**Work Paper SCE13CS008**

**Revision 1**

**Southern California Edison Company**

**Energy Star Audio Equipment**

# At-a-Glance Summary

|  |  |
| --- | --- |
| ****Applicable Measure Codes:**** | CE-92392 Energy Star 3.0 Component Equipment replacing T20 Component Equipment  CE-25413 Energy Star 3.0 Compact Stereo replacing T20 Compact Stereo  CE-17389 Energy Star 3.0 MP3 Docking Station replacing T20 MP3 Docking Station  CE-92565 Energy Star 3.0 HTIB replacing T20 HTIB  CE-59948 Energy Star 3.0 Clock Radio replacing T20 Clock Radio |
| **Measure Description:** | This work paper addresses the installation of Energy Star 3.0 Audio Equipment, which includes: Energy Star 3.0 Component Equipment, Energy Star 3.0 Compact Stereo, Energy Star 3.0 MP3 Docking Station, Energy Star 3.0 HTIB, and Energy Star 3.0 Clock Radio. |
| **Base Case Description:** | The base case for the work paper is Audio Equipment that meets Title 20. |
| **Energy Impact Common Units:** | Per Unit |
| **Energy Savings :** | Refer to Excel Calculation Attachment |
| **Gross Measure Cost ($/unit)** | Refer to Excel Calculation Attachment |
| **Measure Incremental Cost ($/unit):** | Refer to Excel Calculation Attachment |
| **Effective Useful Life (years):** | 3 years |
| **Measure Application Type:** | Replace on Burnout (ROB) |
| **Net-to-Gross Ratios:** | 0.7 |
| **Important Comments:** | **This work paper document does not contain a data set in conformance with the 4/1/14 CPUC Ex Ante Database Specification; SCE will provide that data set separately.** |

# Document Revision History

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Workpaper and Revision # | Tech. Revision | MM/DD/YY | Author/Affiliation | Summary of Changes |
| SCE15CS008 .0 | No | 4/26/2012 | Jared Kruzek/AESC, Inc. | Original work paper for 2013 PC |
| SCE13CS008 .1 | Yes | 3/4/2014 | Brian Gehring/AESC, Inc. | -IE and Energy Star requirements update.  -kW and kWh Savings updated with new requirements |
| SCE13CS008 .1 | No | 4/17/2014 | Cassie Cuaresma/SCE | -Work paper updated for reporting period effective 7/1/2014-12/31/2014 |

# Section 1. General Measure & Baseline Data

## 1.1 Measure Description & Background

The measures in this work paper are for the purchase of Audio Equipment that meet Energy Star version 3.0 requirements. The energy savings in this work paper are calculated on a per audio device basis. The eligible Base case units are Audio Equipment that that complies with Title 20 (Section 1605.3 V) regulations which designates a maximum power usage for the standby-passive mode for compact audio products, this includes component equipment (receivers, amplifiers, subwoofers, and rack audio systems), compact stereos, MP3 docking stations, home theatres in a box (HTIB), and clock radios. Energy Star requirements are detailed in Section 1.4.2.

**Table 1 Measure Names**

|  |  |
| --- | --- |
| Solution Code | Measure name |
| CE-92392 | Energy Star 3.0 Component Equipment replacing T20 Component Equipment |
| CE-25413 | Energy Star 3.0 Compact Stereo replacing T20 Compact Stereo |
| CE-17389 | Energy Star 3.0 MP3 Docking Station replacing T20 MP3 Docking Station |
| CE-92565 | Energy Star 3.0 HTIB replacing T20 HTIB |
| CE-59948 | Energy Star 3.0 Clock Radio replacing T20 Clock Radio |

This measure only applies to Residential building types, which are Residential Mobile Home - Double-Wide, Residential Multi-family (common and dwelling areas), and Residential Single-family. Additionally, proposed Audio Equipment must satisfy Energy Star version 3.0 requirements [376] in order to be eligible for this measure. Table 2 below shows the timeline of Energy Star publications.

