Documentation of Custom Measure Cost-effectiveness Parameters

# Commercial/Industrial/Agricultural (C/I/A) Calculated Incentives Programs

## Energy Savings Values

The C/I/A Calculated program savings are based on one aggregated forecast of savings and then split to the three components as follows: 85% Commercial (3220), 10% Industrial (3231) and 5% Agricultural (3237). The savings at the measure category level were based on goals for the entire program spread to the individual categories or measure types based on historical data and program manager judgment. The forecast was not done at the project level as the incentive rates are offered at the kWh/therm level.

 In the DR at page 2, ED asks SDG&E to provide *“…..installation counts that represent the number of project/measure installations expected each year not the number of kWh or therms expected to be claimed each year.”*

Since the forecast was not developed at a project level SDG&E’s response can only be hypothetical based on average values of savings per project. To prepare this response, SDG&E calculated the simple average savings per measure category from its 2011 Annual Report data that included the “Bid Program” that is not being implemented in 2013-13. Then the savings from the C/I/A we programs were aggregated to one set of values by measure category for the two year period. The aggregated savings were divided by the historical average savings per project in each measure category to yield a value. This value is SDG&E’s best answer to the DR inquiry into the estimated number of project/measure installations. Since the values are for a two year period, SDG&E spread the aggregated values to 2013 and 2014 using a 51/49% split based on the respective year’s goal.

Given the diversity of projects and the wide variance in the savings per project, SDG&E does not consider these values part of its forecast. They are provided sole for the purpose of responding to this DR. These values are listed below in Table 1.

Table 1



For measures that have dual baseline, the percentage of second period savings relative to the first year savings is documented in a spreadsheet entitled “DualBaselineFactors.xls”. In general, DEER values and/or approved work paper ratios were followed.

For the purposes of forecasting KW and Therm values associated with electric measures, SDG&E used historical KW/kWh and therm/kWh values. These values are provided in Table 2 below.

Table 2



## Measure Costs (full & incremental)

SDG&E used historical customer reported cost as the basis for measure cost when possible/available. SDG&E worked with the other IOUs to develop a common methodology to use historical project costs to estimate a full and incremental measure costs. To be consistent, SDG&E tried to use either SCE’s or PG&E’s values when SDG&E’s estimates seemed significantly different from the other IOUs. For gas measures, SDG&E coordinated with SoCalGas. The values can be found in the Excel workbook entitled “SDG&E Measure Cost IMC Data Summary.xls”

## Measure Life (EUL & RUL Values)

SDG&E used the DEER EUL values and methodology posted on the DEEResorces.com website. For measures with dual baseline, the RUL value was computed at 1/3rd of the EUL. The exception is linear fluorescent lighting measures where the RUL was computed (20,000 hours/ 3180 hours)/3 = 2.096 years. The 3180 hours value is from the “Com” building type, for the “IOU” climate zone, which are weighted averages.

## Net to Gross (NTG)

SDG&E used the NTG values posted DEEResorces.com website with the exception of the NTG values for custom gas measures that where provided in D.12-05-015.

# Savings by Design (Nonresidential New Construction)

## Energy Savings Values

The Savings by Design program’s (SBD) energy savings are developed in a considerably different way than the C/I/A calculated program. The “measures” or “measure category” are more modeling output groupings from the building simulation models than deemed measures. In general, each project is unique as the goal is to work with the design teams to change the design from a code design to a design that exceeds code by varying percentages. Projects are at both the whole building level or at the systems levels. The forecast was based on scaled values of historical savings by measure

In the DR at page 2, ED asks SDG&E to provide *“…..installation counts that represent the number of project/measure installations expected each year not the number of kWh or therms expected to be claimed each year.”*

Since the forecast was not developed at a project level SDG&E’s response can only be hypothetical based on average values of savings per project. To prepare this response, SDG&E calculated the simple average savings per electric or gas measure category from its 2011 Annual Report data. These values are provided in Table 3 below.

 Table 3

## Measure Costs (incremental)

The measure cost for the SBD program is a rather difficult parameter to quantify for a number of reasons. 1) Since there a number of ways to exceed the building standard the cost of doing that can vary considerably based on the original design; 2) The cost of exceeding the building standard is not expected to be linear - for example increasing the SEER of an air conditioner has a cost that increases exponentially; 3) With re-design, there are often cost savings as well as additional costs; and 4) Since the increases with the percentage over the building standard, SDG&E needed to use a value of measure cost that is a not to exceed amount rather than a fixed value. SDG&E started with costs based on work by Equipoise Consulting in October 2000. The values were altered to accommodate variable incentives and changing costs. SDG&E believes that this is an area that needs additional study and analysis. In February of 2008, The Heschong Mahone Group issued a white paper entitled “Incremental Measure Cost in New Construction Programs”. While this is a few years old, SDG&E believes that this is a good starting place for a study to develop incremental cost parameters. Moving forward, SDG&E plans to work with the Energy Division and other IOUs to develop a methodology to determine estimated incremental costs for the SBD program.

