Work Paper SCE17CC012

**Revision 1**

**Southern California Edison**

**Commercial Electric Deck Oven**

# At-a-Glance Summary

|  |  |
| --- | --- |
| **Measure Codes** | FS-70944 |
| **Measure Description** | Energy efficient (60% cooking energy efficiency) commercial electric deck oven |
| **Base Case Description** | Standard-efficiency (40% cooking energy efficiency) commercial electric deck oven |
| **Units** | Unit |
| **Energy Savings** | Refer to Excel Calculation Attachment A1. |
| **Full Measure Cost ($/unit)** | Refer to Excel Calculation Attachment A1. |
| **Incremental Measure Cost ($/unit)** | Refer to Excel Calculation Attachment A1. |
| **Effective Useful Life** | Cook-ElecCombOven: 12 years |
| **Measure Installation Type** | Replace on Burnout (ROB)  New Construction (NEW) |
| **Net-to-Gross Ratio** | Com-Default>2yrs: 0.6 |
| **Important Comments** | This work paper has a complementary Ex Ante Database data set that will be provided in a separate submission to the California Public Utilities Commission (CPUC). |

# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 10/20/2016 | Theodore D’Williams/TRC | * This work paper is an update of SCE13CC012.2 * New Calculation template for 2017 program year * Gross and incremental cost updated. * Installation type - New Construction added |
| 1 | 08/30/2018 | Srushti Koli/TRC | * New Calculation template for 2018 program year * Added mid-stream delivery method * Added eligibility requirement for Replace on Burnout (ROB) case * Updated measure case cost data based on the most recent values from an authorized distributor. Normalized costs per quantity of decks. * Added Standard Practice Evidence section to support the claim that electric deck ovens are not ISP at this moment * Added Driver for Expansion/Load Added section to discuss efficiency drivers for measure * Removed Manufacturing – Bio/Tech and Manufacturing – Light Industrial building types. |

# Commission Staff and Cal TF Comments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Rev** | **Party** | **Submittal Date** | **Comment Date** | **Comments** | **WP Developer Response** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Cal TF website: <http://www.caltf.org/>

# Section 1. General Measure & Baseline Data

## 1.1 Measure Description & Background

This work paper details the replacement of standard-efficiency commercial electric deck ovens with energy-efficient commercial electric deck ovens. The base case standard-efficiency ovens are rated at approximately 40% efficiency, whereas the new energy-efficient ovens are over 60% efficient. The heavy load cooking energy efficiency used to describe these ovens is the amount of energy imparted to the food product compared to the total consumed energy of the equipment during cooking during the heavy load test described by ASTM F1965-99 (2010) [289].

Base, Standard, and Measure Cases

|  |  |
| --- | --- |
| **Case** | **Description of Typical Scenario** |
| Measure | Energy efficient (60% cooking energy efficiency) commercial electric deck oven |
| Existing Condition | Standard-efficiency (40% cooking energy efficiency) commercial electric deck oven |
| Code/Standard | N/A |
| Industry Standard Practice | N/A |

Measures and Codes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Measure Codes** | | | | **Measure Name** |
| SCG | SDG&E | SCE | PG&E |
| N/A | N/A | FS-70944 | N/A | Cooking Efficiency ≥ 60% Commercial Electric Deck (Deck Area ≥ 1200 in^2) Oven |

**Eligibility Requirements**

This measure is applicable to the Non-Residential building types listed in Section 3 and all climate zones.

Eligible deck ovens must:

* Have a heavy load cooking energy efficiency of 60% or greater based on the heavy-load pizza test in ASTM F1965-99(2010) [289].
* Have an idle energy rate of 1.3 kW or less.
* Be on the Food Service Technology Center pre-approved list, found at the website <https://caenergywise.com/rebates/>.
* For Replace on Burnout (ROB) measures, the new electric deck oven must be replacing an existing standard efficiency electric deck oven.

## 1.2 Technical Description

Commercial electric deck ovens are appliances that cook the food product within a heated chamber. The food product can be placed directly on the floor of the chamber during cooking and energy may be delivered to the food product by convective, conductive, or radiant heat transfer. The chamber may be heated by electric forced convection, radiation, or quartz tubes. Top and bottom heat may be independently controlled.

