combining relevant sets of Cost Case IDs. Eq. 1, below, provides an example of how the incremental costs for an exit sign Measure ID is built from 2 Cost Case IDs:

Eq. 1: Measure ID Assembly Methodology



Future documentation on this approach will be forthcoming.

2 GUIDE TO INTERPRETING AND USING THE MEASURE COST DATA

The presented cost findings are disaggregated by measure technology; that is, each tab within the cost delivery summary corresponds to unique measure groupings. The rationale behind this approach was to improve overall reporting organization, while providing a logical representation of measure specific costs. In addition, the developed reporting structure offers a visually intuitive discussion of labor costs by measure type, across all 16 California climate zones.

Exhibit 2-1 provides an example of reported costs for select linear fluorescent lighting technologies. The reporting structure shown is consistent across all measure categories, and each unique cost assembly table will be discussed in the following order:

1. Cost Case Reporting Table
2. Labor Base Wage Rate Table
3. California Climate Multiplier Table
4. Incremental Cost Reporting Table

Exhibit 2-1: Presentation of Cost Findings

Cost Case Reporting Table					
Cost Case Description	Cost Case ID	Program Delivery Strategies	Material Cost	Installation Man Hours - Retrofit	Installation Labor Cost - Retrofit
FL, (1) 46in, T5 lamp, Programmed Start Ballast, (BF: 1.00), Lumens=2750, W/fixt=33	46in28wT5PSEI33w	Downstream Prescriptive Rebates/Incentives	\$44.09	0.44	\$32.40
FL, (2) 46in, T5 lamp, Programmed Start Ballast, (BF: 1.00), Lumens=5600, W/fixt=64	46in28wT5PSEI64w	Downstream Prescriptive Rebates/Incentives	\$53.09	0.50	\$36.82
FL, (3) 46in, T5 lamp, (2) Programmed Start Ballasts, (BF: 1.00), Lumens=8250, W/fixt=97	46in28wT52PSEI97w	Downstream Prescriptive Rebates/Incentives	\$97.18	0.51	\$37.56

Labor Base Wage Rate Table					
Reference	Sector	Measure Category	Measure Subcategory	Program Delivery Strategies	Base Labor Rate
NR-IL-DP	Non-Res	Indoor Lighting	Other Lighting	Downstream Prescriptive Rebates/Incentives	\$67.88

Climate Multiplier Table: EL50			
Climate Zone	Reference City	Material	Installation
1	Eureka	0.989	0.962
2	Santa Rosa	0.939	1.150
3	San Francisco	1.027	1.513
4	San Jose	1.024	1.378
5	San Luis Obispo	0.880	0.993
6	Santa Barbara	0.870	1.072
7	San Diego	1.000	0.978
8	Santa Ana	0.936	1.050
9	Los Angeles	0.963	1.138
10	Riverside	0.904	1.029
11	Redding	0.984	1.048
12	Sacramento	0.973	1.048
13	Fresno	0.894	0.944
14	Mojave	0.879	0.979
15	Palm Springs	0.936	1.029
16	Susanville	0.987	1.048
Average		0.949	1.085

Incremental Cost Reporting Table					
Program Delivery Strategies	Measure Material Cost Case ID	Measure Material Cost	Base Case -Code/Standard Case ID	Base Case - Code/Standard Material Cost	Base Case - Code/Standard Incremental Material Cost
Downstream Prescriptive Rebates/Incentives	46in28wT5PSEI33w	\$44.09	48in2g32wT8ISNEI31w	\$17.67	\$26.42
Downstream Prescriptive Rebates/Incentives	46in28wT5PSEI64w	\$53.09	48in2g32wT8ISHEI65w	\$23.20	\$29.89
Downstream Prescriptive Rebates/Incentives	46in28wT52PSEI97w	\$97.18	48in2g32wT8ISREI102w	\$27.16	\$70.03

2.1 Cost Case Reporting Table

This table provides comprehensive cost findings by measure “Cost Case ID”. Moreover, it presents calculated installation hours and costs, referencing wage rates and California Climate Zone multipliers provided in subsequent tables. Building off of Exhibit 2-1, Exhibit 2-2 details the Cost Reporting Table for select linear fluorescent lighting technologies:

Exhibit 2-2: Cost Reporting Table

Cost Case Reporting Table

Cost Case Description	Cost Case ID	Program Delivery Strategies	Material Cost	Installation Man Hours - Retrofit	Installation Labor Cost - Retrofit
FL, (1) 46in, T5 lamp, Programmed Start Ballast, (BF: 1.00), Lumens=2750, W/fixt=33	46in28wT5PSEI33w	Downstream Prescriptive Rebates/Incentives	\$44.09	0.44	\$32.40
FL, (2) 46in, T5 lamp, Programmed Start Ballast, (BF: 1.00), Lumens=5500, W/fixt=64	46in28wT5PSEI64w	Downstream Prescriptive Rebates/Incentives	\$53.09	0.50	\$36.82
FL, (3) 46in, T5 lamp, (2) Programmed Start Ballasts, (BF: 1.00), Lumens=8250, W/fixt=97	46in28wT5PSEI97w	Downstream Prescriptive Rebates/Incentives	\$97.18	0.51	\$37.56

What follows is a dedicated discussion defining the column headers and source information related to this specific table:

Cost Case Description: This column provides a description of the specific measure cost case ID being priced including, whenever possible, relevant parameter specifications.

Cost Case ID: The Cost Case ID is a unique code developed for each measure technology permutation addressed through the 2008 DEER Update Study. Note that this table does not identify if a cost case is for an energy efficient measure or for a base case technology. ***Also, note that cost cases will repeat for each program delivery strategy referencing that cost case.***

Program Delivery Strategies: This column identifies the program delivery strategy through which the measure is being priced. A full list of program delivery strategies is presented in Appendix B. In general, measures fell into the following three delivery strategies:

1. Direct Install
2. Upstream Incentive Rebates/Incentives
3. Downstream Prescriptive Rebates/Incentives

The DEER team provides material costs by program delivery strategy to allow flexibility in program design. Direct installation programs may consider using the lower downstream program costs presented for linear fluorescent lighting if this is more reflective of the material cost structure for their programs.

Material Cost: This column highlights the Summit Blue derived measure material costs for a specific Cost Case ID. Workbooks which contain the specific cost observations and analysis used to develop the reported costs will be delivered at the completion on the project.

Installation Man Hours – Retrofit: The estimated time, in hours, required to install a measure specific technology in a retrofit application. The hours represent the time required to remove the base measure, and install the new, efficient technology. Hourly projections were drawn from, and calibrated through, a variety of representative resources including:

- RS Means 2007
- Surveys of Implementation Contractors
- Detailed Discussions with Program Managers
- On-Site Surveys of Retail Venues
- Previous DEER Measure Cost Studies

Installation Labor Cost – Retrofit: The estimated cost in dollars to install a measure specific technology in a retrofit application. This was an algorithm based estimate built off of the following equation:

Eq. 2: Retrofit Installation Labor Cost - Calculation Methodology

$$[\text{Installation Labor Cost} - \text{Retrofit}_i] = \text{Hrs}_r \times \text{Rate}_r \times (\text{Multiplier}_c) \div N_c$$

Where: Hrs_r = Retrofit Installation Man Hours for Cost Case ID “i”
 Rate_r = Installation Hourly Labor Rate for Cost Case ID “i”
 Multiplier_c = California Climate Zone Multiplier for Region “c”
 N_c = Total Count of California Climate Zones (16)

The single installation labor cost value presented represents the average cost across all 16 California Climate Zones. It should also be noted that measure retrofit costs encompass both material and installation costs, as the base measure is replaced prior to the end of its effective useful life (EUL).

Installation Man Hours – New: The estimated time, in hours, required to install a measure in a new construction application and is applicable only to select non-residential lighting measures and motors.