## Measure Life (EUL & RUL Values)

SDG&E used the DEER EUL values posted on the DEEResorces.com website. Since SBD has broad categories, SDG&E used conservative or most common/applicable values from the list for the particular category. For example, the “Whole Building” categories, SDG&E used 15 years, while most of the bigger saving measures have EULs of 20 years.

## Net to Gross (NTG)

SDG&E used the NTG values posted DEEResorces.com website.

# California Advanced Homes

## Energy Savings Values

The California Advanced Homes (CAH) program’s energy savings were developed in a similar manner as the SBD program. The forecast was done by scaling the 2010-2011 results to meet the goal for the program. The “measures” or “measure category” are more modeling output groupings from the building simulation models than measures in a deemed program. In general, each project is unique as the goal is to work with the design teams to change the design from a code design to a design that exceeds code by varying percentages.

In the DR at page 2, ED asks SDG&E to provide *“…..installation counts that represent the number of project/measure installations expected each year not the number of kWh or therms expected to be claimed each year.”*

Since the forecast was not developed at a project level SDG&E’s response can only be hypothetical based on average values of savings per project. To prepare this response, SDG&E calculated the simple average savings per electric or gas measure category from its 2011 Annual Report data. These values are provided in Table 4 below.

Table 4



## Measure Costs (incremental)

The measure cost for the CAH program is a rather difficult parameter to quantify for a number of reasons. 1) Since there a number of ways to exceed the building standard the cost of doing that can vary considerably based on the original design; 2) The cost of exceeding the building standard is not expected to be linear - for example increasing the SEER of an air conditioner has a cost that increases exponentially; 3) With re-design, there are often cost savings as well as additional costs; and 4) Since the increases with the percentage over the building standard, SDG&E needed to use a value of measure cost that is a not to exceed amount rather than a fixed value. Moving forward, SDG&E plans to work with the Energy Division and other IOUs to develop a methodology to determine estimated incremental costs for the CAH program.

## Measure Life (EUL & RUL Values)

SDG&E used the DEER EUL values posted on the DEEResorces.com website. Since CAH program has broad categories, SDG&E used conservative or most common/applicable values from the list for the particular category. For example, the “Space Heating” categories, SDG&E used 18 years, while most of the bigger saving measures have EULs of 20 years.

## Net to Gross (NTG)

SDG&E used the NTG values posted DEEResorces.com website. Since the CAH program measure categories encompass a large number of DEER measure categories, it is difficult to determine the appropriate NTG value. SDG&E believes that the correct value should be a weighted average a set of DEER NTG values somewhere in the middle of the value for EUC and the default. When populating the E3 dataset, the link in the forecasting system grabbed the wrong value and selected a value of 0.36 for room A/c units. SDG&E intended to select a value of 0.55 as a conservative value for the forecast filing. SDG&E will work with Energy Division to determine the appropriate value to use.

# Energy Upgrade California

## Energy Savings Values

Energy Upgrade California (EUC) program’s energy savings were developed based on median values for the completed homes in the 2010-11 program. The individual site level savings are based on model simulations. From the 200 homes that in the program database, the median kWh, KW and therm savings are 625 kWh, 0.50 KW and 143 therms.

## Measure Costs

The program data list self-reported project cost with a mean and median of $12,234 and $10,120, respectively. The project cost data has a significant amount of variance. The standard deviation of the data equals $7,729. In addition the median incentive from the EUC program was $2,000. Given the above, SDG&E believed that the mean and median project cost values are not a reasonable representation of the cost of the measures associated with the savings. SDG&E used a value of $4,000 as the measures cost. This value was selected because it seemed more reasonable that a residential customer would pay about ½ of the cost of the energy saving measures.

## Measure Life (EUL & RUL Values)

SDG&E used a measure life of 20 years as the measures in the EUC program are long-lived measures such as insulation, furnaces, etc.

## Net to Gross (NTG)

SDG&E used the NTG value posted DEEResorces.com website for EUC.