**Table 2 ENERGY STAR Effective Dates**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Audio/Video Product | Version 1.0  Phase 1 | Version 1.0  Phase 2 | Version 2.0  Tier 2 | Version 2.0  Tier 3 | Version 3.0 |
| All Products | December 31, 2002 | January 1, 2003 | July 30, 2010 | March 30, 2012 | May 1, 2013 |

## 1.2 Technical Description

In order to qualify for Energy Star 3.0 labels, the Audio Equipment must have power consumption limits at different modes of operation. The detailed descriptions of all operating modes are summarized as follows:

1. *On Mode: Where the product is connected to a main power source, has been activated and is providing one or more primary functions. The common terms “active”, “in-use” and “normal operation” also describe this mode.* 
   1. *Active State: A state within On mode in which a product is performing a primary function.*
   2. *Idle State: A state within On mode in which a product is not performing a primary function and no content is actively being delivered to the end-user.*
2. *Sleep Mode: The common term “standby” may also describe this mode, where the product is connected to a main power source, is not providing a primary function, and offers one or more of the following user oriented or protective functions which may persist for an indefinite time*
   1. *to facilitate the activation of other modes (including activation or deactivation of On mode) by remote switch (including remote control), internal sensor, timer;*
   2. *continuous function: information or status displays including clocks;*
   3. *continuous function: sensor-based functions.*
3. *Off Mode: Where the product is connected to a main power source, is not providing any On mode or Sleep mode functions, and cannot be switched into any other mode except by user actuation of a manual power switch. An indicator that only shows the user that the product is in the off position is included within the classification of an Off mode.*

The tables below summarize the power consumption limits at each mode. Audio Equipment devices must meet all of the limits to be eligible. The limits specified in the tables are additive. Therefore, the power consumption for a device at each operating mode cannot exceed the sum of the limits for all applicable product functions of the device. For example, the sleep mode power consumption limit for product with in-use Wifi would be P = 1.0 + 2.0 = 3.0 watts.

**Table 3 ENERGY STAR Version 3.0 Sleep Mode Power Consumption Limits**

|  |  |
| --- | --- |
| Product Function | Sleep Mode Power Allowance (watts) |
| Base Allowance For All Products | 1.0 |
| In-use Networking / Control Protocol with Wake Capability | 1.0 |
| In-use Wi-Fi or Gigabit Ethernet Protocols with Wake Capability | 2.0 |

**Table 4 ENERGY STAR Version 3.0 On Mode Power Allowance**

|  |  |  |
| --- | --- | --- |
| Product Function | | On Mode Power Allowance (W) |
| High Resolution Display  (> 480x234 pixel resolution and 7 inches diagonal screen size) | | P = 6\*(R) + 0.05\*(A) + 3  Where:  R = Display resolution (x \* y)  in megapixels  A = Viewable screen area  in square inches |
| In-use Networking / Control Protocol | | 1.0 |
| In-use Wi-Fi or Gigabit Ethernet Protocols | | 2.0 |
| Audio Amplification (Where P is the output power at 1/8 Maximum Undistorted Power (MUP) with 1kHz sinusoidal input) | P≤50 W | 5.0 |
| P>50 W | 0.1\*P |

**Table 5 ENERGY STAR Version 3.0 Idle State Power Consumption Limits**

|  |  |  |
| --- | --- | --- |
| Product Function | | Idle State Power Allowance (watts) |
| Base allowance for all products | | 5.0 |
| In-use Networking/Control Protocol | | 1.0 |
| In-use Wi-Fi or Gigabit Ethernet Protocols | | 2.0 |
| Audio Amplification | P≤50 W | 5.0 | |
| P>50 W | 0.1\*P | |

Additionally, in order to qualify for Energy Star 3.0 labels, devices must have Auto Power Down (APD) functionality and must meet the requirements summarized below. ENERGY STAR defines Auto Power Down (APD) as the capability to automatically switch a device from On mode to Sleep mode after a predetermined period of time has elapsed. APD functionality shall be available on all products except those that are subject to third-party performance standards that prohibit APD, including those used for Mass Notification and Emergency Communications Systems and those subject to ANSI/UL 2572.

APD functionality shall be enabled by default, with APD timing less than or equal to 2 hours, subject to the following exceptions:

1. Products may offer users the option (e.g., via system menu or physical switch) to modify APD timing in 10 minute intervals, or to disable APD entirely.
2. Products may initiate APD immediately upon receipt of authoritative control instruction via an active Networking / Control Protocol.
3. Commercial Amplifiers as defined in Section 1 may be shipped with APD disabled. If APD is disabled, the product shall meet the Idle State power requirements.

APD Timing Default Settings shall be as follows:

APD Timing ≤ 30 minutes:

This timing option is acceptable for use as a default setting. If APD timing is set by default to no more than 30 minutes and APD cannot be disabled or increased to greater than 30 minutes, products do not have to meet Idle State power requirements.

