



Government of Assam
ASSAM ENGINEERING COLLEGE

JALUKBARI :: GUWAHATI - 781013

Department of Electrical Engineering

Dr. Bimal Chandra Deka

Email: deka_bimal.ele@aec.ac.in

Professor

Contact: 9859180023



To Whom It May Concern

This is to certify that the undersigned has successfully completed the audit of energy utilization of Chhaygaon College, Chhaygaon, Dist. Kamrup, Assam for the year 2024-2025.

The college has been taking lot of initiative to create awareness amongst the students, teachers and other stakeholders to make the college campus an energy efficient campus. Effort has been made to replace conventional electrical gadgets with energy efficient devices in a phased manner. The college has been taking initiative to install roof-top solar plant as an alternative source of energy for producing electricity to meet certain demand in the near future.

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

(Dr. Bimal Ch. Deka)

Dr. Bimal Ch. Deka
Professor
Electrical Engg. Dept.
Assam Engineering College
Jalukbari, Guwahati-13

ENERGY AUDIT REPORT

2024 - 2025

CHHAYGAON COLLEGE

DISTRICT: KAMRUP (Rural)

ASSAM

Audited by

Dr. Bimal Ch. Deka
Professor
Electrical Engineering Department
Assam Engineering College
Jalukbari, Guwahati-781013
Assam



Dr. Bimal Ch. Deka
Professor
Electrical Engg. Dept.
Assam Engineering College
Jalukbari, Guwahati-13

I. Introduction:

Chhaygaon College was established in the year 1974 and one of the pioneer institutes in the district of Kamrup, Assam. The college is located at a distance of around 40 km to the west 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 Chhaygaon 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 the college is provided by the Assam Power Distribution Company Limited. A 3- phase transformer was installed to transfer power to the college.

Consumer No.: 028000006273

Connected Load: 19 kW

Contracted Demand: 19 kVA

Tariff Category: LT V (B) General Purpose (Education)

Supply Voltage Level: HT

Average Power Factor: 0.98

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

1. ACADEMIC BLOCK:

(a) Department:

Sl No	Department	Fan	Light	Computer	Printer	UPS
1	Assamese	5	4	2	1	2
2	English	5	2	1	1	1
3	Economics	5	6	1	1	1
4	History	5	9	1	1	1
5	Hindi	5	2	1	1	1
6	Philosophy	3	5	1	1	1
7	Political Science	4	6	1	1	1
8	Education	2	2	1	1	1
9	Accountancy	2	2	1	1	1
10	Management & Finance	5	3	2	1	1
11	Business Statistics	2	1	1	1	
12	Information Technology	1	2	1	1	1

(b) Class Rooms:

Sl No	Class Rooms	Fan	Light	Digital Board	Audio syst	UPS
1	Room 1	4	4			
2	Room 2	7	2			
3	Room 3	5	2			
4	Room 4	5	2			
5	Room 5	7	5			
6	Room 6	16	8	Smart class room in collaboration with HDFC		
7	Room 7	4	6			
8	Room 9	5	5			
9	Room 11	6	7			
10	Room 13	4		Smart class room		
11	MA (Ground)	1	2			
12	Room 110	16	4			
13	MA (1 st floor)	1	2			
14	Room 111	6	4			
15	Room 217	15	15			
16	History (attached)	2	4			
17	Room 218	7	8			
18	Room 107	6	4			
19	Room 108	6	4			
20	Room 109	8	3	Smart class room		
21	Room 213	8	4			
22	Room 18	7	8			
23	Room 17	1	1			
24	Room 16	1	1			
25	Room 101	5	4			
26	Room 103	6	2	Smart class room		
27	Room 104	4	3			
28	Room 105	4	2			
29	Room H1	6				
30	Room H2	5	5			
31	Room H3	8				
32	Room 206	2				
33	Room 205	2				
34	Room 204	5	1			
35	Room 203	7	3			
36	Room 201	13	5			
37	Room 208	2				
38	Room 210	2	1			
39	Room 212	12	4			
40	Room 202	7	2	Smart class room		

(c) Laboratory:

Sl No	Laboratory	Fan	Light	Computer	Printer/Projector	UPS
1	Education Lab	2	3			
2	Computer Lab	8	6	32		1
3	Language Lab		3	28		

2. ADMINISTRATIVE BLOCK:

Sl No	Type	Fan	Light	Computer	Printer	UPS
1	Principal's office	2	15	2		1
2	Library	17	20	3		3
3	IQAC	4	5	4		
4	General office 1	7	4	7		3
5	General office 2	3	9	4		1
6	Examination Cell	7	4			
7	KKSHOU	2	3	1		
8	Women Cell		2			
9	NSS	2	2			
10	Sports Cell	2	2			
11	Medical & Health	1	2	1		
12	Vice Principal's office	2	3			
13	Alumni Cell	1	2			
14	IDOL	1	2			
15	Eco-club	1	2			

