San Diego Gas & Electric

# Residential Rate OIR:

# Rate Design and Bill Impact Analysis Model

## User Guide

December 21st, 2012

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# Rate Design and Bill Impact Analysis Model

## User Guide

**SDGE**

A Sempra Energy utility

San Diego Gas and Electric is providing this model for the limited purpose of examining alternative proposed residential rate designs as part of CPUC proceeding R.12-06-013. San Diego Gas and Electric believes this model to be correct to the best of its knowledge as of December 21, 2012, but does not provide any warranty or guarantees regarding its use or ability to analyze all potential rate design scenarios. Parties are, of course, free to develop their own analyses.

## Overview

The Electric Rate Design Mod el provides the user with a tool that allows them to design and evaluate different residential rate structures.

The model has the following assumptions:

- All rate and customer bill impacts are compared to San Diego Gas & Elec tric's (SDG&E) current rates and illustrative cost-based rate[1] structure.
- Revenue neutral with respect to current rates[2]
- Current authorized revenue allocations
- Determinants consistent with those in SDG&E's pending General Rate Case (GRC) Phase II.

The resulting rates are presented as Total Rates, but t he analysis focuses on the cost drivers and rate design structures of three rate components; Distribution, Commodity, and Total Rate Adjustment Component (TRAC). All other rate components are equal to current authorized [3]. T he rate design options follow the cost based structure of the identified rate components as discussed below . However, TRAC is a rate component strictly responsible for meeting

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[1] Developed in SDG&E GRC Phase II Application 11-10-002 and adjusted for revenue neutrality
[2] Effective September 1$^{st}$, 2012 per Advice Letter 2396-E
[3] Other components include; Transmission, Public Purpose Program (PPP) Charges, Nuclear Decommissioning (ND) Charge, Ongoing Competition Transition Charges (CTC) and Reliability Services (RS).

AB1X and SB695 legislative compliance and has no "cost-based" structure. In addition the user may select alternative structures for California Alternate Rates for Energy (CARE) to providing assistance to low income customers.

Specifically, the user is able to choose the following:

1. **Distribution:**
    a. Customer Cost Recovery
        i. Variation of Basic Service Fee (BSF)[4] and/or recovery through energy rates[5]
    b. Demand Cost Recovery
        i. Non-Coincident Demand (NCD)[6], Fixed Charge Demand Adder[7], and/or recovery through energy rates

2. **Commodity:**
    a. Capacity Cost Recovery
        i. Variation of On-Peak Demand[8] and/or recovery though energy rates

    b. Energy Cost Recovery
        i. Time-of-Use (TOU) rates[9] or flat rate by season[10]

3. **TRAC:**
    a. Tier Structure through which through which subsidies ensuring compliance with AB1X/SB695 are applied and recovered for SDG&E.

4. **California Alternate Rates for Energy (CARE)[11]**
    a. CARE rates and discount

This guide goes into detail to show the user how to select different rate options of cost recovery and includes screenshot examples for each of the components mentioned above. Included throughout the presentation are four rate design scenarios. At the end of each section the guide describes what selections need to be made for each scenario. Section V of the guide has complete step-by-step instructions for each of the four scenarios and the resulting output in

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[4] Customer pays a fixed $/month
[5] Customer pays for cost recovery through a cent/kWh energy charge.
[6] Customer pays a dollar amount per NCD-kW; maximum demand during the billing period regardless of TOU period.
[7] Customer pays fixed $/month added to Basic Service Fee to recover distribution demand costs.
[8] Customer pays a dollar amount per Peak-kW; maximum demand measured during the peak period.
[9] Different rate levels depending upon the time period in which energy is used.
[10] Customer pays a flat commodity rate (cents/kWh) only different between summer and winter.
[11] Alternative mechanism for providing assistance for low-income customers.

shown for scenario four. The goal is for any user to be able to design and evaluate residential rate structures using the model by following the instructions and examples in this guide.

The Four scenarios are identified as:

| | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 |
|---|---|---|---|---|
| **Customer Charge** | $20/month | $10/month | $5/month | $5/month |
| **Demand Differentiated Basic Service Fee (BSF) Adder** | N/A | N/A | 2 BSF levels: $5/month for customers with max annual demand <3kW; $10/month for 3kW or above | 2 BSF levels: $5/month for customers with max annual demand <3kW; $10/month for 3kW or above |
| **TOU** | None - Flat | 150% OP/OF | None - Flat | 150% OP/OF |
| **Tiers** | None | None | 2 tiers with 20% differential | None |
| **CARE** | 20% Discount | 20% Discount | 20% Discount | 20% Discount |

Step-by-step instructions for all scenarios with expanded output for scenario four are located in the Appendix.

# Marginal Costs

The user is able to input marginal distribution and commodity costs to create a "User Inputted cost-based rate" used for output comparisons in the model.