30 minutes < APD Timing ≤ 2 hours:

This timing option is acceptable for use as a default setting. If APD can be disabled, or if APD timing can be set to greater than 30 minutes, products shall meet Idle State power requirements.

APD Timing > 2 hours:

This timing option may only be enabled by the end user and is not available for use as a default setting. If APD can be disabled, or if APD timing can be set to greater than 30 minutes, products shall meet Idle State power requirements.

Products that offer audio amplification must meet the amplifier efficiency requirements based on the equation and table below:

Where:

η is the amplifier efficiency;

 is the output power at 1/8 MUP with 1 kHz sinusoidal input, in watts;

 is the input power at 1/8 MUP with 1 kHz sinusoidal input, in watts; and

 is the power consumption from the Optical Disc Player, as measured in Section 8.2 of the test procedure, for products without AV inputs.

**Table 6 ENERGY STAR Minimum Amplifier Efficiencies**

|  |  |
| --- | --- |
| Amplifier Input Power at 1/8 MUP  with 1 kHz Sinusoidal Input, PIN  (W) | Version 3.0  Minimum Amplifier  Efficiency, η |
| < 20 | N/A |
| 20 ≤ < 100 | 0.44 |
| ≤ 100 | 0.55 |

## 1.3 Measure Application Type

The program/install type for the above measures is:

* Replace on Burn-out (ROB)

The delivery method that is available for the measures is:

* Midstream Programs / Mid-Stream Incentive

## 1.4 Measure and Base Case Cost Effectiveness Data

### 1.4.1 DEER Measure and Base Case Analysis

This specific measure is not included in the Database for Energy Efficient Resources (DEER) 2014 version 4.0 [49], either non-residential or residential. Furthermore, DEER does not include any measures that describe savings for Audio Equipment.

Table 7 DEER Difference Summary

|  |  |
| --- | --- |
| DEER Difference Summary Table | |
| Modified DEER Methodology | No |
| Scaled DEER Measure | No |
| DEER Building Prototypes Used | No |
| Deviation from DEER | DEER14 does not contain this type of measure |
| DEER Version | N/A |
| DEER Run ID and Measure Name (Sample) | N/A |

**Net to Gross**

The NTG value was obtained from the “DEER2011\_NTGR\_2012-05-16.xls” on the` DEER website as required by Version 5 of the California Public Utilities Commission (CPUC) Energy Efficiency Policy Manual [351]. The relevant NTGR for this measure is shown in Table 8 below.

Table 8 Net-to-Gross Ratio

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NTGR\_ID\* | Description\* | Sector\* | BldgType\* | ProgDelivID | NTG\* |
| All-Default<=2yrs | All other EEM with no evaluated NTGR; new technology in program for 2 or fewer years | All | Any | Any | 0.70 |

\*Denotes that the column is taken from the DEER NTG Table.

**Installation Rate**

The installation rate (IR) is identified in the calculation attachment. This value is obtained from the support table available in READi. Currently there is no versioning on the installation rate table. To address appropriate selection of the installation rate the date of the work paper will serve as the last date checked for updated IR values. The installation rate varies by end use, sector, technology, application, and delivery method. The relevant IR values for this measure are shown in Table 9 below.

Table 9 Installation Rate

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| GSIA\_ID\* | Description\* | Sector\* | BldgType\* | ProgDelivID | GSIAValue\* |
| Def-GSIA | Default GSIA values | Any | Any | Any | 1 |

**Spillage Rate**

Spillage rate will also be applied to measures however the values will not be tracked in the work papers. The spillage rate will be tracked in an external table to be supplied to the Energy Division.

**READi Technology Fields**

To support the development of the ED ex ante tables, select fields from the ex ante database will be identified in the work paper. For a full set of values associated with the measures in the work paper refer to the Excel calculation template. (In the event that the READi IDs do not support the technology in this work paper simply indicate “Non-DEER”.)

Table 10 READi Tech IDs

|  |  |
| --- | --- |
| READi Field Name | Values included in this workpaper |
| Measure Case UseCategory | Appliances and Plug Loads |
| Measure Case UseSubCats | Consumer Electronics |
| Measure Case TechGroups | Business and Consumer Electronics |
| Measure Case TechTypes | Non-DEER |
| Base Case TechGroups | Business and Consumer Electronics |
| Base Case TechTypes | Non-DEER |

### 1.4.2 Codes and Standards Analysis

This measure is governed by Title-20 “Appliance Efficiency Code”, which mandates Compact Audio Products to have a power usage not greater than 2 W in Audio standby-passive mode for those without a permanently illuminated clock display and 4 W in Audio standby-passive mode for those with a permanently illuminated clock display.