Deck ovens are available in various sizes measured by the surface area of the oven cavity floor. Sizes range from approximately 1000 in2 to 2200 in2. Deck ovens are typically stackable to allow for multiple ovens in a single floor space.

Deck oven performance is determined by applying the American Society for Testing and Materials (ASTM) Standard Test Method for Performance of Deck Ovens F1965-99 (2010) [289], which is the industry standard for quantifying the efficiency and performance of commercial deck ovens.

## 1.3 Installation Types and Delivery Mechanisms

The delivery method is Financial Support - Down-Stream Incentive – Deemed and Mid-Stream Programs-Mid-Stream Incentive.

The install type is ROB (Replace-on-Burnout) and New Construction (NEW).

Installation Type Descriptions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Installation Type** | **Savings** | | **Life** | |
| 1st Baseline (BL) | 2nd BL | 1st BL | 2nd BL |
| Replace on Burnout (ROB) | Above Code or Standard | N/A | EUL | N/A |
| New Construction (NEW) | Above Code or Standard | N/A | EUL | N/A |

A delivery mechanism is a delivery method paired with an incentive method. Delivery mechanisms are used by programs to obtain program participation and energy savings.

Delivery Method Descriptions

|  |  |
| --- | --- |
| **Delivery Method** | **Description** |
| Financial Support | The program motivates customers, through financial incentives such as rebates or low interest loans, to implement energy efficient measures or projects. |
| Mid-Stream Programs | *See Mid-Stream Incentive in the Incentive Method Descriptions table.* |
| Partnership | The program implements projects through a partnership between the utility and an institutional, government, or community-based organization. |

Incentive Method Descriptions

|  |  |
| --- | --- |
| **Incentive Method** | **Description** |
| Down-Stream Incentive | The customer installs qualifying energy efficient equipment and submits an incentive application to the utility program. Upon application approval, the utility program pays an incentive to the customer. Such an incentive may be deemed or customized. |
| On-bill Finance – Loan (OBF) | The program offers financing for the cost of an efficient measure as part of the utility bill. This can be an add-on option to an existing program or can serve as an organizing principle for its own program. |
| Mid-Stream Incentive | The program gives a financial incentive to a midstream market actor (distributor, vendor, or retailer) to encourage the promotion of efficient measures. |

## 1.4 Measure Parameters

### 1.4.1 DEER Data

DEER 2017 does not include this measure.

DEER Difference Summary

|  |  |
| --- | --- |
| **DEER Item** | **Used for Work paper?** |
| Modified DEER methodology | No |
| Scaled DEER measure | No |
| DEER Base Case | No |
| DEER Measure Case | No |
| DEER Building Types | Yes |
| DEER Operating Hours | No |
| DEER eQUEST Prototypes | No |
| DEER Version | N/A |
| Reason for Deviation from DEER | DEER does not contain this measure |
| DEER Measure IDs Used | N/A |

**Net-to-Gross Ratio**

The NTG values were obtained using the DEER READI tool v.2.4.8. The relevant NTG values for the measures in this work paper are shown in the table below.

Net-to-Gross Ratio

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **NTGR ID** | **Description** | **Sector** | **BldgType** | **Measure Delivery** | **NTGR** |
| Com-Default>2yrs | All other EEMs with no evaluated NTGR; existing EEM in programs with same delivery mechanism for more than 2 years | Com | Any | Any | 0.6 |

**Spillage Rate**

Spillage rates are not tracked in work papers; they are tracked in an external document which will be supplied to the Commission Staff.

**Installation Rate**

The IR values were obtained using the DEER READI tool v.2.4.8. The relevant IR values for the measures in this work paper are shown in the table below.

Gross Savings and Installation Adjustment

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

**Effective and Remaining Useful Life**

The EUL and RUL value were obtained using the DEER READI tool v.2.4.8 and is illustrated in the table below. DEER defines the RUL as 1/3 of the EUL value. The RUL value is only applicable to the first baseline period for an RET measure with an applicable code baseline. The relevant EUL and RUL values for the measures in this work paper are in the table below.

