



SRI GURU NANAK DEV KHALSA COLLEGE
(University of Delhi)
DEV NAGAR

INTERNAL
ENERGY AUDIT
REPORT

**SGND Khalsa College
Energy Audit Report
June 2021**

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Introduction

IQAC constituted a committee comprising of the following members to undertake energy audit of SGND Khalsa College.

- Dr. Gita Lakhanpal, Associate Professor, Department of English
- Dr. Meena Singh, Associate Professor, Department of Economics
- Ms. Meera Dhiri, Administrative Officer.

Physical verification of electrical appliances and energy bills was conducted from 14th – 16th June 2021. The Report of the Audit Committee is presented to the IQAC for submission to the Principal and incorporating the findings and recommendations in the SSR report to be submitted to the NAAC.

Objectives

In accordance with the mandate given to the Committee, the Energy Audit was conducted to meet the following objectives:

- (a) Verify and undertake an exhaustive documentation of number of electrical appliances and fixtures installed in the college premises;
- (b) Review and analyse the recent energy usage history based on the electricity bills;
- (c) Create a baseline for energy consumption of different appliances with the objective of benchmarking electricity use and determining possible savings through reduction in energy consumption
- (d) Suggest options of installing energy efficient appliances and potential savings.
- (e) Make appropriate recommendations for electricity conservation

Methodology

A walk-in methodology was followed to compile, document, and verify the number of appliances and fixtures in each room and common spaces in the college premises. Meetings were held with selected users of appliances (Teachers, Technical Staff, Chowkidars and administrative staff) to assess and understand the duration and time of usage of different appliances considering the month wise teaching schedule, weather seasonality and teaching calendar followed in routine functioning of the college. This information was cross checked with broad section of teachers and administrative staff to validate the assumptions made for computing the baseline consumption of electricity. These assumptions are presented in Annex 1 and Annex 2

Electricity consumption in a typical educational institution can be segregated in two main components. The academic activity involves classroom teaching, seminars and other activities involving students and teachers activities. These activities take place as per the timetable and are normally non-existent during vacation period and mid-term breaks. Also, the number of hours for which these activities take place during a particular day depends upon the time table. In contrast, the administrative activities are like a typical office activity and the energy use is more uniform and stable during the day and over different months. With a view to examine the electricity use in different work areas (Academics, Administrative, Common spaces) and to prepare credible baseline estimates, appropriate classification has been carried out in terms of Classrooms, Administration, Common Areas (Teaching), Common Areas (Administration) etc.

The base line data is then compared with the actual billing to assess potential energy savings. Finally potential savings are computed under different scenarios with and without replacement of old appliances with energy efficient appliances to make recommendations.

Description of Building

SGND Khalsa College Campus spread over one acre is located in a densely populated commercial-cum residential district of Delhi. The main building of the college has four floors. It comprises of classrooms/Lecture Halls, Seminar Room, Administrative wing housing the workspaces for Principal and administrative Staff, Storerooms for record keeping and storage, common spaces used during for academic related activities (common rooms, staff rooms, NCC/NSS Rooms etc) and common areas managed by administration areas in teaching wing and other common spaces like corridors, Gurdwara, Gym, Library, staff quarter and guard rooms.

The Building is more than seven decades old. However, the old electrical wiring and systems were replaced, and new upgraded systems and wirings with proper safety were installed in 2015/16.

The College has recently installed a roof top solar PV unit with installed capacity of 70.29 Kw. It is designed to generate 87,500 units electricity annually under optimal conditions. Dependence of grid electricity is likely to reduce by around 50% once the system is fully operational and generates electricity at full capacity. During such periods when the institutional demand is low(such as vacation time), surplus electricity can be sold to the grid reducing the electricity bill further.

Electrical Load and Consumption

The connected load of the College is 90 KW. The college has a backup generator. In recent years, its use is minimal as the overall grid supply has improved.

Data on electricity consumption has been collected from the electricity bills from the period April 2017 to December 2020. The following table depicts the average daily consumption of electricity during the last four years

Table 1: Total Electricity Consumed

Academic Session	Average Daily Electricity Consumption (No of Units)
2017/18	567
2018/19	554
2019/20	536
2020/21	203

It is noted that the average daily consumption has shown a secular declining trend in the last 4 years. Even if the year 2020 is considered as abnormal because the Institution was closed for most of the time because of lock down, the average daily consumption has declined by over 5% from 567 units to 536 units over a period spanning April 2017 to March 2020.