**Table 11 Code Summary**

|  |  |  |
| --- | --- | --- |
| Code | Applicable Code Reference | Effective Dates |
| Title 20 (2012) | Section 1605.3(v) Table V-1 | February 1, 2013 |

### 1.4.3 Non-DEER Study Review

The estimated hours of operation for component equipment, compact stereos, home theatres in a box (HTIB), and clock radios during On/Active Mode and Idle Mode come from a survey conducted by TIAX in 2007 [380].

### 1.4.4 Measure and Base Case Effective Useful Life

DEER14 update documentation provides EUL and RUL information to be used for the 2015 program cycle extension on [www.deeresources.com](http://www.deeresources.com). The DEER documentation “Summary of EUL-RUL Analysis for the April 2008 Update to DEER” provides the RUL value as a flat 1/3 of the EUL value. The RUL value will only be applied to the first baseline period for retrofit measures that have applicable code that will affect the energy savings. In all other installation types and retrofit with no applicable code that affects the energy savings, the RUL is not applicable to either the first or second baseline period.

DEER does not include a EUL\_ID for this measure. Therefore, this work paper consults other sources to establish measure effective useful life.

To obtain the EUL value, Energy Star Consumer Electronics Calculator [377] was consulted. The calculator utilizes equipment lifetime of 3 years, which was taken from a survey [377]. There is no RUL for this measure because the new device is replacing equipment that has been assumed to have failed or replaced at the end of its life. Table 12 below identifies the value/methodology used for the measures in this work paper.

Table 12 DEER14 EUL Value/Methodology

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| READi EUL ID | Market | Enduse | Measure | EUL (Years) | RUL (Years) |
| Non-DEER | Residential | Appliances | Energy Star Audio Equipment | 3 | N/A |

# Section 2. Energy Savings & Demand Reduction Calculations

Savings are estimated sourcing data and assumptions from Title 20, Energystar, and the TIAX study [380]. The calculation results can be found in Tables 13 – 15 below.

**Table 13 Base Case Power Draws**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Power Draw  [W] | Description | Usage Mode | | |
| **On/Active** | **Idle** | **Sleep** |
| Component Equipment | 34.23 | 25.7 | 2.0 |
| Compact Stereo | 14.62 | 11.0 | 2.0 |
| MP3 Docking Station | 7.80 | 5.9 | 2.0 |
| HTIB | 25.64 | 19.2 | 2.0 |
| Clock Radio | 6.90 | 5.2 | 2.0 |

**Table 14 Measure Case Power Draws**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Power Draw  [W] | Description | Usage Mode | | |
| **On/Active** | **Idle** | **Sleep** |
| Component Equipment | 34.23 | 9.34 | 0.53 |
| Compact Stereo | 14.62 | 4.68 | 0.34 |
| MP3 Docking Station | 7.80 | 5.35 | 0.40 |
| HTIB | 25.64 | 4.60 | 0.22 |
| Clock Radio | 6.90 | 3.25 | 0.50 |

**Table 15 Usage Estimates**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Usage  [hr/yr] | Type | Usage Mode | | | | | Total |
| **On/Active** | **Idle** | | | **Sleep\*** |
| Component Equipment | 1580 | | 730 | 6450 | | 8760 |
| Compact Stereo | 840 | | 730 | 7,190 | | 8760 |
| MP3 Docking Station | 840 | | 730 | 7,190 | | 8760 |
| HTIB | 1580 | | 730 | 6,450 | | 8760 |
| Clock Radio | 88 | | 0 | 8672 | | 8760 |

\*Off time in TIAX report corresponds to the description of Sleep time in Energystar. The unit remains plugged in, but inactive.

On mode power consumption is assumed to be equivalent in both the baseline and proposed scenarios. Savings are assumed to be a result of more efficient sleep and idle state power consumption. “On Mode” power consumption can be found referenced in Table’s 13 and 14.

Idle mode power consumption differs between the base and measure case. The base case idle mode power requirements were determined using the estimate of 75% of On Mode power draw, as proposed by the TIAX study. The measure case idle mode power consumption is taken from the average idle mode power draw of the products in the Energystar qualified products list.