# I. Distribution Costs
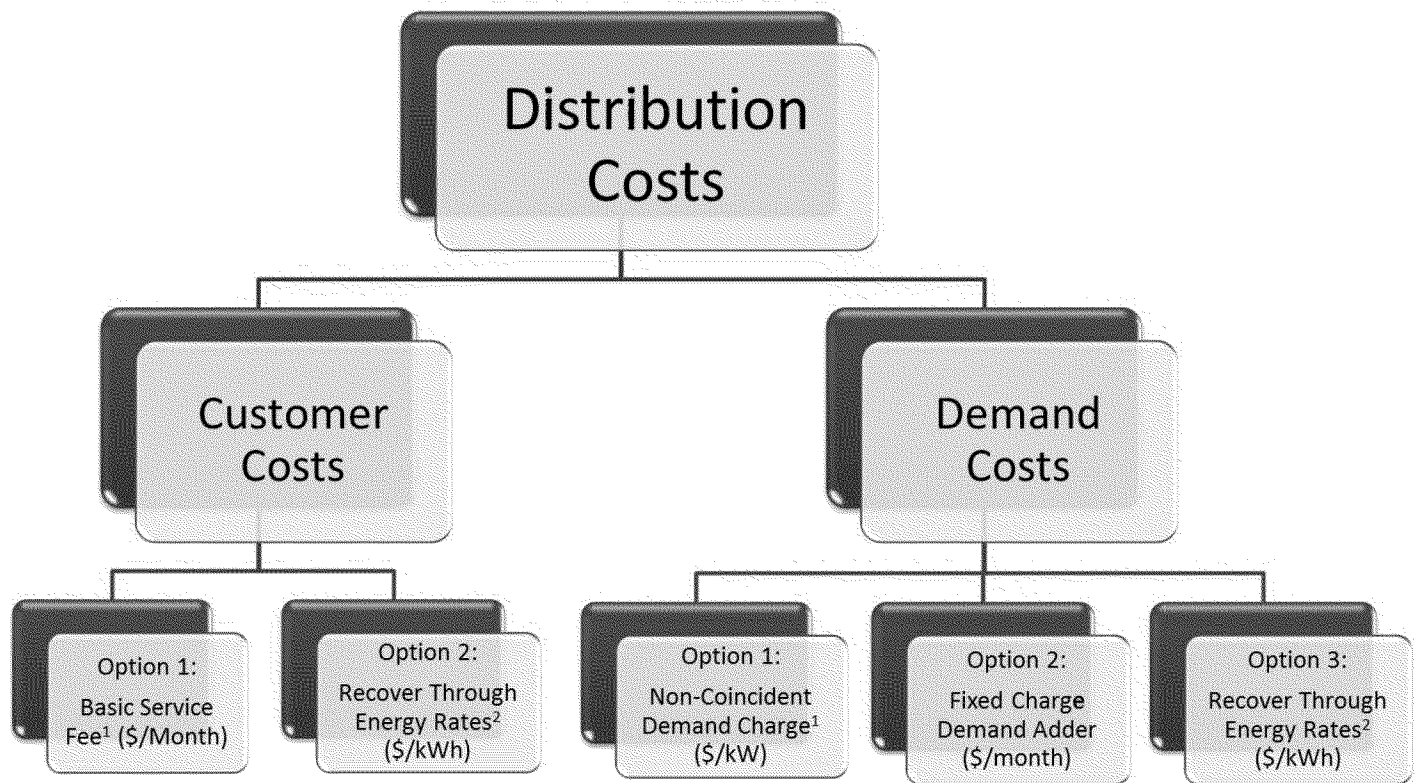
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                        ┌─────────────────────────┐
                        │   Distribution          │
                        │   Costs                 │
                        └─────────────────────────┘
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          ┌──────────────────┐          ┌──────────────────┐
          │   Customer       │          │   Demand         │
          │   Costs          │          │   Costs          │
          └──────────────────┘          └──────────────────┘
            /          \              /          |          \
```

| Option 1: Basic Service Fee[1] ($/Month) | Option 2: Recover Through Energy Rates[2] ($/kWh) | Option 1: Non-Coincident Demand Charge[1] ($/kW) | Option 2: Fixed Charge Demand Adder ($/month) | Option 3: Recover Through Energy Rates[2] ($/kWh) |

[1] Cost-Based Structure
[2] Current Structure

The above chart illustrates the two parts of identified distribution costs, Customer and Demand, and the rate design options available, noting the cost-based recovery structure.  Any Distribution Customer Costs not collected in the Basic Service Fee (BSF) will be collected through a flat energy rate as an equal cent per kWh.   Similarly, any Distribution Demand Costs not recovered in a Non-Coincident Demand Charge or Fixed Charge Demand Adder will be collected as an equal cent per kWh.

**A.     Distribution Customer costs** – there are 2 non-exclusive rate design options available for cost recovery:

1. **Basic Service Fee** – All customers pay a dollar per month charge.
   a. For cost based recovery of distribution customer costs. This can be partial or full recovery of distribution customer costs.
   b. When no BSF is selected, the minimum bill option occurs as the default.
2. **Recover through energy rates** – All Distribution Customer Costs are collected as an equal cent per kWh ($/kWh).
   a. As stated above, depending on the Basic Service Fee level, this could be partial or full recovery of distribution customer costs.
   b. If this option is selected, instructions will appear to enter a minimum bill $ per day. A minimum bill cannot be entered if a basic service fee is selected.

**B.     Distribution Demand costs** – there are 3 rate design options available; Options 1 and 2 are mutually exclusive but both are non-exclusive with option 3:

1. **Non-Coincident Demand Charge** – For cost based recovery of distribution demand costs.
   a. Charge based on the customer's maximum annual demand at any time during the day ($/kW).

2. **Fixed Charge Demand Adder** – Hybrid option for cost based recovery of distribution demand costs only available if a Basic Service Fee is selected for Distribution Customer Cost recovery.
   a. A fixed dollar per month dependent on the customer's maximum annual demand. Up to 4 levels can be designated (0-3 kW, 3-7 kW, 7-13 kW, and over 13 kW). This adder is presented in the Basic Service Fee.

3. **Recovery through energy rates** - All Distribution Demand Costs are collected as an equal cent per kWh ($/kWh).
   a. As stated above, depending on NCD and Fixed Charge Demand Adder, this could be partial or full recovery of distribution customer costs.

*The below image is a screenshot from the model of the distribution portion of the inputs described above.*



Drop-down menu gives cost recovery options for each cost component

Cents/kWh not collected by cost-based structure that flow to energy rates

Dependent on selections from drop-down menus, instructions appear highlighted in yellow.

## C.   Distribution Rate Design Scenario Examples – Instructions for Distribution portion only.

### Scenario One:   $20 Basic Service Fee
1. Select "Basic Service Fee" from Customer Cost dropdown menu
2. Enter $20 for Basic Service Fee Amount
3. Select "Recover through energy rates" for Distribution Demand

### Scenario Two:   $10 Basic Service Fee
1. Select "Basic Service Fee" from Customer Cost dropdown menu
2. Enter $10 for Basic Service Fee Amount
3. Select "Recover through energy rates" for Distribution Demand

### Scenario Three:  $5 Basic Service Fee, Fixed Charge Demand Adder $5 below 3 kW and $10 above 3 kW
1. Select "Basic Service Fee" from Customer Cost dropdown menu
2. Enter $5 for Basic Service Fee Amount
3. Select "Fixed Charge Demand Adder" for Distribution Demand
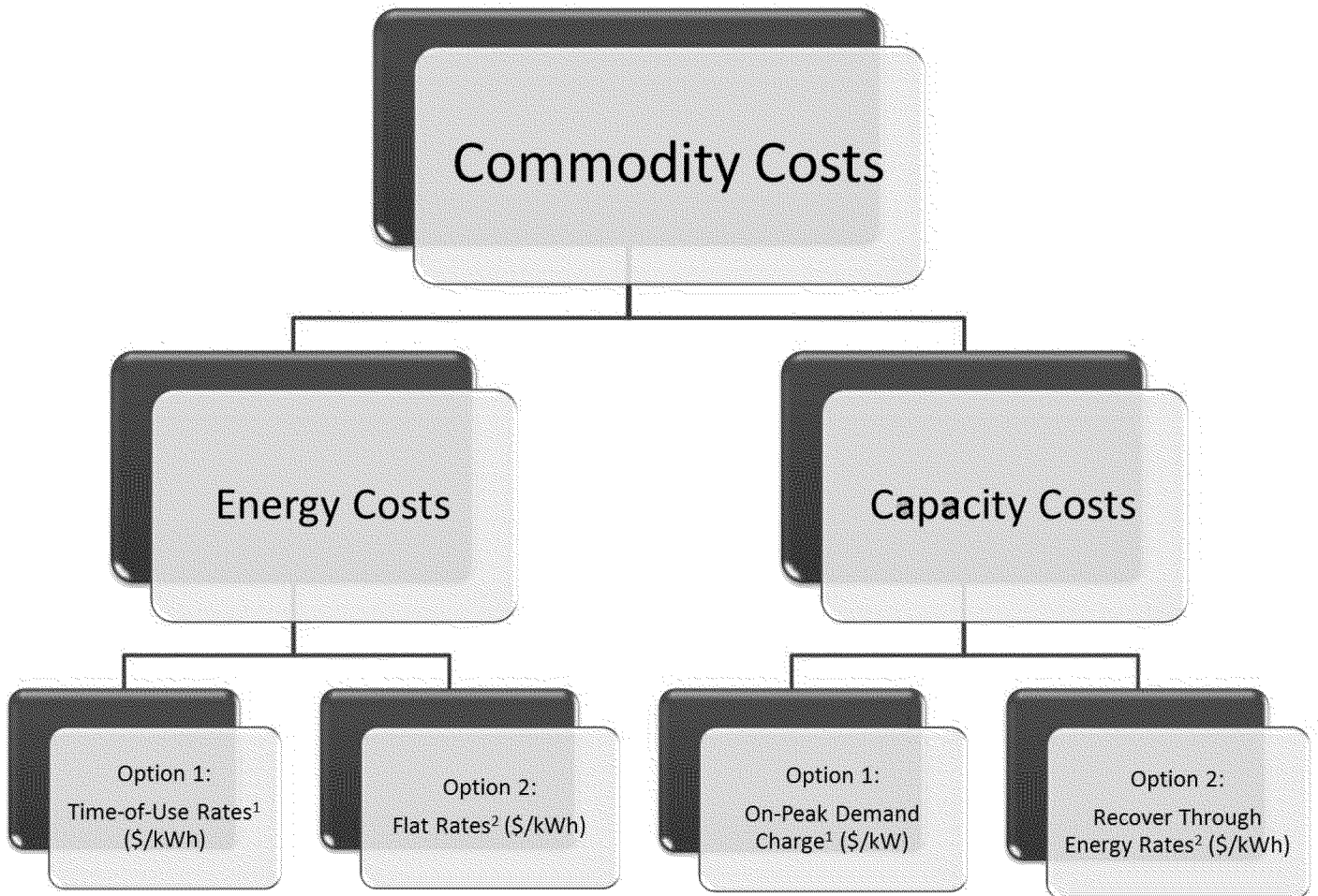4. Enter $5 for 0-3 kW Adder
5. Enter $10 for 3-7 kW Adder, 7-13 kW Adder and >13 kW Adder

### Scenario Four:   $5 Basic Service Fee, Fixed Charge Demand Adder $5 below 3 kW and $10 above 3 kW
*Same as Scenario Three Distribution portion above.*

## II. Commodity Costs

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                    │                         │
                    │    Commodity Costs      │
                    │                         │
                    └─────────────────────────┘
                    ┌───────────┴───────────┐
          ┌──────────────────┐      ┌──────────────────┐
          │                  │      │                  │
          │   Energy Costs   │      │  Capacity Costs  │
          │                  │      │                  │
          └──────────────────┘      └──────────────────┘
            ┌───────┴───────┐         ┌───────┴───────┐
    ┌──────────┐   ┌──────────┐  ┌──────────┐  ┌──────────┐
    │Option 1: │   │Option 2: │  │Option 1: │  │Option 2: │
    │Time-of-Use│  │Flat Rates²│ │On-Peak    │ │Recover    │
    │Rates¹     │  │($/kWh)    │ │Demand     │ │Through    │
    │($/kWh)    │  │           │ │Charge¹    │ │Energy     │
    │           │  │           │ │($/kW)     │ │Rates²     │
    └──────────┘   └──────────┘  └──────────┘  └──────────┘
```

[1] Cost-Based Structure
[2] Current Structure

The above chart illustrates the two parts of identified co mmodity costs; Energy and Capacity, and the rate design options available, noting the cost-based recovery structure. First the user selects commodity capacity rate design for cost recovery. If recover y through energy rates is chosen, then all capacity costs will be colle cted in summer commodity energy rates. Any Commodity Capacity Costs not collected in an On -Peak Demand charge are collected through summer energy rates.