This small decline has become possible primarily due to replacement of GLS bulbs with energy efficient LCD/LED bulbs and tubes. We understand that at present nearly 40 percent of light bulbs are of low wattage LCD/LED type.

Electricity Tariff rates are based on slab rate. The average weighted tariff (inclusive of fixed charge) paid during the last three years is presented below (Table 2):

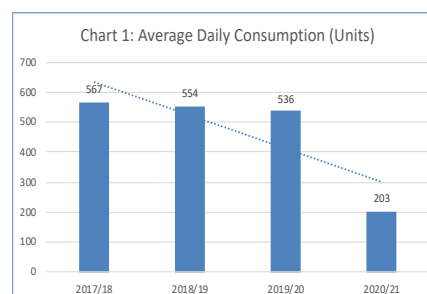


Table 2: Average Weighted Electricity Tariff

Financial Year	2017/18	2018/19	2019/20	2020/21
Weighted Tariff (Rs/Unit)	11.18	14.90	17.44	18.95

Electricity Consumption is Seasonal

Analysis of month wise electricity consumption patterns indicates that electricity consumption is seasonal and determined by the summer vacations, mid-term breaks and use of air conditioners (Chart 2).

Table 3 below indicates average daily use during Summer Months (April-September) is nearly twice the daily consumption in winter months (October-March).

It is also interesting to note that Electricity consumption in usage coinciding with the use of much of the average annual savings in the electricity consumption has been achieved during the winter months (October-March Season). During the summer months the decline is not significant primarily because of higher number of Air Conditioners and Fans in use.

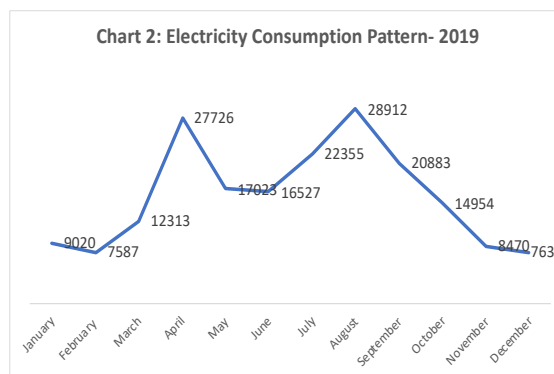


Table 2: Seasonal Average Consumption (Average Daily Units Consumed)

Year	Summer (April-September)	Winter (October-March)	Season Average
2017	743	391	567
2018	736	373	554
2019	730	343	536

Inventory of Electrical Appliances and main functional Areas

Based on the physical verification the inventory of electrical appliances and the areas where they are installed is presented in the following table (Table 3).