Sleep mode power consumption also differs between the base and measure case. The base case sleep mode power requirements are limited to the maximum allowed by Title 20. The measure case sleep mode power usage is taken from the average sleep mode power draw of the products in the Energystar qualified products list.

The TIAX report includes hours of usage estimates by modes, which come from the survey data collected in 2007 [380]. MP3 docking stations were assumed to have the same usage as compact stereos since the TIAX report does not address MP3 docking stations. The estimated hours of usage were used to calculate both base and measure Audio Equipment’s annual energy usage. The off time designated by the TIAX report was found to correspond to the description of sleep time in Energystar. The unit remains plugged in, but in an inactive power state.

**Energy Savings**

Annual energy savings for consumer electronic equipment is typically calculated by comparing the annual electricity consumption (AEC) of the base equipment with the measure equipment. In order to calculate the total AEC for Audio Equipment, the average power draw in three modes (On/Active, Idle, and Sleep) is multiplied by the corresponding hours of usage. Total energy use in each mode is then summed to calculate total energy consumption:

*AEC (kWh/yr) = (PActive \* TActive) + (PIdle\* TIdle)* + *(PSleep \* TSleep)*

*Where P = Power draw (kW) and T = operating hours (hours per year)*

The energy savings were calculated by subtracting each measure energy use from the corresponding base case energy use. Sample calculations are shown below.

An example calculation for Energy Star 3.0 Compact Stereo replacing base case Compact Stereo is as follows:

* 1. Base case = (0.0146 kW \*840 hours/yr + 0.011kW\*730 hours/yr + 0.002 kW \* 7190 hours/year) = 34.67 kWh / year.
  2. Measure case = (0.0146 kW \*840 hours/yr + 0.00468 kW\*730 hours/yr + 0.00034 kW \* 7190 hours/year) = 18.14 kWh / year.
  3. Energy Savings (Base – Measure) = 34.67 kWh/yr – 18.14 kWh/yr = 16.52 kWh/yr

**Demand Savings**

The above break down of operating hours indicates that the Audio Equipment is in Sleep Mode for more than 86% of the time. Therefore, it was assumed that the units are in Sleep Mode during CPUC defined DEER peak period. The demand savings were calculated by subtracting each measure case power draw from the corresponding base case power draw.

An example calculation for Energy Star 3.0 Compact Stereo replacing a base case Compact Stereo is as follows:

Demand Savings = 0.0002 kW – 0.00034 kW = 0.00166 kW

Table 16 summarizes the Annual Energy and Demand Savings for Audio Equipment measures. The detailed calculations can be found in the attached excel sheet [4].

**Table 16 Annual Energy and Demand Savings**

|  |  |  |  |
| --- | --- | --- | --- |
| **Solution**  **Code** | **Description** | **Annual Electric Savings (kWh/unit)** | **Annual Demand Savings (kW/unit)** |
| CE-92392 | Energy Star 3.0 Component Equipment replacing T20 Component Equipment | 21.40 | 0.00147 |
| CE-25413 | Energy Star 3.0 Compact Stereo replacing T20 Compact Stereo | 16.52 | 0.00166 |
| CE-17389 | Energy Star 3.0 MP3 Docking Station replacing T20 MP3 Docking Station | 11.87 | 0.00160 |
| CE-92565 | Energy Star 3.0 HTIB replacing T20 HTIB | 22.16 | 0.00178 |
| CE-59948 | Energy Star 3.0 Clock Radio replacing T20 Clock Radio | 13.01 | 0.00150 |

For final savings numbers, interactive effects were applied to the energy and demand savings above using the CFL Interactive Effect Schedule. The calculations are performed in Attachment 1 “At A Glance Summary and Calculations.”

# Section 3. Load Shapes

The difference between the base case load shape and the measure load shape would be the most appropriate load shape; however, only end-use profiles are available. Therefore, the closest load shape chosen for this measure is the DEER:Indoor\_CFL\_Ltg load shape. See Table 17 for a list of all Building Types and Load Shapes. See the KEMA report [31] for a more thorough discussion regarding the load shapes for this measure.

**Table 17 Building Types and Load Shapes**

|  |  |  |
| --- | --- | --- |
| Building Type | E3 Alt. Building Type | Load Shape |
| Residential Mobile Home - Double-Wide | RES | DEER:Indoor\_CFL\_Ltg |
| Residential Multi-family | RES | DEER:Indoor\_CFL\_Ltg |
| Residential Single Family | RES | DEER:Indoor\_CFL\_Ltg |

# Section 4. Base Case & Measure Costs

## 4.1 Base Case Cost

Within each category of audio equipment, the pricing can vary significantly depending on what additional features are included or if high end components are used. For the cost analysis below, an average cost was determined for each product (where available) from a range of products in order to account for pricing differences.