A. **Commodity Capacity costs** – there are 2 non-exclusive rate design options available:

1. **On-Peak Demand Charge** – Charge based on the customer's maximum demand measured during the peak period. [12]

2. **Recover through energy rates** – All Commodity Capacity Costs are collected as a summer energy rate dependent upon the rate structure selected below. For example, if a Flat Energy rate is chosen, the capacity costs will be an equal cent per kWh for summer energy. If Time-of-Use energy is chosen then the commodity capacity costs will be recovered in summer energy usage dependent upon on-peak/off-peak ratio desired.

B. **Commodity Energy costs** – there are 2 mutually-exclusive rate design options available:

1. **Time-of-Use Rates** – Energy costs are recovered per kWh with different rates by time of use (On-Peak, Semi-Peak, and Off-Peak) and season[13].
   a. The user is able to select the ratio of On-Peak to Off-Peak rates and ratio of Semi-Peak to Off-Peak by season. For example, an On/Off ratio of 2 and Semi/Off ratio of 1.5 means the On-Peak commodity rate is double the Off-Peak commodity rate and the Semi-Peak rate is 50% higher than the Off-Peak rate. An error message will appear if the ratios do not meet the criteria of an on-peak rate higher than semi-peak rate and an off-peak rate lower than a semi-peak rate.

2. **Flat Rate by Season** – Energy costs are recovered per kWh, differing only between summer and winter.

C. **Seasonal Rate Adjustment – Percent Difference of Seasonal EECC** – Percent Difference of Seasonal EECC rate.

There will be a seasonal difference in the summer and winter EECC rate. The user is able to input a % of that difference to increase or decrease the seasonal difference in total rates. For example, if the summer commodity rate is 5 cents higher than the winter commodity rate, to lessen the differential the user could enter 75% which would set the different at 5 x 75% = 3.75 cents. This is adjusted through the TRAC mechanism.

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[12] Currently residential commodity capacity is summer only.
[13] SDG&E Residential Time-of-Use periods:

|  | Summer (May-Oct) | Winter (Nov-April) |
|---|---|---|
| On-Peak | 11am-6pm | 5pm-8pm |
| Semi-Peak | 6am-11am & 6pm-10pm | 6am-5pm & 8pm-10pm |
| Off-Peak | Other hours + Holidays and Weekends | Other hours + Holidays and Weekends |

*The below image is a screenshot from the model of the commodity portion of the inputs described above.*



**Commodity:**

| Capacity: | Recover through energy rates ▼ | | $7.07/kW/On-Peak Summer Demand |
| | Select One | | |
| | On-Peak Summer Demand Charge | | **Residual Capacity Cost per kWh (Summer):** |
| | Recover through energy rates | | 3.82 Cents per kWh |
| Energy: | Time-of-Use ▼ | | |
| | Select One | | *Time-of-Use* |
| | | | |
| | Flat Rate by Season | ←- Enter Ratio On-Peak/Off-Peak | *Example: Ratio of 2.0 On/Off and 1.5 Semi/Off* |
| Summer On/Off Relationship: | | | *would yield On Peak=20 Semi-Peak=15 and Off-* |
| Summer Semi/Off Relationship: | 1.5 | ←- Enter Ratio Semi-Peak/Off-Peak | *Peak=10* |
| Winter On/Off Relationship: | 2.0 | ←- Enter Ratio On-Peak/Off-Peak | |
| Winter Semi/Off Relationship: | 1.5 | ←- Enter Ratio Semi-Peak/Off-Peak | |
| | | | |
| Seasonal Rate Adjustment - Percent Difference of Seasonal EECC: | 75% | ←- Enter % | Seasonal Difference 5.04 Cents/kWh x 0.75 = |
| | | | 3.78 Cents/kWh |

**Drop-down menu gives cost recovery options for each cost component**

**Dependent on selections from drop-down menus, instructions appear highlighted in yellow.**

**Cents/kWh not collected by cost-based structure that flow to energy rates. Also, examples of how inputs made affect the rates.**

D.   **Commodity Rate Design Scenario Examples** – Instructions for Commodity portion only.

### Scenario One:   Flat Energy Rate
1. Select "Recover through energy rates" from Capacity dropdown menu
2. Select Flat Rate by Season from Energy dropdown menu
3. Input 75% for Seasonal Rate Adjustment *(not specified in scenario).*

### Scenario Two:   Time of Use Energy Rate with 150% On-Peak to Off-Peak relationship
1. Select "Recover through energy rates" from Capacity dropdown menu
2. Select "Time-of-Use" from Energy dropdown menu
3. Enter 1.5 for Summer On/Off Relationship and 1.5 for Winter On/Off Relationship
4. Enter 1.25 for Summer On/Off Relationship and 1.25 for Winter Semi/Off Relationship *(not specified in scenario).*
5. Input 75% for Seasonal Rate Adjustment *(not specified in scenario).*

### Scenario Three:  Flat Energy Rate
*Same as Scenario One Commodity portion above.*

### Scenario Four:   Time of Use Energy Rate with 150% On-Peak to Off-Peak relationship
*Same as Scenario Two Commodity portion above.*

# III.   Total Rate Adjustment Component (TRAC)

The TRAC component   is the mechanisms that differentiates SDG&E's residential tiered rates and        ensures regulatory compliance with AB1X/SB695 .  Tier 1 and Tier 2 TRAC credit  s ensure total Tier 1 and Tier 2 rates meet the constraints under AX1X/SB695.  These credits are then recovered through charges applied to upper tier TRAC rates.      In the event Time-of-Use commodity energy is selected, tiers will be reflected as baseline adjustments.  If a flat commodity energy rates are selected, tiers will be reflected in the total rate   , consistent with the current rate structure .  The user first selects how many Tiers are desired from the drop down menu highlighted in yellow, in Column C.    If 2, 3 or 4 Tiers are chosen then additional instructions with appear, as explained below.

A.     **Number of Tiers** – there are 4 mutually exclusive rate design options available:

1. **Flat - No** tier differentials.  This would not be in compliance with AB1X/SB695 and require legislative change.

2. **2 Tiers** – Reflects a baseline/non-baseline option with the two tiers differentiated by a consistent percent increase of Tier 2 rates over Tier 1 rates.  This would change both Tier 1 and Tier 2 rates thus it would not be in compliance with AB1X/SB695 and require legislative change.

3. **3 Tiers** – Three tiers with option to keep Tier 1 and Tier 2 in compliance with AB1X/SB695.  Tier 3 would apply to usage greater than 130% of Baseline.

4. **4 Tiers** – Four tiers with option to keep Tier 1 and Tier 2 in compliance with AB1X/SB695.

B.     **Tier Differential** – User can choose to ignore current AB1X/SB695 requirements and enter tier differentials in the form of cents/kWh or percent difference.

If 2 or more Tiers are selected, the user is instructed to decide to maintain current Tier 1 and Tier 2 references or ignore AB1X/SB695.  If "No" is inputted, the user is instructed to decide to have % or cent tier differentials.  The user is then instructed to input the corresponding differentials depending on number of Tiers and inputs as described.

C.     **Percent increase to current Tier 1 and Tier 2 rates** – Option if Tier 1 and 2 references are maintained.

Instructions will appear to enter a percent increase to Tiers 1 and 2.  For example if 3% is selected, the current Tier 1 and Tier 2 rates will be increased by 3%.  This option is available if 3 or more Tiers are chosen and the user selected to maintain current Tier 1 and Tier 2 references.