Table 3: Number of Appliances and Use

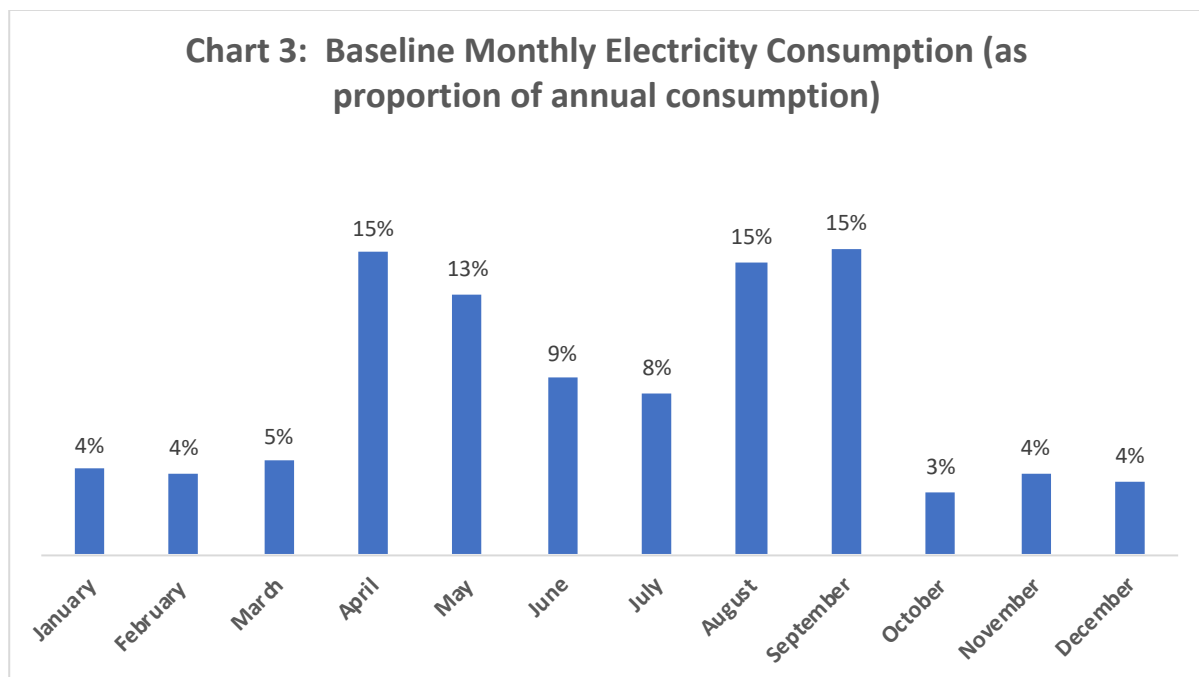
Appliance	Academic Wing	Administrative Wing	Total
Projectors and Screens	42	0	42
Lights	290	310	600
Fans	235	90	325
Computers	149	41	190
Printers	0	18	18
LCD TVs	5	6	11
Air Conditioners	31	23	54
Exhaust Fans	16	10	26
Refrigerators	1	2	3
Water Dispenser/Coolers	1	4	5
Hot Case	1	3	4
Microwave	0	1	1
Photocopier	0	1	1
Miscellaneous (Speakers, Pedestal Fans, Water Cooler, Servers etc)	0	15	15

Baseline Energy Consumption

Electricity consumption based on actual meter reading does not reveal the main purpose of electricity use. A baseline energy model has been created as a tool to benchmark electricity consumption vis-a-vis the actual consumption. Baseline has been created based on certain assumptions regarding the number

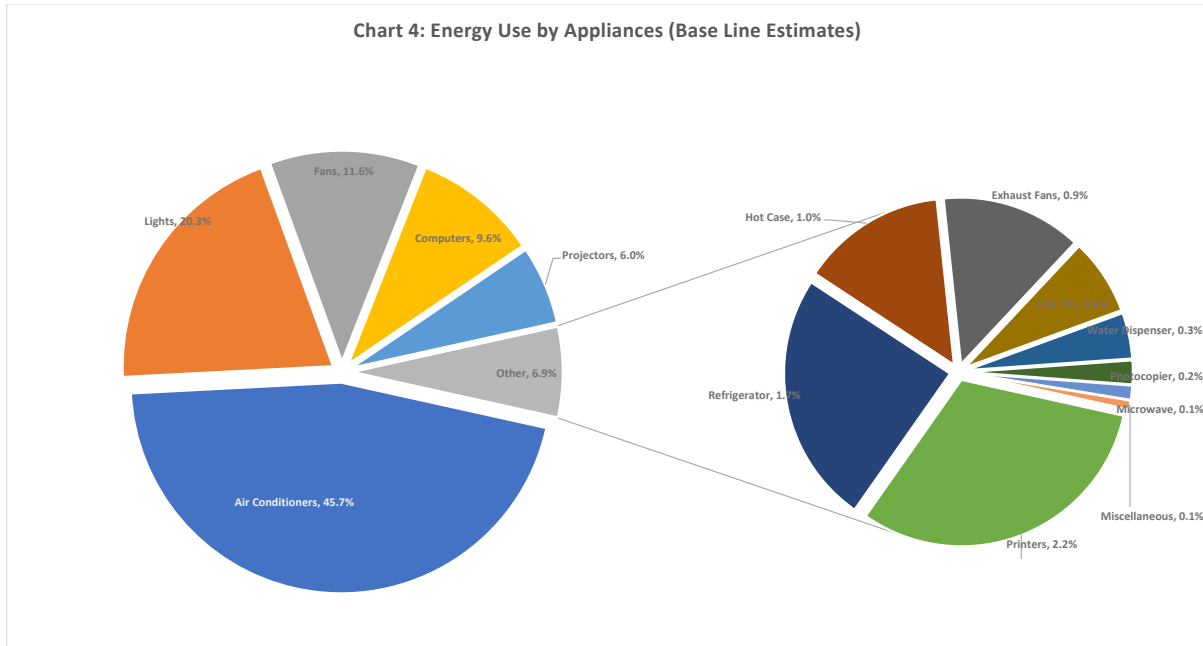
of hours a particular appliance is potentially used in a normal functioning of the Institution. These assumptions have been validated through extensive discussions with the stakeholders, the academic timetable adopted for teaching, propensity of teachers to use electrical gadgets (computers and projectors) as teaching methodology, examination and admission schedules, extra-curricular activities calendar, vacations and mid-term breaks. For instance, during summer vacation or during semester end examination time computers and projectors in the computer labs and classrooms are not used and hence the energy use is nil. However, since the administration offices are functional during these times, the computers and other electrical appliances installed in these areas are working normally and are to be accounted for in creating a baseline energy use.

