Customer Ref # --- Energy analysis report

# Summary:

The presented reports summarized the analyses results for the customer reference # --- based on tariff document EECC-CPP-D with revision number 28608-E for seven accounts the mentioned customer.

The following steps are completed to provide a comprehensive report and analysis for customer reference # ---. Our firm recommendations for energy and bill management are based on the results of the present report.

# Data Cleaning:

1-The File Output.xlsx contains 7 sheets which each of them presents the following information for the customer accounts 1,2,3,4,6,9,10. A macro file is embedded in the excel file to pull the information from the raw data and convert it to the specific format. The selected format in the Output.xlsx file shows the customer export and import from the grid as well as net energy consumption for 15min intervals for duration of 2017.

The following table shows the sample of the presented data in Output.xlsx file.

**Table 1: Sample data from file Output.xlsx**

|  |  |  |  |
| --- | --- | --- | --- |
| **INTRVL\_DATE** | **CHNL\_ID 101 (kW)** | **CHNL\_ID 102 (kW)** | **Net Usage (kWh)** |
| 1/1/17 12:15 AM | 2.08 | 0 | 0.52 |
| 1/1/17 12:30 AM | 2.08 | 0 | 0.52 |
| 1/1/17 12:45 AM | 2.08 | 0 | 0.52 |
| 1/1/17 1:00 AM | 2.08 | 0 | 0.52 |

Data cleaning was performed on the provided raw data. As a result, missing data points and duplications were detected during the cleaning procedure. Different math functions applied to the data to find the parts of the raw data with cleaning requirements. In addition, different visualization techniques are also applied to find the inconsistencies in the data and to verify the data patterns by the analyst.

In the next step, the data is reformatted in a way that can be useful for the further analysis. A VBA is written to help for the reformatting in a automated way.

# Bill Calculation:

The following data points were extracted from the tariff document EECC-CPP-D document with revision number 28608-E for the bill calculation.

**Table 2: data points from tariff document**

|  |  |
| --- | --- |
| **Data Point** | **Page reference number** |
| Maintaining the eligibility for CPP program. The customer need to meet the min 20KW criteria. | Page 1 |
| CCP adder rate schedule [[1]](#footnote-1) | Page 1 |
| Summer and winter rates (peak,off-peak,semi-peak)[[2]](#footnote-2). It is also assumed that the provided credit for the energy export to the grid will be the same rate of energy import from the grid. | Page 2 |
| Capacity reservation charge/ demand charge | Page 2 |
| Franchise fee | Page 3 |
| CPP events time | Page 3 |
| CPP triggering conditions | Page 4 and page 6 |

Logical analysis was applied using nested IF functions to calculate the energy cost for the different time spans including winter,summer,peak,off-peak,etc.

The CPP events were considered for the 18 hottest days of the year 2017 and the additional charge was applied for the peak hours use of energy. It is assumed that the customer received the notice but it did not cut the consumption so as a result the high penalty cost applied. The temperature data is extracted from the San Diego/Miramar MCAS station weather data through weather.com website.

The whole package took around 7-8 hours to complete and the check points for auditing the steps was performed using excel graphs and applying the mathematical functions to verify the validity of the data in each step of the analysis. In addition, domain knowledge of the analyst was very helpful to detect the faulty results in all steps of the task.

1. The secondary rate is selected as it is assumed that the customer will be connected to the LV distribution network. [↑](#footnote-ref-1)
2. The secondary rate is selected as it is assumed that the customer will be connected to the LV distribution network. [↑](#footnote-ref-2)