

Detailed Energy Audit Report

of

Govt. Raza Post Graduate College, Rampur Uttar Pradesh- 244901

(Affiliated to M.J.P Rohilkhand University, Bareilly)



Prepared by

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LIST OF ABBREVIATIONS

APFC	Automatic Power Factor Controller
CFL	Compact Fluorescent light
DEA	Detailed Energy Audit
DG	Diesel generator
DPR	Detailed Project Report
EE	Energy Efficiency
EEM	Energy Efficiency Measure
kWh	Kilo watt hour
LED	Light Emitting Diode
SEGR	Specific Energy Generation Ratio
SPV	Solar Photovoltaic
SVL	Sodium Vapor Lamp
TOD	Time of day
VFD	Variable Frequency Drive
SEB	State Electricity Board
PSPCL	Punjab State Power Corporation Limited
°C	Degree Centigrade
CFM	Cubic Feet per minute
HP	Horsepower
Kg	Kilo Gram
kW	Kilo Watt
MJ	Mega Joule
RPM	Revolutions per minute
T or MT	Tons
V	Voltage

CONVERSION FACTORS

1 kgoe	10000 kCal
1 kWh	860 kCal
HSD	9783 kCal/ Ltr(Density = 0.8263 Kg /Lit.)
1 MTOE	10 ⁷ kCal

ACKNOWLEDGEMENT

We are grateful to the senior management of Govt. Raza Post Graduate College, Rampur for their keen interest in energy solutions' portfolio and for allowing to conduct an energy audit of the campus situated at Govt. Raza Post Graduate College, Rampur, Uttar Pradesh.

We are thankful to **Dr. Deepa Agrawal (Principal)** for showing keen interest and extending full co-operation to our team during the study, without which it would have been tough to strategize a realistic report.

We hope that the analysis provide in this report will be valuable and worthy of discussions to take things forward to help college management meet their aspirations of energy cost reduction. While we have made every attempt to adhere to high-quality standards, in both data collection and analysis, and in presentation through the report, we would welcome suggestions to improve upon this report further.



Krishna Kant Dubey

Certified Energy Manager

(EM-300297)

GO GREEN INDIA, SONBHADRA

Date: 18/12/2023

AUDITOR CERTIFICATE

Reg No.: EM-300297/22



Certificate No.: 11153/T

National Productivity Council
(National Certifying Agency)

PROVISIONAL CERTIFICATE


This is to certify that Mr. / Mrs. / Ms. **KRISHNA KANT DUBEY**
son / daughter of Mr. **SHREEKANT DUBEY**has passed the National
Certification Examination for Energy Managers held in **JULY 2022**conducted on behalf of the
Bureau of Energy Efficiency, Ministry of Power, Government of India.

He / She is qualified as **Certified Energy Manager**. This certificate is valid till the Bureau of Energy
Efficiency issues an official certificate.

Place: Chennai, India

Date : **9th November 2022**

Digitally Signed:DEVERAPALLI SREENIVASULU
Wed Nov 09 18:25:18 IST 2022
CoE, NPC AIP Chennai


Controller of Examination

WORK COMPLETION CERTIFICATE

Name of College: Govt. Raza Post Graduate College, Rampur

Full Address: Govt. Raza Post Graduate College, Rampur, Uttar Pradesh-244901

Date of Audit: 08/12/2023 to 18/12/2023

This is to certify that Mr. Krishna Kant Dubey has completed a detailed energy audit at Govt. Raza Post Graduate College, Rampur. The audit was conducted from 08/12/2023 to 18/12/2023 and completed on 18/12/2023.

We are thankful to **Dr. Deepa Agrawal (Principal)** for showing keen interest and extending full co-operation to our team during the study and we are also thankful to **Dr Hitendra Kumar Singh** (Head Department of Botany) and **Dr. Durgesh Singh Yadav** (Assistant Professor Department of Botany), for the assistance provided to complete the audit.



Krishna Kant Dubey

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Certified Energy Manager

(EM-300297)

GO GREEN INDIA, SONBHADRA

Date: 18/12/2023

ABOUT COLLEGE

Government Raza Postgraduate College, Rampur (Uttar Pradesh) is established at the district headquarters since 16 July 1949. It is an ancient and famous government college of Uttar Pradesh. Located near Naveen Tehsil in Khushrobagh of the main city.