Based on the estimated use of these appliances, the annual energy consumption is assessed to be over 155 thousand units. The highest use is estimated to be in the months of April, August, and September and lowest in October (Chart 3). This pattern confirms the seasonal nature of electricity consumption in the college.



Nearly 80% of the annual electricity consumption is accounted for 6 months (April-September). Other 6 months account for only 20% of electricity.

The baseline data also reveals that nearly 46% of the annual electricity consumption is on account of air conditioners. Lights and fans respectively account for 20% and 12% annual electricity consumption. Computers also account for nearly 10% of electricity consumption. Together these 4 uses account of nearly 88% of estimated annual electricity consumption (Chart 4). Special effort needs to be made to monitor use of these appliances to conserve electricity.



Analysis and Findings

Comparison with Actual consumption based on meter reading and final energy bills is presented in Table 4

It is noted that actual consumption during 2018 and 2019 was 30 percent and 23 percent more than the baseline estimates. Actual consumption in 2020 is 50 percent lower than the base line consumption. This is considered as an aberration because 2020 was a lock down year and the academic and administrative functions of the college were interrupted.

Table 4: Comparison of Baseline Consumption with Actual Consumption

	Annual Energy Consumption (000 Units)	% Difference over Base Line Consumption
Base Line Estimated Consumption	155	
Actual Consumption 2018	204	31%
Actual Consumption 2019	193	25%
Actual Consumption 2020	79	-49%

Potential Savings from energy Conservation measures

Higher than the baseline consumption suggests that there is a scope for electricity conservation through behavioural change. The present consumption pattern (reflected in monthly electricity bills) is most likely due to reasons such as (a) the appliances are not switched off after the desired activity is completed or they are kept on standby mode for long periods of time. when not in use, or are not switched off even when not need or are energy inefficient. We infer that there is scope for energy savings to the extent of around 20-25 percent by adopting and reinforcing the energy conservation practices such as maximizing day-time light use, switching off appliances when not in use, ensuring regular servicing and upkeep of air conditioners and keeping the ambient temperature between 24-25 degree Celsius, fixing air leaks etc.

Potential Savings from replacing old Air Conditioners

Walk-in observations reveal that air conditioners installed in the college are mainly window type appliances and majority of them are older than 4-5 years. These machines reportedly also do not meet the BIS rating and energy efficiency standards. As a result the energy efficiency ratio of these appliances is nearly 50-60 percent is relatively high compared to the latest appliances available. Replacing these machines with latest 3-5 star rated split air conditioners can result in energy savings of around 20,000 units over the baseline estimates. The likely cost of replacing all these units is around Rupee 16 lakh (approx. Rupee 30,000 per air conditioner) with annual monetary saving of around Rupee 3.8 lakh.