Effective Useful Life

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EUL ID** | **Description** | **Sector** | **UseCategory** | **EUL (Years)** | **RUL (Years)** |
| Cook-ElecCombOven | Combination Oven - Electric | Com | FoodServ | 12 | N/A |

### 1.4.2 Codes and Standards Analysis

**California Title 24 2016:** Title 24 [496] this measure does not fall under Title 24 of the California Energy Regulations.

**California Title 20 2018:** Title 20 [515] has a category for cooking appliances, but deck ovens are not included.

### ASTM Standards: ASTM Standard Test Method for Performance of Deck Ovens (F1965-99, reapproved 2010) [289] is applicable for estimating deck oven energy use and cooking performance. It was used to estimate the energy consumption of the base case and measure equipment.

**Federal Standards:** These measures do not fall under Federal DOE or EPA Energy Regulations.

Code Summary

|  |  |  |
| --- | --- | --- |
| **Code** | **Reference** | **Effective Dates** |
| ASTM | F1965-99 | January 1, 2010 |

## 1.5 EM&V, Market Potential, and Other Studies – Base Case and Measure Case Information

### 1.5.1 Non-DEER Study Review

#### 1.5.1.1 Standard Industry Practice Evidence

According to a California Energy Commission (CEC) study by Fisher-Nickel in October 2017 (Attachment 5), deck ovens are among the least developed in the oven category. As other oven technologies have replaced older deck ovens, there has been little interest in improving their efficiency on the part of either the manufacturers or the end users.

In the 3rd quarter of 2018 SCE collected information from the leading oven manufactures (Revent Inc. and MPM Food Equipment Group) on the past and projected sales trends for electric deck ovens and various product categories available in the market. Additionally, expected savings estimates for electric deck ovens, as well as cost and efficiency comparisons with the current gas deck ovens was requested from the manufacturers (Attachment 4). For details on the specific questions that SCE asked the manufacturers, please refer to the summary document and emails in Attachment 4.

According to the information exchange between Southern California Edison and Revent Inc., gas heated ovens dominate the current US market with over 90% of sales. This is due to lower purchase cost and lower gas price. Almost all electric deck ovens are imported from Europe and China with authorized distributors in the US. On an average the total US market for electric ovens is between 600 – 800 ovens, of which approximately 30 – 40 units are in California (Attachment 4). The projected trend for electric deck ovens used for baking for Retail and In-store baking customers is observed to be a slow growth area, based on product sales in those industries. Furthermore, as electric deck ovens require high current, having to invest in modifying the existing electrical system to accommodate the added load can be a factor in the limited sales. There are no major studies or data available on energy consumption and estimated savings for smaller deck ovens. With the responses above, it is determined that efficient electric deck ovens are not an industry standard practice (ISP), and that gas deck ovens are expected to continue to dominate the US market (Attachment 4).

Based on the information above, if a customer intended to increase their load with additional ovens, they would likely install gas deck ovens (Attachment 4). As the standard practice, gas deck ovens comprise most of the market sales, and also have a cheaper equipment cost compared to their electric counterparts. Due to the ubiquity of the gas ovens in the market, it is likely that the customer would also already have existing gas ovens, with gas utility and distribution system already installed. Additional installation costs would need to be paid by the customer in many cases where the existing electrical system could not handle the high amperage of the electric deck ovens, creating a further barrier for adoption.

## 1.6 Data Quality and Future Data Needs

N/A

# Section 2. Calculation Methodology

## 2.1 Electric Energy Savings Estimation Methodologies

This work paper uses ASTM F1965-99 (2010) for calculation of energy use and demand, based on testing in an approved and qualified laboratory. In the absence of mandatory regulations for testing commercial deck ovens, there is little incentive on equipment manufacturers to have their baseline equipment tested. Therefore, the ASTM performance parameters for baseline equipment were drawn from a sample of economy grade equipment tested by the PG&E Food Service Technology Center and the Southern California Edison Foodservice Technology Center.