Installation Labor Cost – New: The estimated cost in dollars to install a measure specific technology in a new construction application. This was an algorithm based estimate built off of the following equation:

Eq. 3: New Installation Labor Cost - Calculation Methodology

$$[\text{Installation Labor Cost} - \text{New}_i] = \text{Hrs}_n \times \text{Rate}_n \times \Sigma(\text{Multiplier}_c) \div N_c$$

Where: Hrs_n = New Installation Man Hours for Cost Case ID “i”
 Rate_n = Installation Hourly Labor Rate for Cost Case ID “i”
 Multiplier_c = California Climate Zone Multiplier for Region “c”
 N_c = Total Count of California Climate Zones (16)

California Climate Multiplier Table: This column serves to establish a relationship between the Cost Reporting Table and the California Climate Multiplier Table. The code listed for each Cost Case ID provides insight into the actual installation cost multipliers used to calculate labor costs. This table is further discussed below.

Labor Base Rate Table Reference: This column establishes a relationship between the Cost Reporting Table and the Labor Base Wage Rate Table. The code listed for each Cost Case ID provides more detailed information on the hourly labor rates used to calculate labor costs, along with the applicable market sector. This table is further discussed below.

Normalizing Unit: This column provides unitary cost definitions for the measures priced throughout the DEER Cost Update Study. The Cost team has labored to maintain consistency with the Energy team’s normalizing unit definitions for uniformity and ease of integration with the final DEER Database product.

2.2 Labor Base Wage Rate Table

The Labor Base Wage Rate Table provides hourly labor rates for installation services relevant to specific measure applications. These rates were drawn from, and calibrated through, a variety of sources including:

- RS Means 2007
- Surveys of Implementation Contractors
- On-Site Surveys of Retail Venues
- Previous Measure Cost Studies

Exhibit 2-3 provides an example of the Labor Base Wage Rate Table for select linear fluorescent lighting technologies. And as in Section 2.1, column definitions and descriptions unique to this table will be discussed in greater detail.

Exhibit 2-3: Labor Base Wage Rate Table

Labor Base Wage Rate Table

Reference	Sector	Measure Category	Measure Subcategory	Program Delivery Strategies	Base Labor Rate
NR-IL-DP	Non-Res	Indoor Lighting	Other Lighting	Downstream Prescriptive Rebates/Incentives	\$67.88

Reference: The “Reference” column provides a unique wage rate code developed by the cost research staff to represent the hourly labor rate required to install a specific measure technology. This code represents the relationship between the Cost Reporting Table and the Labor Base Wage Rate Table.

Sector: The market sector applicable to the hourly labor rate specified. In this study, the two options for this field are Residential (Res) and Non-Residential (Non Res).

Measure Category: This column represents the overarching measure category that the hourly labor rate is attributed to.

Measure Subcategory: Similar to the “Measure Category” column, this column characterizes the more specific measure subcategory that the hourly labor rate is attributed to.

Base Labor Rate: The most representative hourly labor rate (\$/Hr) charged by a contractor to install a specific measure technology.

2.3 California Climate Multiplier Table

The California Climate Zone Pointer Table provides both material and installation cost multipliers applicable to each of California’s 16 climate zones. These multipliers represent the economic difference in measure costs within different regions throughout the state and were developed at the measure technology level throughout the DEER Cost Update Study¹. In line with previous discussions, Exhibit 2-4 details the California Climate Zone Pointer Table for select linear fluorescent lighting technologies:

Exhibit 2-4: California Climate Multiplier Table

Climate Multiplier Table: EL50

Climate Zone	Reference City	Material	Installation
1	Eureka	0.989	0.962
2	Santa Rosa	0.939	1.150
3	San Francisco	1.027	1.513
4	San Jose	1.024	1.378
5	San Luis Obispo	0.880	0.993
6	Santa Barbara	0.870	1.072
7	San Diego	1.000	0.978
8	Santa Ana	0.936	1.050
9	Los Angeles	0.963	1.138
10	Riverside	0.904	1.029
11	Redding	0.984	1.048
12	Sacramento	0.973	1.048
13	Fresno	0.894	0.944
14	Mojave	0.879	0.979
15	Palm Springs	0.936	1.029
16	Susanville	0.987	1.048
	Average	0.949	1.085

Column header definitions and source documentation are presented below:

Climate Zone: This column corresponds to the 16 recognized climate zone regions² within the state of California.

¹ RS Means 2007

² http://www.energy.ca.gov/maps/climate_zone_map.html

Reference City: RS Means 2007 does not provide cost multipliers at the climate zone level. As such, this column identifies the city deemed most representative of a particular climate region. The rationale behind this approach was to elect cities within the most populated sector of a climate zone, as measure sales volume distribution would intuitively be higher and more accurate of measures installed within that territory.