Table 5: Savings Potential of Replacing Old Window Air

	Energy Efficiency Ratio	Energy Consumption (Units)	Potential Annual Savings (000 Units/%)
Existing Machines	2.2 (Assumed)	71026	
3 Star Rated Machines	3.1	50310	20716 (29%)
5 Star Rated Machines	3.5	44687	26339 (37%)

Potential Savings from Replacing Lights and Fans with Lower wattage

It is observed that out of 600 light points, large numbers still use relatively high wattage (40 Watt and higher) conventional tubes and bulbs. Technology exists to replace these with 10-20 watt lights without any loss of brightness and lumens. Replacing these lights with modern LED lights can result in a savings of over 15000 units annually. Likewise, most of the fans installed in the institution are more than 10 years old with rated capacity of 100 watt or more. Efficient models of fans are now available with power rating of 50 watt or even lower. Replacement of these fans can result in a significant saving of around 6000 units annually.

The total potential Savings is thus assessed to be as per Table 6:

Table 6: Potential Cumulative Savings

		Units	Amount (Rs Lakh)
1	Pre-Covid Energy Bill Actual-2019	193401	34.76
2	Baseline Estimates	155338	27.90
3	Potential Savings through energy Conservation Measures (1-2)	38063	6.83
4	Additional Savings by replacing ACs with 3 Star rated appliances	20716	3.72
5	Additional Savings by replacing lights & fans with low wattage fittings	21712	3.90
6	Total Potential Saving (3+4+5)	80491	14.45
7	Expected Final Consumption if all measures are implemented	112910	20.27

- Amount is computed @ Rs 17.95 per unit

The total annual saving potential through behavioural changes and replacement of old Air Conditioners, Fans and Lights is estimated to be over 71% of the actual consumption in 2019 (80491 Units) and this can result in financial saving of around 14 lakh per annum. One year saving would be sufficient to meet the cost of replacement of all air conditioners in the college.

Recommendations

1. Maximise day-time light in rooms and corridors by ensuring that lights are switched off during day-time in rooms and areas where there is sufficient day light. Glass panes and windows need to be cleaned regularly to improve day light in rooms and reduce the dependence on artificial lights;

2. Switch off fans and lights when the classroom activities are over. It is often noted that when the class activity concludes, the lights and fans are not switched off;
3. Electronic appliances on standby mode consume substantial amount of power even when they are not in full use. The normal practice is that computers and printers are switched on in the morning and remain on standby mode for a long period during the day. Even in cases where the appliances are switched off, they continue to consume some power if they are not unplugged from the power sockets. As a good practice electronic equipment should not be on standby mode for more than 15 minutes. Further it should be unplugged from socket after the institution closes in the evening;
4. Fixing air leaks and increasing ambient room temperature by a degree or so when air conditioners are working can result in substantial savings;
5. Regular Servicing of Air conditioners and cleaning of air filters is a must improve their efficiency.
6. Subject to availability of funds consider
 - a. Replacement of old Air conditioners with BIS rated split air conditioners.
 - b. Replacement of remaining high wattage lights with lower wattage LED lights providing same brightness and lumens
 - c. Replacement of old heavy fans with latest fans with lower wattage

Dr. Gita Lakhanpal

Gita Lakhanpal

Dr. Meena Singh

Meena Singh

Ms. Meera Dhiri

Meera

Dated: 21st June 2021

Annexure 1: Major Assumptions for creating Baseline for Energy Consumption

1. Number of Working Days:

- a. Teaching and Administrative work are two interrelated activities performed in the college. While the teaching activity is governed by the academic calendar and has an element of mid-term breaks and vacations, the non-teaching activities are primary performed by the administrative staff and are routine activities without any vacations and mid-term breaks. The actual time spent on these activities has a direct relationship with electricity consumption. Based on the general experience, the time tables and academic calendar, it is assumed that teaching (academic) activity is performed over 199 days during the year and the administration works is performed over 249 days during the year after taking into account the weekly offs and other holidays. The annual attendance is further divided into months taking to work out the monthly electricity consumption.