*The below image is a screenshot from the model of the TRAC portion of the inputs described above.*

**Total Rate Adjustment Component (TRAC):**

| | | |
|---|---|---|
| Number of Tiers: | 4 | <-- Enter 2, 3, 4 or Flat |
| Maintain Current Tier 1 and Tier 2 References: | No | <-- Enter 'Yes' or 'No' |
| % Differential or Cent/kWh Differential Between Tiers: | Cent | <-- Enter 'Percent' or 'Cent' |
| Tier 1 to Tier 2 Differential (Cents/kWh): | | <-- Enter cents/kWh |
| Tier 2 to Tier 3 Differential (Cents/kWh): | | <-- Enter cents/kWh |
| Tier 3 to Tier 4 Differential (Cents/kWh): | | <-- Enter cents/kWh |
| % Increase to current Tier 1 and Tier 2 Rates: | | <-- Enter % increase |
| Tier 1 to Tier 2 Differential (%): | | <-- Enter % Difference T1 to T2 |
| Tier 2 to Tier 3 Differential (%): | | <-- Enter % Difference T2 to T3 |
| Tier 3 to Tier 4 Differential (%): | | <-- Enter % Difference T3 to T4 |
| *Not in compliance with SB695 Tier 1 and Tier 2 Levels | | |

Dependent on selections, instructions
appear highlighted in yellow.

## D. TRAC Rate Design Scenario Examples – Instructions for TRAC portion only.

**Scenario One:   No Tiers (Flat)**
1. Enter "Flat" for Number of Tiers

**Scenario Two:   No Tiers (Flat)**
> *Same as Scenario One TRAC portion above.*

**Scenario Three:  2-Tiers with 20% differential**
1. Enter 2 for Number of Tiers
2. Enter "Percent" for % Differential or Cent/kWh Differential Between Tiers
3. Enter 20% for % Difference Tier 1 to Tier 2

**Scenario Four:   No Tiers (Flat)**
> *Same as Scenario One TRAC portion above.*

## IV.    California Alternate Rates for Energy (CARE)

The following are alternative options for providing additional assistance for low income customers.  Currently, in ad dition to the benefits of a 20% line item discount     , exemption from the Department of W    ater Resources Bond Charge,  an exemption from the CARE surcharge   , CARE customers also receive rate design benefits which result in a reference rate lower than the non-CARE rate prior to these other benefits.

A.    CARE Discount (% off total bill) – Select percent line-item discount for CARE customers.

CARE customers receive a percent off their total electric bill.  Currently, the discount is 20%.  The user can enter any percentage.  The user has the option to enter different CARE discount percentages by Tier depending on selections made.  This is only available if no $/kW or $/month charges are selected and only with non-TOU rates.  The user is able to input a % for the number of chosen tiers in the TRAC section.

B.    CARE Tier 1 and Tier 2 Rates equal to non-CARE rates – Available for any number of Tiers selected.

CARE customers currently receive lower rates than non-CARE customers.  Enter Yes to set CARE and non-CARE Tier 1 and Tier 2 rates equal or No to maintain the current relationship.

C.    CARE Tier 3 Rate equal to non-CARE rate – Available only if 3 or 4 Tiers are selected.

CARE customers currently receive lower rates than non-CARE customers.  Enter Yes to set CARE and non-CARE Tier 3 rates equal or No to maintain the current relationship.

D.    CARE Discount ($/month) – Select dollar discount per month for CARE customers.

Enter a dollar amount to be taken off of a CARE customer's monthly bill.  This can be in place of a percent total bill discount but not added to a percent total bill discount.

E.    Revenue shift to non-Residential classes from selections

Difference between current CARE discount revenue allocations and what would result from the selected rate structure.  The amount shown is the total revenue difference minus the residential allocation.

*The below image is a screenshot from the model of the CARE portion of the inputs described above.*

**California Alternate Rates for Energy (CARE):**

| CARE Discount: | Percent Discount | | Note: For Time-of-Use rates only one percentage |
|---|---|---|---|
| Tier 1 CARE Discount % as line item discount: | 20% | <-- Enter % | discount will apply. For Tiered rates user can |
| Tier 2 CARE Discount % as line item discount: | 20% | <-- Enter % | differentiate % discount by Tier if no per kW or |
| Tier 3 CARE Discount % as line item discount: | 20% | <-- Enter % | per month charges are selected. If a Fixed Charge |
| Tier 4 CARE Discount % as line item discount: | 20% | <-- Enter % | Discount is selected only one dollar amount can |
| CARE Discount Fixed $/month discount: | $10.00 | <-- Enter $/month | be entered. |
| CARE Tier 1 and Tier 2 Rate equal non-CARE?: | No | <-- Enter 'Yes' or 'No' | |
| CARE Tier 3 Rate equal non-CARE?: | No | <-- Enter 'Yes' or 'No' | |
| Estimate of revenue shift from to non-Residential classes: | $ 0.6 Million | | |

Input a Line Item Discount for CARE customers ($/month).

Ability to set CARE rates equal to non-CARE rates. CARE Tier 3 option only appears if 3 or 4 Tiers are selected.

Ability to select CARE Discount %.

## F.     CARE Rate Design Scenario Examples – Instructions for CARE portion only.

**Scenario One:    20% Discount**
1. Select "Percent Discount" for CARE Discount
2. Enter 20% for "CARE Discount % as line item discount:
3. Enter "No" for CARE Tier 1 and Tier 2 Rates equal non-CARE?

**Scenario Two:    No Tiers (Flat)**
   *Same as Scenario One CARE portion above.*

**Scenario Three:  2-Tiers with 20% differential**
   *Same as Scenario One CARE portion above.*

**Scenario Four:    No Tiers (Flat)**
   *Same as Scenario One CARE portion above.*

# V.    Appendix A: Scenario Instructions

## 1.    Scenario One: Basic Service Fee (Dist.)

**Distribution**

**Step 1:  Distribution Customer Costs: $20 per month Basic Service Fee**

Customer Cost dropdown menu – select "Basic Service Fee".  Instructions appear to enter a $/month next to Basic Service Fee Amount; enter $20.

**Step 2:  Distribution Demand Costs: Recovered through energy rates**

Distribution Demand dropdown menu – select "Recover through energy rates"

**Commodity**

**Step 3:  Commodity Demand Costs: Recovered through energy rates**

Capacity dropdown menu – select "Recover through energy rates"

**Step 4:  Commodity Energy Costs: Flat rates by season**

Energy dropdown menu – select "Flat Rate by Season"

**Step 5: Seasonal Rate Adjustment**

Enter 75% (not specified in scenario)

**TRAC**

**Step 6:  TRAC: Flat (no tiers)**

Next to Number of Tiers type "Flat"

**CARE**

**Step 7:  CARE: 20% Discount; Not set equal to non-CARE rates**

Select "Percent Discount" from the dropdown menu.  Next to CARE Discount % as line item discount: enter 20%, next to CARE Tier 1 and Tier 2 Rate equal non-CARE?: Enter No.

**Execute**

***Step 8:  Click "Calculate Selected Rate Structure"*** – The box below should be highlighted in green and read "Revenue Neutrality Confirmed".

## 2.    Scenario Two: Time-of-Use Energy (Comm.) + BSF (Dist.)

**Distribution**

**Step 1:  Distribution Customer Costs: $10 per month Basic Service Fee**

Customer Cost dropdown menu – select "Basic Service Fee".  Instructions appear to enter a $/month next to Basic Service Fee Amount; enter $10.

**Step 2:  Distribution Demand Costs: Recovered through energy rates**

Distribution Demand dropdown menu – select "Recover through energy rates"

**Commodity**

**Step 3:  Commodity Demand Costs: Recovered through energy rates**

Capacity dropdown menu – select "Recover through energy rates"

**Step 4:  Commodity Energy Costs: Time-of-Use with 150% On-Peak/Off-Peak ratio**

Energy dropdown menu – select "Time-of-Use".  Instructions appear to enter On-Peak /Off-Peak ratio; enter 1.5 for both summer and winter.  Instructions appear to enter Semi-Peak/Off-Peak ratio; enter 1.25 (not specified in scenario).

**Step 5: Seasonal Rate Adjustment**

Enter 75% (not specified in scenario)

**TRAC**

**Step 6:  TRAC: Flat (no tiers)**

Next to Number of Tiers type "Flat"

**CARE**

**Step 7:  CARE: 20% Discount; Not set equal to non-CARE rates**

Select "Percent Discount" from the dropdown menu. Next to CARE Discount % as line item discount: enter 20%, next to CARE Tier 1 and Tier 2 Rate equal non-CARE?: Enter No.