3. OTHERS:

Sl No	Type	Fan	Light	Computer	Printer	UPS
1	Teachers' common room	5	2			
2	Students' union room	2	2			
3	Boys' common room	3	2			
4	Girls' common room	5	5			
5	Canteen	4	4			
6	Gymnasium	4	2			
7	Auditorium	48	56			
8	Indoor stadium	Electrification in progress				
9	Drinking water zone		3			
10	Washrooms & Toilets		24			
11	Folklore	7	3			
12	Guest room	1	4			
14	Press	2	2			
15	Corridors	2	49			

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

Sl No	Electrical Items	Rating	Quantity
1	Photocopy Machine	Normal	5
2	Air Conditioner	1 to 1.5 Ton	8
3	CC Camera		60
4	DG Set	40 kVA	1
5	Water Pump with motor	1 to 3 HP	3
6	Outdoor LED lighting		11
7	Wi-fi port		10
8	Printing Machine		1
9	Public address system (Auditorium)		1
10	Voltage Stabilizer	1-phase	4
11	Refrigerator	Household	2
12	LCD Projector	Normal	4

4. Recent infrastructure development:

- The old office room is converted to a conference room with a smart digital board, two air conditioners of 1.5 ton each and 16 LED bulbs.
- Electrification work of indoor stadium is in progress.

Switches:

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

Outdoor Lighting:

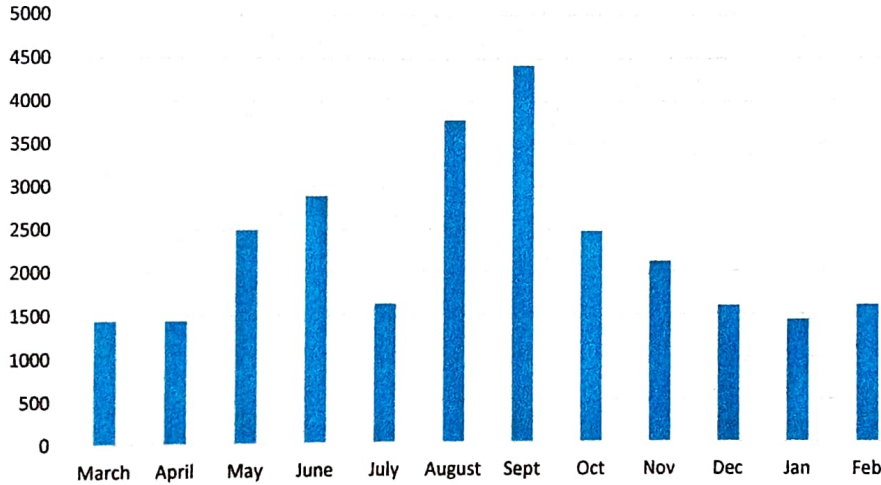
There are sufficient number of LED bulbs for outdoor lighting during night. It covers the entire college campus.

III. ENERGY CONSUMPTION DATA AND ANALYSIS:

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 twelve months from March 2024 to February 2025. The trend is also illustrated pictorially.

Month	Energy consumption (kWh)	Avg. PF	Maximum Demand (kVA)	PF Penalty /Rebate (in kWh)	Tariff (in Rs.)	Total Energy Charge (in rupees)
March 24	1442.00	0.98	19	-43.00	6.85	9583.15
April 24	1442.00	0.98	19	-43.26	6.85	9583.15
May 24	2492.00	0.99	19	-75.00	6.85	16556.45
June 24	2891.00	0.99	19	-87.00	6.85	19207.40
July 24	1631.00	0.99	19	-49.00	8.14	12877.48
Aug 24	3782.00	0.99	19	-113.00	8.14	29865.66
Sept 24	4425.00	0.99	19	-133.00	8.14	34936.88
Oct 24	2470.00	0.99	19	-74.00	8.14	19503.44
Nov 24	2117.00	0.99	19	-64.00	8.14	16711.42
Dec 24	1598.00	0.99	19	-48.00	8.14	12617.00
Jan 25	1434.00	0.99	19	-43.00	8.14	11322.74
Feb 25	1607.00	0.99	19	-48.00	8.14	12690.26
Total	27331.00			-820.26		205455.03

Trend of Energy Consumption(kWh)
(March 2024 - February 2025)



From the above data, it is found that total energy consumption for the 12-month period from March 2024 to February 2025 is **27331.00 kWh** (Previous year 31454.00 kWh). The total rebate due to PF is **820.26 kWh** (Previous year 702 kWh). The amount of tariff paid during the period is **Rs. 205455.03** (Previous year Rs. 210029.00) excluding all fixed charges etc. The rebate amount received for the above 12-month period is Rs. 6677.00. The amount of tariff is reduced in comparison with the previous year even after the tariff rate has been increased from Rs. 6.85 per unit to Rs. 8.14 per unit.