The college is about 7 kilometers from Gandhi Samadhi Civil Line. College is affiliated to M.J. P. Rohilkhand University, Bareilly. GRPGC strives to impart knowledge and skills that equip individuals to become integral members of an informed society, dedicated to national progress while honoring the diverse tapestry of Indian society, rooted in both national and human values. The college provides undergraduate and postgraduate education in Science, Arts, Commerce and B.Ed courses. Apart from this, various courses under IGNOU, Industrial Chemistry and Ph.D. Courses also available. Primary level computer courses, conduct of research projects, postgraduate and research students are available in the college.

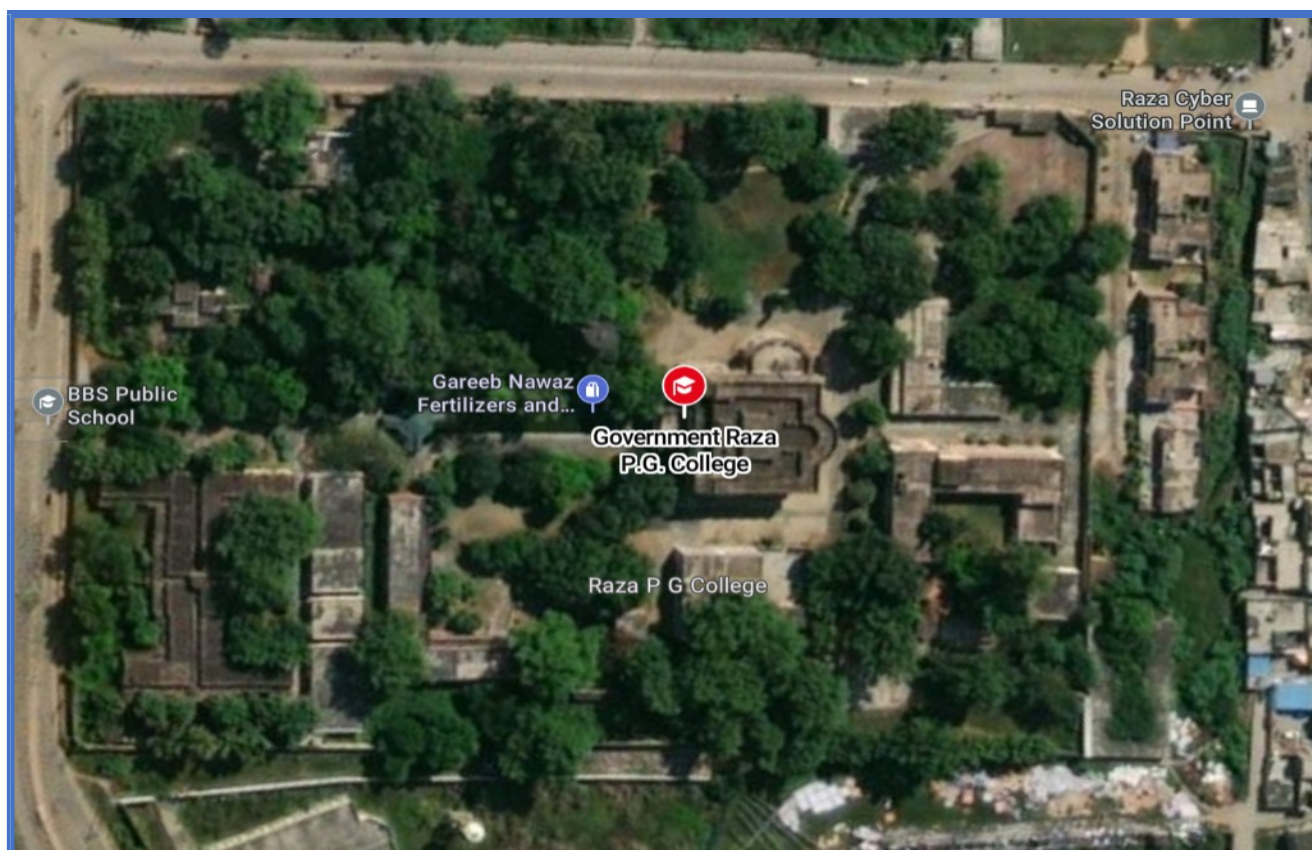


Figure 1: Satellite view of the campus

1. EXECUTIVE SUMMARY

With the advent of energy crisis and exponential hikes in the cost of different forms of energy, Energy Audit is manifesting its due importance in Industrial & institutional Establishments.