**Execute**

***Step 8:  Click "Calculate Selected Rate Structure"*** – The box below should be highlighted in green and read "Revenue Neutrality Confirmed".

## 3. Scenario Three: BSF w/ Fixed Charge Demand Adder (Dist.) + Tiers (TRAC)

**Distribution**

**Step 1: Distribution Customer Costs: $5 per month Basic Service Fee**

Customer Cost dropdown menu – select "Basic Service Fee". Instructions appear to enter a $/month next to Basic Service Fee Amount; enter $5.

**Step 2: Distribution Demand Costs: Fixed Charge Demand Adder**

Distribution Demand dropdown menu – select "Fixed Charge Demand Adder". Instructions appear to enter a $/month next to demand (kW) levels. Enter $5 for 0-3 kW and enter $10 for 3-7 kW, 7-13 kW and >13 kW.

**Commodity**

**Step 3: Commodity Demand Costs: Recovered through energy rates**

Capacity dropdown menu – select "Recover through energy rates"

**Step 4: Commodity Energy Costs: Flat rates by season**

Energy dropdown menu – select "Flat Rate by Season"

**Step 5: Seasonal Rate Adjustment**

Enter 75% (not specified in scenario)

**TRAC**

**Step 6: TRAC: Flat (no tiers)**

Enter "Percent" for % Differential or Cent/kWh Differential Between Tiers. Instructions appear to enter % Difference Tier 1 to Tier 2; enter 20%

**CARE**

**Step 7: CARE: 20% Discount; Not set equal to non-CARE rates**

Select "Percent Discount" from the dropdown menu. Next to CARE Discount % as line item discount: enter 20%, next to CARE Tier 1 and Tier 2 Rate equal non-CARE?: Enter No.

**Execute**

***Step 8: Click "Calculate Selected Rate Structure"*** – The box below should be highlighted in green and read "Revenue Neutrality Confirmed".

## 4. Scenario Four: BSF w/ Fixed Charge Demand Adder (Dist.) + TOU Energy (Comm.)

**Distribution**

**Step 1:  Distribution Customer Costs: $5 per month Basic Service Fee**

Customer Cost dropdown menu – select "Basic Service Fee".  Instructions appear to enter a $/month next to Basic Service Fee Amount; enter $5.

**Step 2:  Distribution Demand Costs: Fixed Charge Demand Adder**

Distribution Demand dropdown menu – select "Fixed Charge Demand Adder".  Instructions appear to enter a $/month next to demand (kW) levels.  Enter $5 for 0-3 kW and enter $10 for 3-7 kW, 7-13 kW and >13 kW.

**Commodity**

**Step 3:  Commodity Demand Costs: Recovered through energy rates**

Capacity dropdown menu – select "Recover through energy rates"

**Step 4:  Commodity Energy Costs: Time-of-Use with 150% On-Peak/Off-Peak ratio**

Energy dropdown menu – select "Time-of-Use".  Instructions appear to enter On-Peak /Off-Peak ratio; enter 1.5 for both summer and winter.  Instructions appear to enter Semi-Peak/Off-Peak ratio; enter 1.25 (not specified in scenario).

**Step 5: Seasonal Rate Adjustment**

Enter 75% (not specified in scenario)

**TRAC**

**Step 6:  TRAC: Flat (no tiers)**

Next to Number of Tiers type "Flat"

**CARE**

**Step 7:  CARE: 20% Discount; Not set equal to non-CARE rates**

Select "Percent Discount" from the dropdown menu. Next to CARE Discount % as line item discount: enter 20%, next to CARE Tier 1 and Tier 2 Rate equal non-CARE?: Enter No.

**Execute**

***Step 8:  Click "Calculate Selected Rate Structure"*** – The box below should be highlighted in green and read "Revenue Neutrality Confirmed".

# VI. Appendix B: Illustrative Output: Scenario Four

## 1. Total Rate Comparison

Total Rate comparison of non-CARE and CARE rates with Current Structured Rates (9/1/2012 rates), Cost-Based Rates (per revenue adjusted SDG&E GRC Phase II 2012 Marginal Costs), the Resulting Rates from the inputs selected, and Alternative Cost-Based Rates (User Inputted or equal to SDG&E if no changes specified) shown side-by-side. The cost-based rates and current rates do not change with any selections to the inputs.

| Resulting Rates (non-CARE) | | SDG&E Cost-Based Rates (non-CARE) | | Current Structued Rates (non-CARE) | | Alternative Cost-Based Rates (non-CARE) | |
|---|---|---|---|---|---|---|---|
| | Total Rate | | Total Rate | | Total Rate | | Total Rate |
| SCHEDULE DR | | SCHEDULE DR | | SCHEDULE DR | | SCHEDULE DR | |
| Basic Service Fee | | Basic Service Fee | 12.67 | Basic Service Fee | 0.00 | Basic Service Fee | 12.67 |
| 0-3 kW | 10.00 | | | | | | |
| 3-7 kW | 15.00 | | | | | | |
| 7-13 kW | 15.00 | | | | | | |
| >13 kW | 15.00 | | | | | | |
| Non-Coincident Demand | 0.00 | Non-Coincident Demand | 6.96 | Non-Coincident Demand | 0.00 | Non-Coincident Demand | 6.96 |
| On Peak Demand | | On Peak Demand | | On Peak Demand | | On Peak Demand | |
| Summer | 0.00 | Summer | 6.97 | Summer | 0.00 | Summer | 6.97 |
| Winter | 0.00 | Winter | 0.00 | Winter | 0.00 | Winter | 0.00 |
| Summer Energy | | Summer Energy | | Summer Energy | | Summer Energy | |
| On Peak | 0.20854 | On Peak | 0.12088 | Baseline Energy | 0.14334 | On Peak | 0.12088 |
| Semi Peak | 0.18751 | Semi Peak | 0.10592 | 101% to 130% of Baseline | 0.16580 | Semi Peak | 0.10592 |
| Off Peak | 0.16649 | Off Peak | 0.09003 | 131% to 200% of Baseline | 0.27982 | Off Peak | 0.09003 |
| Winter Energy | | Winter Energy | | Above 200% of Baseline | 0.29982 | Winter Energy | |
| On Peak | 0.15961 | On Peak | 0.10443 | Winter Energy | | On Peak | 0.10443 |
| Semi Peak | 0.14884 | Semi Peak | 0.09515 | Baseline Energy | 0.14334 | Semi Peak | 0.09515 |
| Off Peak | 0.13806 | Off Peak | 0.08228 | 101% to 130% of Baseline | 0.16580 | Off Peak | 0.08228 |
| Minimum Bill | 0.00000 | | | 131% to 200% of Baseline | 0.26239 | | |
| Tier 1 Discount $/kWh | 0 Summer 0 Winter | | | Above 200% of Baseline | 0.28239 | | |
| Tier 2 Discount $/kWh | 0 Summer 0 Winter | | | Minimum Bill | 0.17 | | |