Month Wise assessment of teaching and administrative working Days

Month	Teaching Days	Administration Working Days
January	20	20
February	19	19
March	22	22
April	21	21
May	20	20
June	0	22
July	7	22
August	20	20
September	21	21
October	9	22
November	19	19
December	21	21
Total	199	249

Appliance Use (No of Days and Hours) for Teaching

Appliance	Area	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Projectors and Screens	Classrooms	20	19	22	21	0	0	0	20	21	9	19	21
Projectors and Screens	Seminar Room	5	5	5	5	0	0	0	5	5	5	5	5
Lights	Classrooms	20	19	22	0	0	0	0	20	21	9	19	21
Lights	Seminar Room	5	5	5	5	0	0	0	5	5	5	5	5
Lights	Common Areas (Teaching)	20	19	22	21	20	10	7	20	21	9	19	21
Fans	Classrooms	0	0	0	21	20	22	10	20	21	0	0	0
Fans	Seminar Room	0	0	0	5	5	0	3	5	5	0	0	0
Fans	Common Areas (Teaching)	0	0	0	21	20	10	7	20	21	0	0	0
Computers	Classrooms	20	19	22	21	0	0	0	20	21	9	19	21
Computers	Common Areas (Teaching)	20	19	22	21	20	0	7	20	21	9	19	21
Printers	Classrooms	20	19	22	21	20	0	7	20	21	9	19	21
Printers	Common Areas (Teaching)	20	19	22	21	20	0	7	20	21	9	19	21
LCD TVs	Classrooms	20	19	22	21	20	0	7	20	21	9	19	21
LCD TVs	Common Areas (Teaching)	20	19	22	21	20	0	7	20	21	9	19	21
Air Conditioners	Classrooms	0	0	0	21	20	0	0	20	21	0	0	0
Air Conditioners	Seminar Room	0	0	0	5	5	0	3	5	5	0	0	0
Air Conditioners	Common Areas (Teaching)	0	0	0	21	20	0	5	20	21	0	0	0
Refrigerator	Common Areas (Teaching)	31	28	31	30	31	30	31	31	30	31	30	31
Water Dispenser/Cooler	Common Areas (Teaching)	20	19	22	21	20	0	7	20	21	9	19	21
Hot Case	Common Areas (Teaching)	20	19	22	21	20	0	7	20	21	9	19	21
Exhaust Fans	Classrooms	20	19	22	21	20	0	7	20	21	9	19	21
Exhaust Fans	Common Areas (Teaching)	20	19	22	21	20	0	7	20	21	9	19	21

Appliance	Area	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Projectors and Screens	Seminar Room	2	2	2	2	0	0	0	2	2	2	2	2
Lights	Classrooms	6	6	6	0	0	0	0	2	2	6	6	6
Lights	Seminar Room	8	8	8	8	8	8	8	8	8	8	8	8
Lights	Common Areas (Teaching)	8	8	8	8	8	8	8	8	8	8	8	8
Fans	Classrooms	0	0	0	6	6	6	6	6	6	0	0	0
Fans	Seminar Room	0	0	0	6	6	6	6	6	6	0	0	0
Fans	Common Areas (Teaching)	0	0	0	8	8	8	8	8	8	0	0	0
Computers	Classrooms	3	3	3	3	3	3	3	3	3	3	3	3
Computers	Common Areas (Teaching)	2	2	2	2	2	2	2	2	2	2	2	2
Printers	Classrooms	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Printers	Common Areas (Teaching)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
LCD TVs	Classrooms	2	2	2	2	2	2	2	2	2	2	2	2
LCD TVs	Common Areas (Teaching)	2	2	2	2	2	2	2	2	2	2	2	2
Air Conditioners	Classrooms	0	0	0	5	5	0	0	5	5	0	0	0
Air Conditioners	Seminar Room	0	0	0	6	6	0	0	6	6	0	0	0
Air Conditioners	Common Areas (Teaching)	0	0	0	6	6	0	0	6	6	0	0	0
Refrigerator	Common Areas (Teaching)	2	2	2	2	2	2	2	2	2	2	2	2
Water Dispenser/Cooler	Common Areas (Teaching)	4	4	4	4	4	4	4	4	4	4	4	4
Hot Case	Common Areas (Teaching)	2	2	2	2	2	2	2	2	2	2	2	2
Exhaust Fans	Classrooms	6	6	6	6	6	6	6	6	6	6	6	6
Exhaust Fans	Common Areas (Teaching)	4	4	4	4	4	4	4	4	4	4	4	4