The tested equipment was split into three tiers (Low, Medium, High) based on their efficiency. The average efficiencies of the tiers (rounded to the tens place) are shown below. Refer to Attachment 2, Tested Oven Efficiencies tab for more details.

|  |  |  |
| --- | --- | --- |
| **Tier** | **Average Efficiency (%)** | **Rounded Average Efficiency (%)** |
| Low | 42% | 40% |
| Medium | 57% | 60% |
| High | 73% | 70% |

The rounded average efficiency of the Low Tier was used for the baseline efficiency. The rounded average efficiency of the Medium Tier was used for the measure case efficiency. As the measure case represents only the medium efficiency tier, the calculations presented below use a more conservative approach in terms of oven efficiency and energy usage compared to the actual performance testing data obtained from Food Service Technology Center website.

Baseline ASTM test results for Commercial Deck Ovens

|  |  |  |
| --- | --- | --- |
| **Idle Energy Rate** | **Cooking-Energy Efficiency\*** | **Production Capacity**  **(lb/h)\*** |
| 1,900 W | 40% | 60 |

\*Based on the Heavy-load Pizza test in ASTM F1965.

Measure ASTM test results for Commercial Deck Ovens

|  |  |  |
| --- | --- | --- |
| **Idle Energy Rate** | **Cooking-Energy Efficiency\*** | **Production Capacity**  **(lb/h)\*** |
| 1,300 W | 60% | 60 |

\*Based on the Heavy-load Pizza test in ASTM F1965.

The table below shows the calculation results of the deck oven cost effectiveness.

Commercial Electric Deck Oven Cost Effectiveness Example

|  |  |  |  |
| --- | --- | --- | --- |
| **Performance** | **Calculation Parameters** | **Baseline Model** | **Measure Model** |
| Preheat Time (min) | TP | 30 | 30 |
| Preheat Energy (kWh) | EP | 6.50 | 3.00 |
| Idle Energy Rate (kW) | IDLE RATE | 1.90000 | 1.30000 |
| Heavy Load Cooking Energy Efficiency (%) | EFFICIENCY | 40% | 60% |
| Production Capacity (lbs/hr) | PC | 60 | 60 |
| Operating Hours/Day | TON | 12 | 12 |
| Operating Days/Year |  | 355 | 355 |
| Pounds of Food Cooked per Day | LBFOOD | 200 | 200 |
| ASTM Energy to Food (kWh/lb) | EFOOD | 0.0732 | 0.0732 |
| Daily Energy Consumption (kWh) | EDAY | 58.62 | 38.02 |
| Average Demand (kW) |  | 4.88472 | 3.16806 |
| Estimated Demand Reduction (kW) |  | - | 1.71667 |
| DEER Coincidence Factor |  | - | 0.9 |
| **DEER Peak Demand Reduction (kW)** |  | **-** | **1.54500** |
| Annual Energy Consumption (kWh) |  | 20,808.92 | 13,495.92 |
| **Estimated Energy Savings (kWh/yr)** |  | **-** | **7,313.00** |

***Daily Energy Consumption Calculation and Definitions***

EDAY = (LBFOOD x EFOOD) ÷ EFFICIENCY + [IDLERATE x (TON - LBFOOD/PC – nP x TP/60)]   
+ nP x EP

Where:

|  |  |
| --- | --- |
| EDAY = | Calculated Daily Energy Consumption (kWh/day) |
| LBFOOD = | Estimated Pounds of Food Cooked per Day |
| EFOOD = | ASTM Energy to Food (kWh/lb) = kWh/pound of energy absorbed by food product during cooking based on the ASTM test method |
| EFFICIENCY = | Measured Heavy Load Cooking Energy Efficiency % |
| IDLE RATE = | Measured Idle Energy Rate (kW) |
| TON = | Estimated Operating Hours/Day |
| PC = | Measured Production Capacity (lbs/hr) |
| TP = | Estimated Preheat Time (min) |
| nP = | Estimated Number of preheats/Day |
| EP = | Measured Preheat Energy (kWh) |

