ENERGY AUDIT REPORT 2023 - 2024

SARAIGHAT COLLEGE

CHANGSHARI, DISTRICT: KAMRUP (Rural)

ASSAM, PIN: 781101

Audited by

Dr. Bimal Ch. Deka
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Electrical Engineering Department
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I. Introduction:

Saraighat College was established in the year 1981 and one of the pioneer institutes in the district of Kamrup (Rural) of Assam. The college is located at a distance of 25 km to the North of the Guwahati City.

Energy Auditing is a routine procedure of monitoring energy consumption and conservation of industry/organization/institute and its analysis.

This report presents the energy audit of the Saraighat College after verifying all electrical loads, its connections, protection schemes and optimal utilization of electricity.

II. Electrical Load of the Campus:

The electricity supply to Saraighat College is provided by the Assam Power Distribution Company Limited. A 63 kVA 3= phase transformer is installed to transfer power to the college.

Consumer No.: 025000001458

Connected Load: 38 kW

Contracted Demand: 35.29 kVA

Tariff Category: HT- IV Bulk Supply (Others)

Supply Voltage Level: HT

Average Power Factor: 0.96

The following sections give details of electrical gadgets used by different academic and administrative blocks of the college.

1. ACADEMIC BLOCK:

(a) Department:

Sl	Department	Fan	Light	Desk Top	Printer	UPS
No				Computer		525
1	Geography	2	2	1	1	1
2	Education	2	2	7	1	
3	Political Science	2	3	1	1	
4	History	4	5	1	1	1(3kVA)
5	Tourism	4	.4	19	3	1(6kVA)
6	Persian	7	1	1	1	(
7	Philosophy	8	1	1	1	1
8	Anthropology	6	2	1	1	
9	Mathematics	5	1	1	1	
10	English	4	3	2	2	1
11	Economics	4	3	1	1	1
12	Assamese	4	4	1	1	

(b) Class Rooms:

SI	Class Rooms	Fan	Light	Digital	Audio	UPS
No	21 1 2		- Jagint	Board	syst	01.5
1	Normal Class rooms (8 nos.)	61	60			
2	Political Science	4	6			-
3	History	2	3		-	
4	Tourism	7	6	3	6	-
5	Mathematics	1	<u> </u>	+		-
7	English	6	4			
,	Economics	9	5		_	-
8	Assamese	9	9			

(c) Laboratory:

SI No	Laboratory	Fan	Light	Desk Top Computer	Printer	UPS
1	Education	2	2			
2	Language Lab	2	ţ.	11	1	1(3 kVA)
3	Computer	2	2	7	1	KVA)

(d) Digital Room:

SI No	Digital Room	Fan	Light	LCD Projector	Smart Board	UPS
1	Room 1	2	2	1	1	
2	Room 2	2	2	1	1	

2. ADMINISTRATIVE BLOCK:

SI	Туре	Fan	Light	Desk Top	Printer	UPS
No				Computer		
1	Principal's Room 1	1	3	2		2
2	Principal's Room 2	2	2	1	1	
3	Office	6	11	4	4	1
4	Library	18	19	12	1	1
5	Examination Zone	7	7	2	1	1
6	KKH	3	2		OTTO DESCRIPTION OF THE PARTY O	the state of the s
7	IQAC	4	1	2	1	

3. OTHERS:

SI No	Туре	Fan	Light	Desk Top	Printer	UPS
1	Teachers' common room	6	8	Computer		
2	Art Gallery		13			
3	Ex-student room	1	13		+	
4	Gymnasium	4	3			
5	Union Room	2	2	1		
6	Girls' common room	2	6	1		
7 8	Boys' common room	4	5			
9	Kitchen	2	2			1.0
$\frac{9}{10}$	Canteen	4	1			
11	Hostel Warden	6	13	1		
12	Hostel Rooms	9	14	10	25	
	Corridors		27		10 4 10 10 10 10 10 10 10 10 10 10 10 10 10	
13	Wash Rooms	2	3			7

In addition to all the above gadgets, the following electrical appliances are also available in the college:

SI	Electrical Items	Rating	Quantity
No		Ruting	Quantity
1	Off-grid roof-top PV system	7 kW	1
2	Photocopy Machine	6.3 A	5
3	Air Conditioner	1.5 Ton	3
4	Display (Digital)		3
5	Vacuum Cleaner	1300 W	1
6	Central UPS (Library)	3 kVA	1
7	Inverter		2
8	Trade-Mill	7000 VA	1
9	Electric Kettle	1200 W	1
10	Refrigerator		2
11	Washing Machine	3 1	1
12	Water Pump		1

Switches:

There are appropriate and sufficient numbers of MCBs and Isolators for maintaining and protecting the equipments.