| Resulting Rates (CARE) | | SDG&E Cost-Based Rates (CARE) | | Current Structued Rates (CARE) | | Alternative Cost-Based Rates (CARE) | |
|---|---|---|---|---|---|---|---|
| | Total Rate | | Total Rate | | Total Rate | | Total Rate |
| SCHEDULE DR-LI | | SCHEDULE DR-LI | | SCHEDULE DR-LI | | SCHEDULE DR-LI | |
| Basic Service Fee | | Basic Service Fee | 12.67 | Basic Service Fee | 0.00 | Basic Service Fee | 12.67 |
| 0-3 kW | 10.00 | | | | | | |
| 3-7 kW | 15.00 | | | | | | |
| 7-13 kW | 15.00 | | | | | | |
| >13 kW | 15.00 | | | | | | |
| Non-Coincident Demand | 0.00 | Non-Coincident Demand | 6.96 | Non-Coincident Demand | 0.00 | Non-Coincident Demand | 6.96 |
| On Peak Demand | | On Peak Demand | | On Peak Demand | | On Peak Demand | |
| Summer | 0.00 | Summer | 6.97 | Summer | 0.00 | Summer | 6.97 |
| Winter | 0.00 | Winter | 0.00 | Winter | 0.00 | Winter | 0.00 |
| Summer Energy | | Summer Energy | | Summer Energy | | Summer Energy | |
| On Peak | 0.18824 | On Peak | 0.11575 | Baseline Energy | 0.12738 | On Peak | 0.11575 |
| Semi Peak | 0.16721 | Semi Peak | 0.10079 | 101% to 130% of Baseline | 0.14815 | Semi Peak | 0.10079 |
| Off Peak | 0.14618 | Off Peak | 0.08490 | 131% to 200% of Baseline | 0.22236 | Off Peak | 0.08490 |
| Winter Energy | | Winter Energy | | Above 200% of Baseline | 0.22236 | Winter Energy | |
| On Peak | 0.14351 | On Peak | 0.09930 | Winter Energy | | On Peak | 0.09930 |
| Semi Peak | 0.13274 | Semi Peak | 0.09002 | Baseline Energy | 0.12738 | Semi Peak | 0.09002 |
| Off Peak | 0.12196 | Off Peak | 0.07715 | 101% to 130% of Baseline | 0.14815 | Off Peak | 0.07715 |
| Minimum Bill | 0.00000 | | | 131% to 200% of Baseline | 0.20811 | | |
| Tier 1 Discount $/kWh | 0 Summer 0 Winter | | | Above 200% of Baseline | 0.20811 | | |
| Tier 2 Discount $/kWh | 0 Summer 0 Winter | | | Minimum Bill | 0.17 | | |

## 2.   Bill Impact: Number of Customers by % Impact

Distribution of customers by % Bill Impact from current and corresponding monthly dollar bill impact from current.  Graphed separately for non-CARE and CARE customers.  User can select to graph SDG&E Cost-Based Rates, User Inputted Cost-Based rates, or User Selected Rates.

**Number of Customers by % Impact**
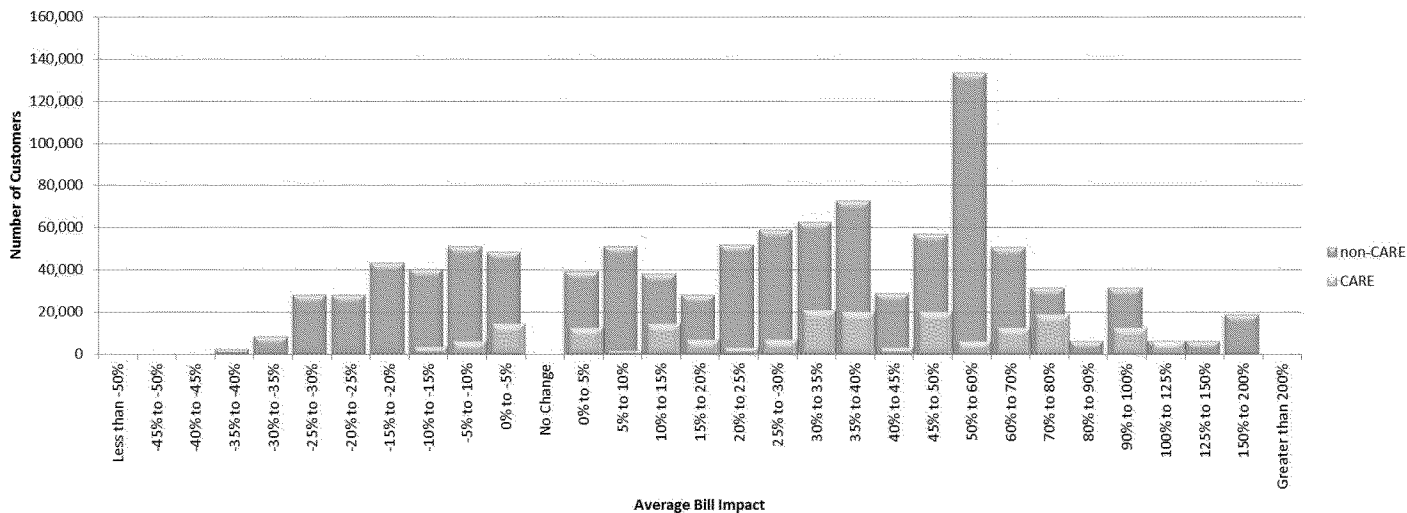


**Average $ Monthly Impact by % Impact**
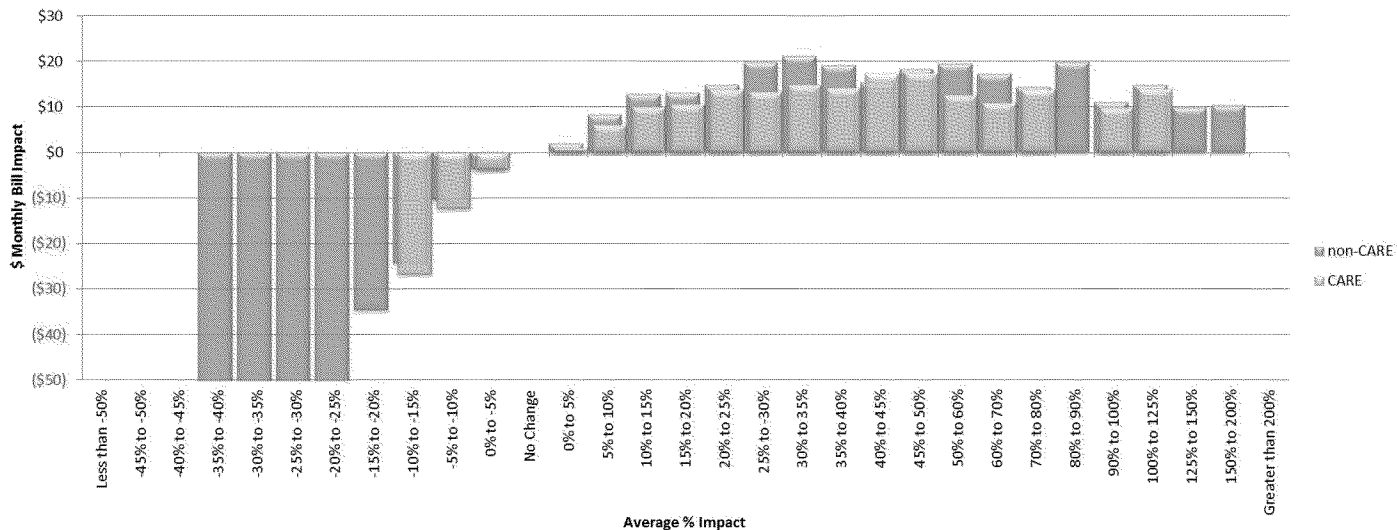
## 3.    Bill Impact: % Impact by Average Non-Coincident Demand Load Factor

Average % impact from current by Load Factor range and corresponding monthly dollar bill impact from current. Graphed separately for non-CARE and CARE customers.  User can select to graph SDG&E Cost-Based Rates, User Inputted Cost-Based rates, or User Selected Rates.

### Average % Bill Impact by Non-Coincident Load Factor



### Average $ Monthly Bill Impact by Non-Coincident Load Factor
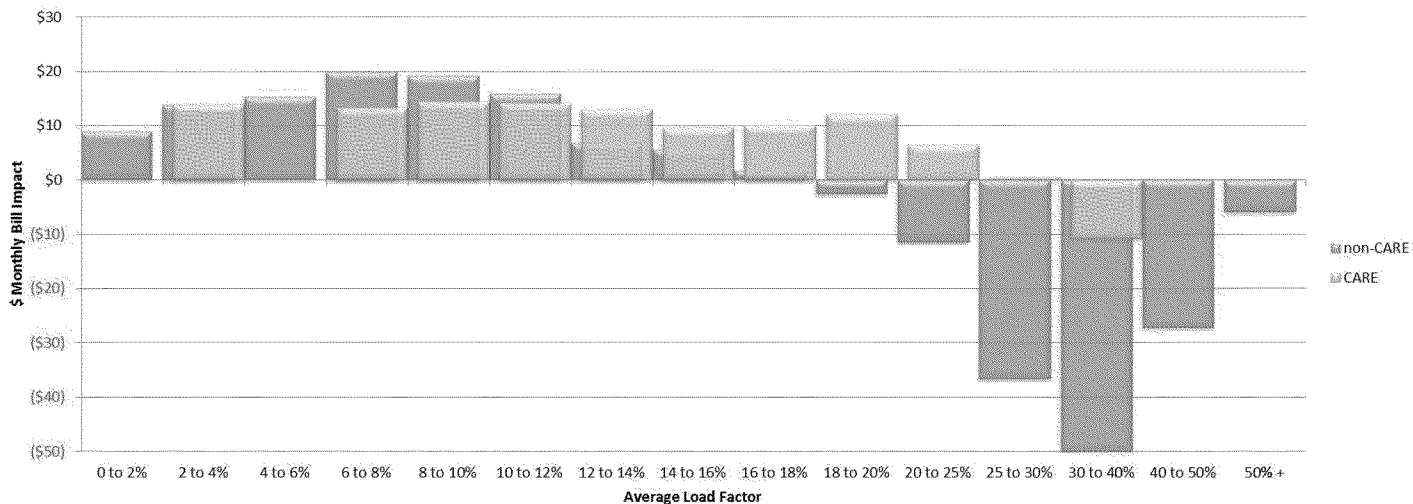
## 4. Bill Impact: % Impact by Average Monthly kWh Consumption

Average % impact from current by average monthly kWh consumption and corresponding monthly dollar bill impact from current. Graphed separately for non-CARE and CARE customers. User can select to graph SDG&E Cost-Based Rates, User Inputted Cost-Based rates, or User Selected Rates.