Appliance Use (No of Days and Hours) in Administration Wing

Appliance	Area	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Lights	Administration	20	19	22	21	20	22	22	20	21	22	19	21
Lights	Residence	31	28	31	30	31	30	31	31	30	31	30	31
Lights	Stores	20	19	22	21	20	22	22	20	21	22	19	21
Lights	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
Fans	Administration	0	0	0	21	20	22	22	20	21	0	0	0
Fans	Residence	0	0	0	30	31	30	31	31	30	0	0	0
Fans	Stores	0	0	0	21	20	22	22	20	21	0	0	0
Fans	Common Areas (Administration)	0	0	0	21	20	0	0	20	21	0	0	0
Computers	Administration	20	19	22	21	20	22	22	20	21	22	19	21
Computers	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
Printers	Administration	20	19	22	21	20	22	22	20	21	22	19	21
Printers	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
LCD TVs	Administration	20	19	22	21	20	22	22	20	21	22	19	21
LCD TVs	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
Air Conditioners	Administration	0	0	0	21	20	22	22	20	21	0	0	0
Air Conditioners	Stores	20	19	22	21	20	22	22	20	21	22	19	21
Air Conditioners	Common Areas (Administration)	0	0	0	21	20	22	22	20	21	0	0	0
Water Cooler	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
Refrigerator	Administration	31	28	31	30	31	30	31	31	30	31	30	31
Refrigerator	Common Areas (Administration)	31	28	31	30	31	30	31	31	30	31	30	31
Water Dispenser/Cooler	Administration	20	19	22	21	20	22	22	20	21	22	19	21
Water Dispenser/Cooler	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
Hot Case	Administration	20	19	22	21	20	22	22	20	21	22	19	21
Hot Case	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
Microwave	Administration	20	19	22	21	20	22	22	20	21	22	19	21
Exhaust Fans	Administration	20	19	22	21	20	22	22	20	21	22	19	21
Exhaust Fans	Stores	20	19	22	21	20	22	22	20	21	22	19	21
Exhaust Fans	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
Photocopier	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21
Miscellaneous (Speakers, P	Common Areas (Administration)	20	19	22	21	20	22	22	20	21	22	19	21

Appliance	Area	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Lights	Administration	8	8	8	8	8	8	8	8	8	8	8	8
Lights	Residence	10	10	10	10	10	10	10	10	10	10	10	10
Lights	Stores	1	1	1	1	1	1	1	1	1	1	1	1
Lights	Common Areas (Administration)	2	2	2	2	2	2	2	2	2	2	2	2
Fans	Administration	0	0	0	8	8	8	8	8	8	8	0	0
Fans	Residence	0	0	0	14	14	14	14	14	14	14	0	0
Fans	Stores	0	0	0	3	3	3	3	3	3	3	0	0
Fans	Common Areas (Administration)	0	0	0	4	4	0	0	4	4	4	0	0
Computers	Administration	8	8	8	8	8	8	8	8	8	8	8	8
Computers	Common Areas (Administration)	8	8	8	8	8	8	8	8	8	8	8	8
Printers	Administration	3	3	3	3	3	3	3	3	3	3	3	3
Printers	Common Areas (Administration)	1	1	1	1	1	1	1	1	1	1	1	1
LCD TVs	Administration	4	4	4	4	4	4	4	4	4	4	4	4
LCD TVs	Common Areas (Administration)	4	4	4	4	4	4	4	4	4	4	4	4
Air Conditioners	Administration	0	0	0	6	6	6	6	6	6	6	0	0
Air Conditioners	Stores	0	0	0	6	6	6	6	6	6	6	0	0
Air Conditioners	Common Areas (Administration)	0	0	0	6	6	6	6	6	6	6	0	0
Water Cooler	Common Areas (Administration)	4	4	4	4	4	4	4	4	4	4	4	4
Refrigerator	Administration	2	2	2	2	2	2	2	2	2	2	2	2
Refrigerator	Common Areas (Administration)	2	2	2	2	2	2	2	2	2	2	2	2
Water Dispenser/Cooler	Administration	4	4	4	4	4	4	4	4	4	4	4	4
Water Dispenser/Cooler	Common Areas (Administration)	4	4	4	4	4	4	4	4	4	4	4	4
Hot Case	Administration	2	2	2	2	2	2	2	2	2	2	2	2
Hot Case	Common Areas (Administration)	2	2	2	2	2	2	2	2	2	2	2	2
Microwave	Administration	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Exhaust Fans	Administration	6	6	6	6	6	6	6	6	6	6	6	6
Exhaust Fans	Stores	6	6	6	6	6	6	6	6	6	6	6	6
Exhaust Fans	Common Areas (Administration)	6	6	6	6	6	6	6	6	6	6	6	6
Photocopier	Common Areas (Administration)	1	1	1	1	1	1	1	1	1	1	1	1
Miscellaneous (Speakers, P	Common Areas (Administration)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Annexure 2: Actual Electricity Consumption