Base Case Cost for component equipment was calculated using an average of the costs taken from multiple online retailers and summarized in Table 18 below. There is no labor cost for this measure because installations are administered by end-users [4].

**Table 18 Base Case Cost**

|  |  |  |
| --- | --- | --- |
| **Description** | **Base Case Cost** | |
| Component Equipment | $ 126.33 |
| Compact Stereo | $ 167.00 |
| MP3 Docking Station | $ 34.00 |
| HTIB | $ 213.33 |
| Clock Radio | $ 37.50 |

\*Based on a limited number of sources

## 4.2 Measure Case Cost

Measure Case Costs were calculated using an average of the costs taken from multiple online retailers and summarized in Table 19 below [4]. The devices were chosen from the list of Energy Star 3.0 Qualified Products List. There is no labor cost for this measure because installations are also administered by end-users.

**Table 19 Measure Case Cost**

|  |  |
| --- | --- |
| **Description** | **Measure Case Cost** |
| Component Equipment | $ 218.25 |
| Compact Stereo | $ 231.25 |
| MP3 Docking Station | $ 129.99 |
| HTIB | $ 229.40 |
| Clock Radio | $ 58.00 |

\*Based on a limited number of sources

## 4.3 Gross and Incremental Measure Cost

### 4.3.1 Gross Measure Cost

Per the E3, the gross measure cost (GMC) is the cost to install an energy efficient measure. In the case of replace-on-burnout (ROB), GMC means the cost premium required to install the energy efficient measure over a less efficient piece of equipment. GMC for ROB measure is represented by the equation below:

GMC = (Measure Equipment Cost + Measure Labor Cost) –

(Base Case Equipment Cost + Base Case Labor Cost)

\*Note: For this measure, there is no labor cost for both base and measure case because installations are done by end-users. Therefore, the equation reduces to the following:

*GMC = Measure Equipment Cost – Base Case Equipment Cost*

Table 20 summarizes the Gross Measure Cost calculated for the measures.

**Table 20 Gross Measure Cost (GMC)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Solution Code | Description | Measure  Cost | Base  Cost | | GMC | |
| CE-92392 | Energy Star 3.0 Component Equipment replacing T20 Component Equipment | 218.25 | 126.33 | 91.92 | |
| CE-25413 | Energy Star 3.0 Compact Stereo replacing T20 Compact Stereo | 231.25 | 167.00 | 64.24 | |
| CE-17389 | Energy Star 3.0 MP3 Docking Station replacing T20 MP3 Docking Station | 129.00 | 34.00 | 95.00 | |
| CE-92565 | Energy Star 3.0 HTIB replacing T20 HTIB | 229.40 | 213.33 | 16.07 | |
| CE-59948 | Energy Star 3.0 Clock Radio replacing T20 Clock Radio | 58.00 | 37.50 | 20.50 | |

### 4.3.2 Incremental Measure Cost

For ROB measures, the Incremental Measure Cost (IMC) is equal to the gross measures cost (GMC).

# Attachments

1.



2.



3.



4.



# References



[31]

[49]

[351]

[376]

[377]

[378]

[380]

# Appendix A – SCE/ED Application Types

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SCE Program Type | ED Application Type | 1st Baseline Savings | 2nd Baseline Savings | 1st Baseline Cost | 2nd Baseline Cost | 1st Baseline Life | 2nd Baseline Life |
| New | New Construction (Nc) | Above Code/Standard | N/A | Incremental Cost | N/A | EUL | 0 |
| Replace on Burnout (ROB) | Replace on Burnout (Rob)/Normal Replacement (NR) | Above Code/Standard | N/A | Incremental Cost | N/A | EUL | 0 |
| Retrofit (RET) | Early Replacement (ER) | Above Cust. Existing | Above Code/Standard | Full Cost | Incremental Cost | RUL | EUL-RUL |
| Retrofit – First Baseline Only (REF) | Early Replacement RUL (ErRul) | Above Cust. Existing | N/A | Full Cost | N/A | EUL | 0 |
| Retrofit Add-on (REA) | N/A | Above Cust. Existing | N/A | Full Cost | N/A | EUL | 0 |