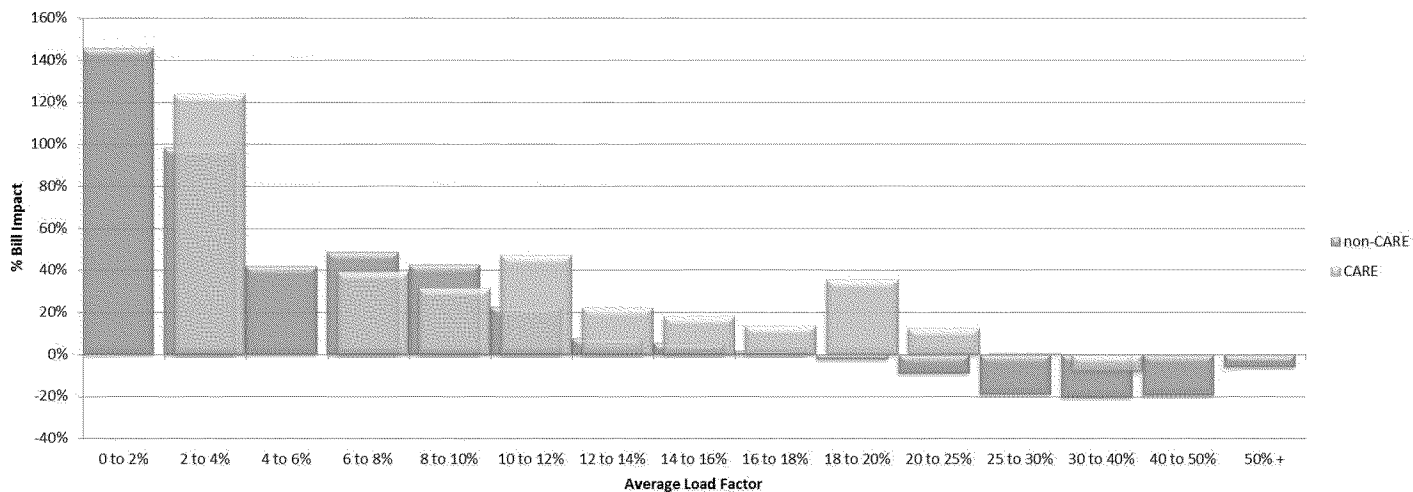**Average % Bill Impact by kWh**
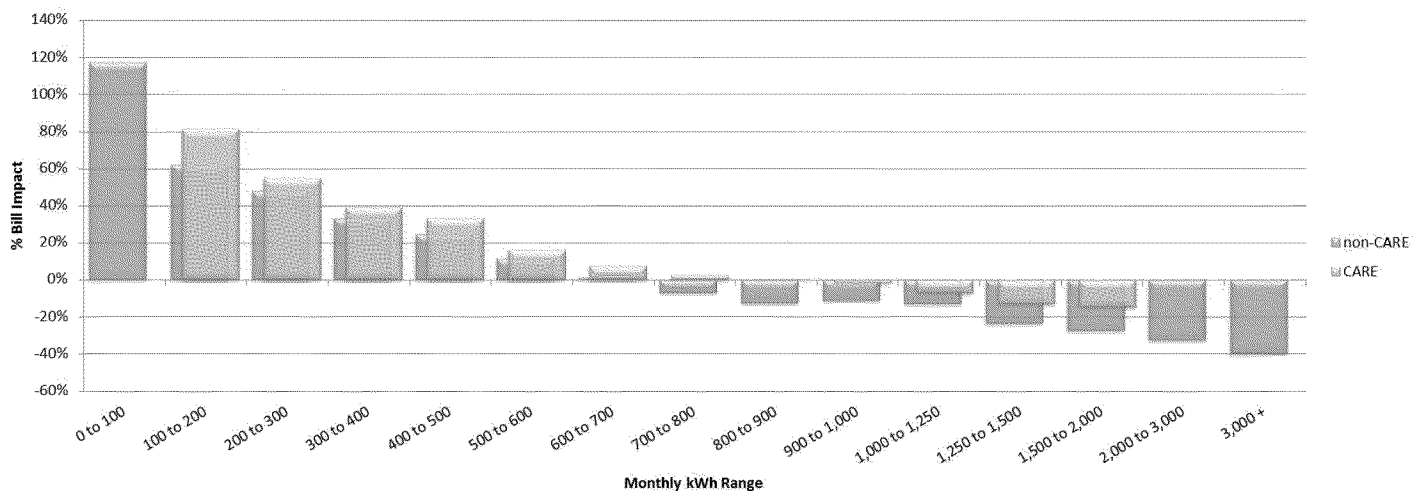


**Average Monthly $ Bill Impact by kWh**
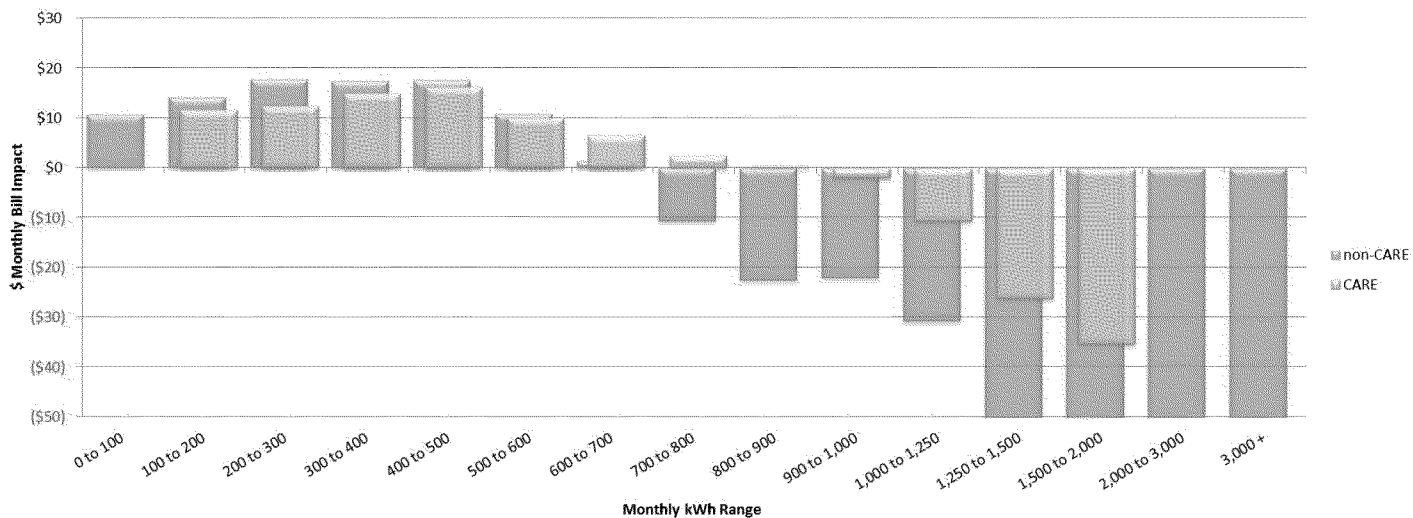
## 5.    Illustrative Monthly Bill Comparison

The use can design two side-by-side graphs to compare example monthly bill impacts, choosing from the following options:

- Comparison with SDG&E Cost-Based Rates or User Inputted Cost-Based Rates
- CARE or non-CARE
- Type of Service: Basic or All-Electric Service
- Usage Level : Low (250 kWh), Medium (500 kWh) or High (1,000 kWh)
- Climate Zone: Coastal, Inland, Mountain or Desert

Graph One is looking at a Basic service, Inland non-CARE customer, between differing usage levels.  Graph Two is looking at an All-Electric service, High level (1,000 kWh) CARE customer, between differing climate zones.

| Select Cost-Based Reference: | SDG&E |
|---|---|

| GRAPH ONE<br>*Create your own graph* | GRAPH TWO<br>*Create your own graph* |
|---|---|
| Choose to view graph by Usage Level or by Climate Zone (x-axis): **Usage Level** | Choose to view graph by Usage Level or by Climate Zone (x-axis): **Climate Zone** |
| Choose non-CARE or CARE: **Non-CARE** | Choose non-CARE or CARE: **CARE** |
| Choose Basic or All-Electric Service: **Basic** | Choose Basic or All-Electric Service: **All-Electric** |
| Choose Usage Level: **Select One** <-- Not Applicable | Choose Usage Level: **High** |
| Choose Climate Zone: **Inland** | Choose Climate Zone: **Select One** <-- Not Applicable |

## 6.    Elasticity of Demand Template

Non-CARE and CARE billing determinants with corresponding current and proposed rates.  User has flexibility to enter any elasticity for every part of the bill.  Note that there is no reference for current TOU rates and that the elasticity's for Non-Coincident Demand or On-Peak Demand cannot be calculated because the current rent is zero.

## Elasticity of Demand Template

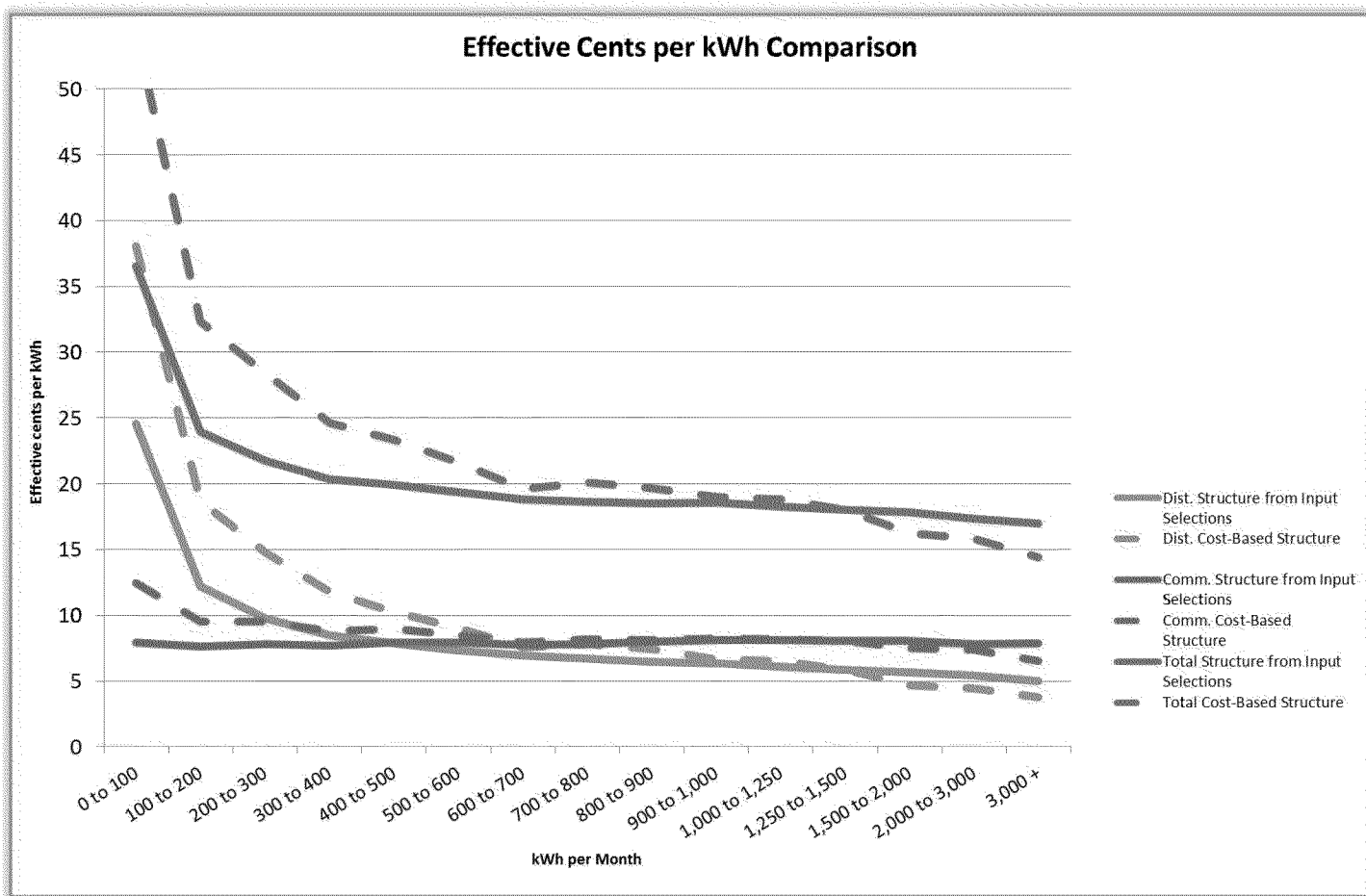| | | Non-CARE (Schedule DR) Determinants (kWh) | Current Rate (9/1/12) ($/kWh) | Proposed Rate from Inputs ($/kWh) | Price Elasticity of Demand ($E_d$) $\frac{(dQ/Q)}{(dP/P)}$ | Estimated Change in quantity $(dP/P) \times E_d \times Q$ | |
|---|---|---|---|---|---|---|---|
| **Summer** | | | | | | | |
| | Tier 1 | 1,564,387,200 | 0.14334 | TOU Rates Selected | | N/A | |
| | Tier 2 | 320,551,974 | 0.16580 | TOU Rates Selected | | N/A | |
| | Tier 3 | 506,678,357 | 0.27982 | TOU Rates Selected | | N/A | |
| | Tier 4 | 722,605,210 | 0.29982 | TOU Rates Selected | | N/A | |
| **Winter** | | | | | | | |
| | Tier 1 | 1,705,632,978 | 0.14334 | TOU Rates Selected | | N/A | |
| | Tier 2 | 320,598,737 | 0.16580 | TOU Rates Selected | | N/A | |
| | Tier 3 | 478,243,381 | 0.26239 | TOU Rates Selected | | N/A | |
| | Tier 4 | 552,688,427 | 0.28239 | TOU Rates Selected | | N/A | |
| **Summer** | | | | | | | |
| | On-Peak | 722,633,065 | | 0.20854 | | N/A | |
| | Semi-Peak | 905,999,397 | | 0.18751 | | N/A | |
| | Off-Peak | 1,485,590,280 | | 0.16649 | | N/A | |
| **Winter** | | | | | | | |
| | On-Peak | 359,472,957 | | 0.15961 | | N/A | |
| | Semi-Peak | 1,136,592,033 | | 0.14884 | | N/A | |
| | Off-Peak | 1,561,098,533 | | 0.13806 | | N/A | |
| | | Non-CARE (Schedule DR) Determinants (kWh) | Current Rate (9/1/12) ($/kWh) | Proposed Rate from Inputs ($/kWh) | Price Elasticity of Demand ($E_d$) $\frac{(dQ/Q)}{(dP/P)}$ | Estimated Change in quantity $(dP/P) \times E_d \times Q$ | |
| Non-Coincident Demand | | 43,491,342 | 0.00 | 0.00 | | N/A | *Note that because the current rate is zero the Estimated Change is not mathematically possible to compute. |
| On-Peak Summer Demand | | 17,073,758 | 0.00 | 0.00 | | N/A | |

## 7.    Effective Cost Curve

Graph of effective rate by kWh.  Ability to view comparison SDG&E or User Inputted Cost-Based rate reference, current rates, and selected rates from inputs.  The graph shows Distribution, Commodity, and Total Rate separately. Note that once SDG&E cost-based rates or User Inputted cost-based rates are selected the user must click "Refresh Table" to update the data accordingly.



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# NOTES

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