**Base Case Calculations:**

|  |  |
| --- | --- |
| EDAYBL | = (200 x 0.0732) ÷ 0.4 + [1.90000 x (12 -200/60 – 1 x 30/60)] + 1 x 6.50 |
|  | = 58.62 kWh |

**Measure Case Calculations:**

|  |  |
| --- | --- |
| EDAYM | = (200 x 0.0732) ÷ 0.6 + [1.30000 x (12 -200/60 – 1 x 30/60)] + 1 x 3.00 |
|  | = 38.02 kWh |

The annual energy savings is found by multiplying the daily energy consumptions by the annual operating days (355) and taking the difference. Note that the ovens are estimated to operate 355 days per year, based on the everyday operation except for the 10 federal holidays.

**Annual Energy Savings:**

Annual Energy Savings = (EDAYBL x 355) - (EDAYM x 355) = (58.62x 355) - (38.02x 355)

Annual Energy Savings = 20,808.92 – 13,495.92

Annual Energy Savings = 7,313.00

This work paper is applicable to all climate zones. See Attachment A1 for all calculations. See Attachment A2 for a complete list of savings.

## 2.2. Demand Reduction Estimation Methodologies

A deck oven’s actual contribution to a building’s peak demand may vary significantly depending on its usage pattern in relation to that of other electric equipment in the facility (operating schedule, appliance on time, etc.). The probability of an appliance drawing its average rate during the period that the building peak is set is significantly higher than for any other input rate for that appliance. Therefore, it has been assumed that the probable contribution to the building’s peak demand is equal to the appliance’s average demand. A coincidence factor of 0.9 from DEER 2005 [26] is applied to demand reduction; see Section 2.1 for final values.

Electric Cooking Measure Savings Estimate



Average Demand = EDAY ÷ TON

Where:

|  |  |
| --- | --- |
| EDAY = | Calculated Daily Energy Consumption (kWh/day) |
| TON = | Estimated Operating Hours/Day |

Estimated Demand Reduction = (Average Demand)BL – (Average Demand)M

DEER Peak Demand Reduction = Estimated Demand Reduction x DEER Coincidence Factor

**Baseline Model Calculations:**

|  |  |
| --- | --- |
| Average DemandBL | = 58.62 ÷ 12 |
|  | = 4.88472 kW |

**Efficient Model Calculations:**

|  |  |
| --- | --- |
| Average DemandM | = 38.02 ÷ 12 |
|  | = 3.16806 kW |

|  |  |
| --- | --- |
| Estimated Demand Reduction | = 4.88472 – 3.16806 |
|  | = 1.71667 kW |
| DEER Peak Demand Reduction | = 1.71667 x 0.9 |
|  | = 1.54500 kW |

Similar to the energy savings, the peak demand reduction is not estimated to vary by climate zone or building type.

# Section 3. Load Shapes

The ideal load shape for net benefits estimates would represent the difference between the base case and measure case. A specific load shape for this food service measure could not be found in the READI v2.4.8 tool. The closest load shapes that are applicable to the measures in this work paper are listed in the table below.

Building Types and Load Shapes

|  |  |  |
| --- | --- | --- |
| **Building Type** | **Load Shape** | **E3 Alternate Building Type** |
| Assembly | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Education - Community College | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Education - Primary School | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Education - Secondary School | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Education - University | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Grocery | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Health/Medical - Hospital | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Health/Medical - Nursing Home | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Lodging - Hotel | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Lodging - Motel | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Office - Large | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Office - Small | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Restaurant - Fast-Food | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Restaurant - Sit-Down | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Retail - Multistory Large | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |
| Retail - Small | DEER:Indoor\_Non-CFL\_Ltg | NON\_RES |

# Section 4. Costs

High-efficiency deck ovens typically have a higher list price than standard efficiency deck ovens. However, high-efficiency designs are often bundled with other features such as all stainless steel construction and high quality components and controls. In addition to lower operating costs, high-efficiency deck ovens exhibit better uniformity and higher production rates that increase their cost-effectiveness.