Material: This column provides a material cost multiplier for each unique climate zone within California, segregated at the measure technology level. The multiplier represents the economic difference in measure material costs within different climate zones throughout the state. At present, material costs are not adjusted by climate zone, and it is uncertain that material costs will be adjusted in the final DEER software for specific areas in California because significant differences in material costs have not been confirmed.

Installation: This column provides a labor cost multiplier for each unique climate zone within California, segregated at the measure technology level. The multiplier represents the economic difference in measure labor costs within different climate zones throughout the state. Because of a wide variation in labor costs across California, it is planned that the final DEER software will allow for labor rate adjustments by climate zone based on these multipliers.

2.4 Incremental Cost Reporting Table

This table provides comprehensive list of incremental costs for various program delivery strategies where a base cost has been identified. Incremental costs are calculated between the energy efficient measure technology and any one of 3 base costs; code/standard, market average, and customer average. Not all base cases are available for all cases. Exhibit 2-5 provides an example of the incremental cost reporting table for select linear fluorescent lighting technologies.

Exhibit 2-5: Example of the Incremental Cost Reporting Table for Linear Fluorescent Fixtures

Program Delivery Strategies	Measure Material Cost Case ID	Measure Material Cost	Base Case -Code/Standard Cost Case ID	Base Case - Code/Standard Material Cost	Base Case - Code/Standard Incremental Material Cost
Downstream Prescriptive Rebates/Incentives	46in28wT5PSEI33w	\$44.09	48in2g32wT8ISNEI31w	\$17.67	\$26.42
Downstream Prescriptive Rebates/Incentives	46in28wT5PSEI64w	\$53.09	48in2g32wT8ISHEI65w	\$23.20	\$29.89
Downstream Prescriptive Rebates/Incentives	46in28wT52PSEI97w	\$97.18	48in2g32wT8ISREI102w	\$27.16	\$70.03

The following discussion provides a definition of the column headers for the incremental cost reporting table:

Program Delivery Strategies: This column identifies the program delivery strategy through which the measure is being priced, as defined previously in this document.

Measure Material Cost Case ID: The ‘Measure Material Cost Case ID’ is a unique code developed for each energy efficient measure technology permutation addressed through the 2008 DEER Update Study. These cost cases represent the efficient measure definition that will be compared to base case definitions (e.g. Code, Market Average, etc) to generate incremental costs.

Measure Material Cost: This column provides the recommended cost value for the corresponding Measure Material Cost Case ID.

Base Case - Code/Standard Cost Case ID: The ‘Code/Standard Cost Case ID’ is a unique code developed for measure technology permutations that are based on current California code.

Base Case - Code/Standard Material Cost: This column provides the recommended cost value for the corresponding Code/Standard Cost Case ID.

Base Case - Code/Standard Incremental Material Cost: This column provides the incremental material cost between the Measure Material Cost Case ID and the Code/Standard Cost Case ID.

Base Case - Market Average Cost Case ID: The 'Base Case -Market Average Cost Case ID' is a unique code developed for measure technology permutations that represent the market average, as defined by various secondary sources.

Base Case - Market Average Material Cost: This column provides the recommended cost value for the corresponding Market Average Cost Case ID.

Base Case - Market Average Incremental Material Cost: This column provides the incremental material cost between the Measure Material Cost Case ID and the Market Average Cost Case ID.

Base Case - Customer Average Cost Case ID: The 'Base Case - Customer Average Cost Case ID' is a unique code developed for measure technology permutations that represent the customer average, as defined by various secondary sources.

Base Case - Customer Average Material Cost: This column provides the recommended cost value for the corresponding Customer Average Material Cost.

Base Case - Customer Average Incremental Material Cost: This column provides the incremental material cost between the Measure Material Cost Case ID and the Customer Average Material Cost.