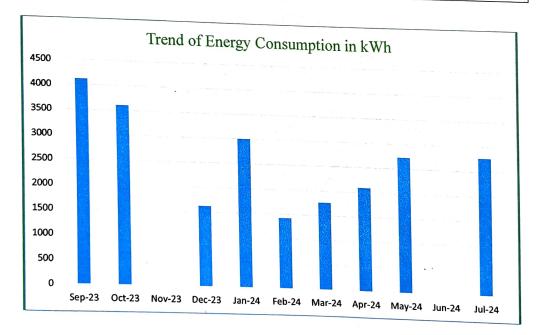
Outdoor Lighting:

There are 23 LED lights for outdoor lighting. It covers the entire college campus.

III. ENERGY CONSUMPTION DATA:

The trend of utilization of electrical gadgets and other appliances are reflected in the monthly bills of energy consumption. The energy consumption data are presented below for few months for the period 2023 - 2024. The trend is also illustrated pictorially.

Month	Energy consumed in units (kWh)	Penalty /Rebate	PF	Maximum Demand (kVA)	Unit charge in rupees	Total Energy charge in rupees
Sept 2023	4120.65	-3.71	0.989	31.53	8.10	33347.21
Oct 2023	3609.30	-3.25	0.987	31.32	8.10	29209.01
Dec 2023	1628.25	15.31	0.955	6.48	8.10	
Jan 2024	3002.70	-2.70	0.985	22.02		13312.84
Feb 2024	1427.10	28.10	0.946		8.10	24300.00
March 2024	1767.15	16.61	0.963	5.25	8.10	11787.20
April 2024				8.97	8.10	14448.46
May 2024		1.07	0.973	17.07	8.10	16959.48
July 2024		-2.46	-	19.8	8.10	22133.17
July 2024	2777.25	-2.5	0.988	14.43	8.10	26054.9



IV. CONCLUSION

It has been observed from the bills that the college is getting PF rebate in almost all months, which is a good sign of utilization of electricity, however, there are penalties in LT metering part. The institute has incurred a loss (in average) per month of Rs. 700.00 as LT metering

penalty. The institute must look into the matter in consultation with the power distribution company.

The college has been taking initiatives to create awareness among the students, teachers and other stakeholders to make an energy efficient campus. The Green Energy Initiative is another sincere effort of the college for carbon neutrality. With the rising awareness on the necessity to save energy, the college has resorted to ways and means for saving electricity. Efforts have been made to shift to renewable energy phase wise. A 7 kW off-grid roof-top solar plant has already been installed as an alternative source of energy. A few such projects are proposed to start in the college.

The location of many class rooms, departments and office rooms are such that sufficient natural light and air available during day time and as a result significant amount of electricity is saved. The college has taken steps to replace conventional electric bulbs with LED bulbs to save energy to some extent. The e-waste of the college has been disposed as scrap and given away to concerned agencies for recycling.

Sample Electricity Bill of Saraighat College

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To Whom It May Concern

This is to certify that the undersigned has successfully completed the audit of energy utilization of Saraighat College, Changsari, Kamrup (Rural), Assam for the year 2023-2024.

The college has been taking lot of initiative to create awareness among the students, teachers and other stakeholders to make the college campus an energy efficient campus. In a phased manner, the college has been shifting towards utilization of photovoltaic energy. The location of many class rooms, departments and rooms for other academic purposes are such that sufficient natural light and air available during day time and as a result significant amount of electricity is saved.

I wish that the Saraighat College will emerge as an institute of Green Campus in the near future.

(Dr. Bimal C Deka)
Professor, EE Dept.

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