The detailed energy audit at Govt. Raza Post Graduate College, Rampur, U.P. was carried out in month of December-2023. The study primarily covers the:

- ✚ Present energy scenario of the campus of college.
- ✚ Detailed analysis of the data obtained through onsite measurements using portable gadgets, discussions with concerned personnel etc.
- ✚ Recommendations for energy savings in all possible areas with cost benefit analysis.
- ✚ Technical specifications for any retrofit options

College has an electricity connection from the Pashchimanchal Vidyut Vitran Nigam Limited (a division of UPPCL) of 30.6 kW at LT supply, so there is no any individual transformer installed in the campus. The detailed energy audit is being conducted for Govt. Raza Post Graduate College, Rampur, so we measured the power quality at main supply using power analyser instrument.

Government Raza Post Graduate College, Rampur has also installed 10 kWp capacity of solar power system on the rooftop of the building to minimise the electricity consumption from grid.



Figure 2: Solar power plant in campus

1.1 ANNUAL ENERGY CONSUMPTION DATA

Table 1: Annual Energy Consumption details

Sl. No.	Item	Values
1	Connected load (kW)	30.6 kW
2	Installed capacity: DG Sets (kVA)	2 nos. (15 kVA, 10 kVA)
3	Annual Electricity Consumption, purchased from Grid	52762 kWh
4	Annual Electricity consumption through DG Sets	4305 kWh
5	Annual Electricity consumption through Solar Power System	14784 kWh
6	Total Annual Electricity Consumption, Grid + DG Sets + Solar - Last One year	52762 kWh (Grid Supply) 4305 kWh (DG Supply) 14784 kWh (Solar) Total: 71851 kWh per annum
7	Annual Cost of Electricity, purchased from Grid	Rs 5,25,213
8	Annual Fuel Cost of Electricity generated through DG Sets	Rs 1,26,781
9	Total Annual Electricity Cost, Purchased Power+ DG Sets	Rs 5,25,213 (Grid Supply) Rs 1,26,781 (DG Fuel Supply) Total: Rs 6,51,994 per annum
10	Working hours	<u>Office Building Lighting</u> 2080 Hrs./annum (8 hrs./day, 260 Days/Annum 6 Days/week) <u>Compound Lighting</u> 3650 Hrs./annum (10 hrs. /day & 365 days) <u>Air Conditioning</u> 1720Hrs./annum (8 hrs. /day,215Days/Annum)

Detailed Energy Audit of Govt. Raza Post Graduate College, Rampur

Sl. No.	Item	Values
		&6 days a week) <u>Ceiling Fans for office building</u> 1720 Hrs./annum (8 hrs. /day, 215 Days/Annum &6 days a week)
11	Working days/week	6 days per week
12	HSD Consumption in DG Sets in the year	1405.5 Ltr.

1.2 ANNUAL ENERGY CONSUMPTION IN MTOE TERMS

Table 2: Annual Energy Consumption in MTOe

Source of Energy	Consumption	Calorific Value	kCal/annum	MTOE/annum
Average Purchased Power per annum	52762	860	45375320	4.5
	kWh/annum	kCal/ kWh		
HSD for DG Set	1406	9783	13750496	1.4
	Ltr. /Annum	kCal/Ltr		
Average Solar Power Generation per annum	14784	860	12714240	1.3
	kWh/annum	kCal/kWh		
Total			71840056	7.2