IV. CONCLUSION

This report presents a detail of electrical gadgets used in the college and its energy consumption. 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, however, the corridors of main building need extra lighting even in the day time due to existing building design. The college has replaced almost all conventional electric bulbs with LED bulbs to save energy. The average power factor is 0.99 which is very much satisfactory. All the installed air conditioners are as per the standards recommended by the Bureau of Indian Standard (BIS). The college is also planning to erect roof-top solar PV plant as an alternative to save electricity as well as reduction of carbon emission in the near future.

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. The effort taken by existing Eco-club is commendable in this regard. 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. The e-waste of the college has been disposed as scrap and given away to concerned agencies for recycling.

ELECTRONIC SUBDIVISION 19CA Chicago
 DIN 1340109AS200156/001242
 GSTIN 18AABDC1354123
 ELECTRONIC 19CA



Consolidated Customer Care Number: 1812

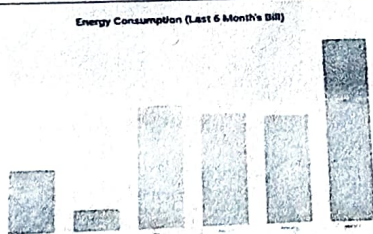
Billing Status: Normal

Reading Type	Meter Number	1st	Previous Reading in kWh	Previous Export Reading in kWh	Current Reading in kWh	Current Export Reading in kWh	Difference Reading in kWh	Difference Export Reading in kWh
kWh (Normal)	23072765	1 03	904.00	0	2346.00	0	1442.00	0
		0	0	0	0	0	0	0

Use 1 Consumed		PE Penalty/Ratebase		LT Metering Penalty @ 2%		DTR Penalty @ 10%		STF Rebate @ 1%		B-Rate Units in kWh	
1447.00		43.00								1209.00	
0		0								0	
Recorded Demand (in KVA)	0	Maximum Demand (in KVA)	0	Billing Demand (in KVA)	19.00	Previous Excess Salar Unit	0	Salar Unit Adjusted	0	Remaining Excess Salar Unit	0
Power on HOURS	0	Freeze Amount	0	Average Power Factor	98.00	Availability Percentage					

Slab-1 (Unit Rate Charge)	Slab-2 (Unit Rate Charge)	Slab-3 (Unit Rate Charge)	Slab-4 (Unit Rate Charge)	Slab-5 (Unit Rate Charge)
01010	01010	01010	01010	01010

Current Demand	Outstanding Amount	Adjustment Amount	Government Subsidy	Solar Rebate	Net Bill Amount
14176.63	0	0	0	0	14177.00
					In Words: Rupees Fourteen Thousands and Seven Paise

$$\text{Effective Energy Charge} = \text{Energy Charge} - \text{Subsidies}$$


Consumption & payment history of last 6 electricity bills
(the latest bill prior to this current bill)

	Bill#1	Bill#2	Bill#3	Bill#4	Bill#5	Bill#6
Unit Consumed	0	0	0	0	0	0
Bill Amount (in Rs.)	0	0	0	0	0	0
Payment (in Rs.)	0	0	0	0	0	0

Details	Units	Rate	Amount
	1399.00	6.85	9583.15
	0	0	0
Energy Charge	0	0	0
	0	0	0
	0	0	0
	0	0	0
Total Energy Charge			9583.15
Energy Charge ReEstimated			0
Demand/Fixed Charge	19.00	90.00	1742.79
FPPPA Charge			1804.71
Green Energy	0	0	0
Electricity Duty	5.00 %		566.30
Government Subsidy	0		0
Tariff Subsidy			0
Meter Rent		175.00	0
Transformer M D Charge			0
Overdrawl Penalty			0
Adjustment Amount			0
Charges for dishonoured cheque			0
Arrear Principal			0
Arrear Surcharge			0
Current Surcharge			479.88
Misc. Arrear			0
Rebate if paid before due date			0
Payable amount before due date			14177.00
Payable amount after due date			14177.00

Signature with seal

MF: Multiplying factor of the meter
Transformer M D Charge : Transformer Maintenance & Depreciation Charge

Dr. Bimal Ch. Deka
Professor
Electrical Engg. Dept.
Assam Engineering College
Jalukbari, Guwahati-13