## 4.1 Base Case Cost

The base costs were obtained through online quotes during the 4th quarter of 2016. Base case costs are calculated by applying an industry-standard 50% discount to manufacturer published list prices. The base costs were verified in the 3rd quarter of 2018 and no major cost updates were observed. Since equipment pricing in food service is closely held information and prices vary widely according to buying volume and other factors, the sources for prices cannot be listed explicitly. Equipment costs are presented with an associated tax rate of 8.75%. It is assumed that the labor cost is the same for the base and measure cases. Installation is assumed to take no more than 30 minutes at a rate of $67.88 based on the Miscellaneous Labor Rate (NR-MISC) from the DEER READI Tool v.2.4.8. As such, the effective installation cost is $33.94. The table below lists the average material cost, labor cost and full cost:

Base Case: Material, Labor and Full Cost

|  |  |  |  |
| --- | --- | --- | --- |
| **Equipment** | **Base Case Material Price** | **Base Case Labor Price** | **Base Case Total Price** |
| Standard-efficiency commercial electric deck oven | $ 3,917.13 | $ 33.94 | $ 3,951.07 |

See Attachment 2, Cost tab for more details.

## 4.2 Measure Case Cost

Measure case costs are costs obtained from online quotes and a price list of an authorized distributor of the manufacturer for each make and model of the high-efficiency deck ovens in the 3rd quarter of 2018. Measure case costs are calculated by applying an industry-standard 50% discount to manufacturer published list prices. As noted in the base case costs, the prices vary widely according to buying volume and other factors and the sources for prices cannot be listed explicitly. Equipment costs are presented with an associated tax rate of 8.75%. It is assumed that the labor cost is the same for the base and measure cases. Installation is assumed to take no more than 30 minutes at a rate of $67.88 based on the Miscellaneous Labor Rate (NR-MISC) from the DEER READI Tool v.2.4.8. As such, the effective installation cost is $33.94. The table below lists the average material cost, labor cost and full cost:

Measure Case: Material, Labor and Full Cost

|  |  |  |  |
| --- | --- | --- | --- |
| **Equipment** | **Measure Case Material Price** | **Measure Case Labor Price** | **Measure Case Total Price** |
| Energy-efficient commercial electric deck oven | $ 7,475.38 | $ 33.94 | $ 7,509.32 |

See Attachment 2, Cost tab for more details.

SCE notes that the standard cost deviation across the sampled equipment is high. However, when normalizing the equipment cost per deck, and calculating costs for a standard two deck oven, the cost deviation between the normalized cost and average cost was minimal. Thus, the average cost calculated above was used.

## 4.3 Full and Incremental Measure Cost

The tables below show the calculation of the full and incremental measure costs:

Full and Incremental Measure Cost Equations

|  |  |  |  |
| --- | --- | --- | --- |
| **Installation Type** | **Incremental Measure Cost** | **Full Measure Cost** | |
| **1st Baseline** | **2nd Baseline** |
| ROB | (MEC + MLC) – (BEC + BLC) | (MEC + MLC) – (BEC + BLC) | N/A |
| NEW/NC |

MEC = Measure Equipment Cost; MLC = Measure Labor Cost

BEC = Base Case Equipment Cost; BLC = Base Case Labor Cost

Full and Incremental Costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Measure** | **Installation Type** | **Incremental Measure Cost** | **Full Measure Cost** | |
| **1st Baseline** | **2nd Baseline** |
| FS-70944 | ROB/NEW | $ 3,558.25 | $ 3,558.25 | N/A |

# Attachments

1. SCE17HC012.1 A1 – Calculation Template.xlsm
2. SCE17HC012.1 A2 – Cost & Savings Calculations.xlsm
3. SCE17HC012.1 A3 – Equipment Cost Data.pdf
4. SCE17HC012.1 A4 – SCE ISP Study Correspondence.xlsx
5. SCE17HC012.1 A5 – CEC Study - Oct 2014.pdf

# Reference

References\_07112018\_101102.xlsx

|  |  |
| --- | --- |
| [26] |  |
| [289] |  |
| [496]  [515] |  |