Bill Period		No of Days	Energy Consumption (Units)	Average Daily Consumption (Units)	Amount Paid (Rs)	Computed Tariff (Rupee/Unit)
01/04/17	30/04/17	29	19450	671	208600	10.7
01/05/17	31/05/17	30	20873	696	229770	11.0
01/06/17	30/06/17	29	16580	572	182720	11.0
01/07/17	31/07/17	30	24742	825	271610	11.0
01/08/17	31/08/17	30	24531	818	272500	11.1
01/09/17	30/09/17	29	25363	875	293350	11.6
01/10/17	31/10/17	30	19038	635	212970	11.2
01/11/17	30/11/17	29	10983	379	124420	11.3
01/12/17	31/12/17	30	7680	256	92480	12.0
01/01/18	31/01/18	30	9931	331	114530	11.5
01/02/18	06/03/18	33	11527	349	132930	11.5
07/03/18	31/03/18	24	9583	399	104190	10.9
01/04/18	30/04/18	29	20419	704	233380	11.4
01/05/18	31/05/18	30	21795	727	254470	11.7
01/06/18	30/06/18	29	19759	681	241220	12.2
01/07/18	31/07/18	30	22659	755	271860	12.0
01/08/18	31/08/18	30	24757	825	299400	12.1
01/09/18	05/10/18	34	24506	721	535290	21.8
06/10/18	10/11/18	35	21311	609	262400	12.3
11/11/18	30/11/18	19	6313	332	93370	14.8
01/12/18	15/01/19	45	11633	259	277370	23.8
16/01/19	12/02/19	27	9020	334	133820	14.8
13/02/19	11/03/19	26	7587	292	252740	33.3
12/03/19	11/04/19	30	12313	410	156300	12.7
12/04/19	22/05/19	40	27726	693	500310	18.0
23/05/19	20/06/19	28	17023	608	219740	12.9
21/06/19	12/07/19	21	16527	787	423880	25.6
13/07/19	13/08/19	31	22355	721	282700	12.6
14/08/19	17/09/19	34	28912	850	370790	12.8
18/09/19	17/10/19	29	20883	720	272080	13.0
18/10/19	15/11/19	28	14954	534	470890	31.5
16/11/19	17/12/19	31	8470	273	135680	16.0
18/12/19	15/01/20	28	7631	273	257240	33.7
16/01/20	19/02/20	34	8713	256	142570	16.4
20/02/20	13/03/20	22	6656	303	107500	16.2
14/03/20	01/04/20	18	7547	419	84470	11.2
02/05/20	09/06/20	38	11474	302	229080	20.0
10/06/20	13/07/20	33	5141	156	106060	20.6
14/07/20	10/08/20	27	4162	154	86880	20.9
11/08/20	09/09/20	29	6934	239	120130	17.3
10/09/20	09/10/20	29	7612	262	127490	16.7
10/10/20	06/11/20	27	5662	210	73140	12.9
07/11/20	14/12/20	37	5086	137	123550	24.3
15/12/20	13/01/21	29	4955	171	105980	21.4
14/01/21	09/02/21	26	4983	192	103390	20.7
10/02/21	16/03/21	34	7543	222	145960	19.4
17/03/21	15/04/21	29	5604	193	88713	15.8