APPENDIX A – EXAMPLE COST DATA COLLECTION FORM

Exhibit A-1: Web Data Collection Form for CFLs

D. E. E. R.
Database for Energy Efficient Resources
Currently logged in as Mike Yim. ([Log out](#))

Residential Lighting Measures

[CFL/Lamps](#)

Measure Parameters

Application: CFL/Lamps

Usage:

Type:

Wattage:

Measure Details

ID:

New ID:

Category:

Measure Description:

Source Information

First Name:

Last Name:

Company:

Address:

City:

State:

Zip:

Phone Number:

E-Mail:

Cost Information

Cost Observation: Retail Wholesale MSRP Web

Source:

Purchase Channel: Retail Wholesale Other

Other:

Manufacturer:

Model Number:

Retailer SKU:

Packaging: Single Multi-Pack Case

Quantity:

Cost per Unit: (\$)

Observation Date:

Measure Specification

Base: A-Base Pin Candelabra

Lamp Type: Screw-In Pin Halogen

Bulb Count:

Lamp Shape: Globe Spiral

Dimmable: Yes No

Dimmable Type: Step Continuous

Range: Spot Flood

Energy Star Rating: Yes No

Warranty: Yes No

Duration: (hrs)

Voltage (V):

Initial Lumens:

Rated Life (hrs.):

Notes:

Analyst Information

First, Last Name: Mike Yim

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Time Stamp: October 4, 2007, 4:38 pm

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APPENDIX B – DEFINITIONS OF PROGRAM DELIVERY STRATEGIES

Exhibit A-2: DEER Terms and Definitions

Program Delivery Strategies	Explanation of Strategy
Information Based	
Mail Audits	Customer mails in survey providing home and appliance characteristics and receives prioritized list of measure recommendations
Internet Audits	Customer provides home and appliance characteristics via online survey and receives customized measure recommendations
Onsite Audits- Generic	Professional makes onsite visit to gather data and present prioritized measure recommendations
Feasibility Study-Industrial grade audit	Certified engineer assesses potential savings and solicits cost bids and provides recommended options to customer
Comprehensive Audit + Repair/Tuning	Industrial grade audit plus repair and fine tuning services delivered as part of audit
Building or System Design Assistance	Training and or technical assistance to provide efficiency improvement to building or system plans to architects/engineers
Trade Ally Training	Efficiency Training delivered to building contractors and installers
Mass or Targeted Marketing	Education or efficiency promotion messages broadcast to entire market using mass media channels
Codes and Standards Training	Efforts to educate and train builders and building officials about code requirements and efficient methods to meet them
Lend or Provide Diagnostic Tools	Programs that provide customers with software and hardware tools to analyze potential energy impacts from efficiency measures and changes in operation
On Site Energy Use feedback in real time	Programs that provide real time feedback on energy use to customers using on site displays
Corporate Energy Management Training	Efforts to convince corporate CED or CFO of need to track energy costs as part of core business, take action and monitor results
Financial Incentive Based	
Downstream Prescriptive Rebates/Incentives	Downstream = rebate usually cash goes to customer/owner on a per measure basis
Midstream Prescriptive Rebates/Incentives	Midstream= rebate usually cash goes to distributor or retailer on a per product basis
Upstream Prescriptive Rebates/Incentives	Upstream= rebate, usually cash to manufacturer on a per product shipped basis
Customized Incentives	Cash to customer based on results of feasibility study and measures selected
Performance Contracting	Incentives paid to customer based on results of ex post verification of savings- from ESCO or administrator
External Financing/Interest Rate Buydown	Customer offered Interest buy down or lower rates to finance measure installation
On Bill Financing	Customer offered opportunity to finance measures and make payments as supplement to utility bill
Building Design Incentives	Rebates or cash to builders for designing and constructing buildings that exceed standard by a threshold percentage (15%)
Direct Installation or Other	
Technology giveaways	Portable measures provided to customers for free with expectation they will install measures later, such as CFL giveaway
Direct Installation- measures only	No cost direct installation of more efficient systems or specific efficiency measures
Direct Installation + Commissioning	Same as above with free commissioning service after installation is complete
Free Tune-up or Repair Services	Free systems tune-up services offered to customers with high bills
Code and Standards Advocacy through Demonstrations	Efforts to test, evaluate and build market acceptance of measures and designs targeted for inclusion in future codes
Emerging technology testing-case studies	Efforts to install new technologies at customer site and gather data on customer acceptance and equipment performance