1.3 CUMULATIVE ENERGY SAVING MEASURES (EEM)

Table 3: Energy Efficiency Measures

EEMs	Annual Energy Savings			Estimated Investment	Simple Payback Period (months)
				(Rs in Lacs)	
	kVAh	kWh	Rs in Lacs		
EEM-1: Increase the minimum AC set temperature at 24-degree Celsius	-	1892	0.14	Nil	Immediate
EEM-2: Replace existing AC ceiling fans with energy efficient BLDC ceiling fans	-	13743	1.04	4.18	48
Total	-	15635	1.18	4.18	48.0

Detailed Energy Audit of Govt. Raza Post Graduate College, Rampur

Table 4: Monetary benefit analysis detail

Particulars	Values
Annual Purchased Power Bill	Rs 5.25 Lacs
Annual Purchased HSD Bill	Rs. 1.27 Lacs
Total Annual Energy Bill	Rs. 6.52 Lacs
Total Annual Energy Saving Potential identified	Rs. 1.18 Lacs
Percentage Energy Cost Saving Potential	18.10%

2. INTRODUCTION

2.1 THE PROJECT

With the advent of energy crisis and exponential hikes in the cost of different forms of energy, Energy Audit is manifesting its due importance in Industrial Establishments.

Energy Audit is the key to a systematic approach for decision-making in energy management as it attempts to evaluate the energy usage pattern in an establishment. Also, it serves to identify all the energy streams in an establishment, so that potential areas wherein energy savings are practically feasible are identified.

It was with this objective of study team that was entrusted by College Management team for the energy audit of their campus situated in Rampur.

2.2 DELIVERIES

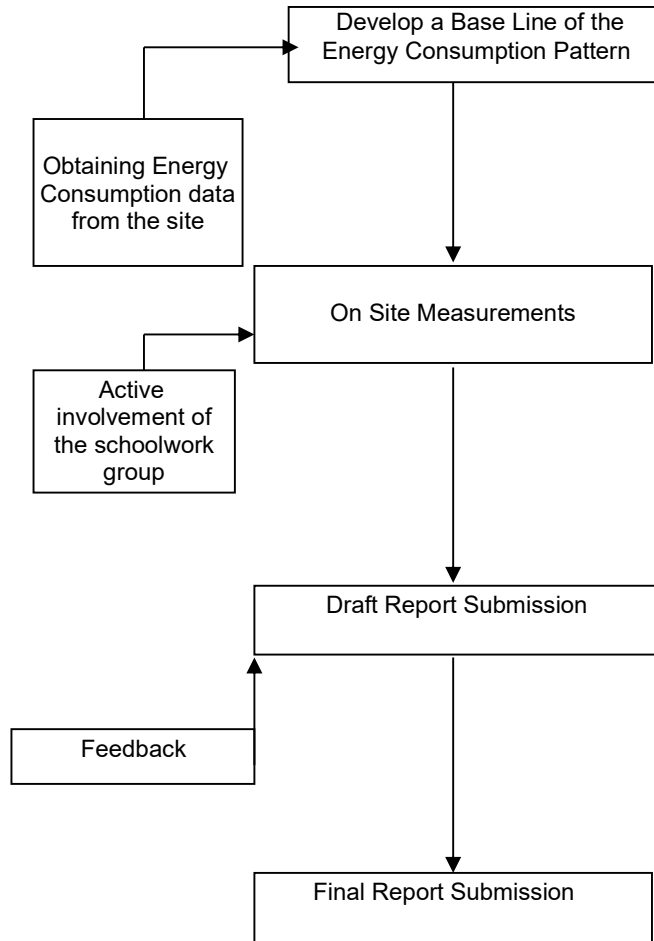
- ✚ Present energy scenario of the building.
- ✚ Detailed analysis of the data obtained through onsite measurements using portable gadgets, discussions with concerned personnel etc.
- ✚ Recommendations for energy savings in all possible areas with cost benefit analysis.
- ✚ Technical specifications for any retrofit options and

2.3 METHODOLOGY

Methodology adopted for achieving the desired objectives viz: Assessment of the Current operational status and Energy savings include the following:

- ✚ Discussions with the concerned officials for identification of major areas of focus and other related systems.
- ✚ A team of engineers visited the campus premises and had discussions with the concerned officials/ supervisors to collect data/ information on the operations and energy distribution in the building. The data was analyzed to arrive at a base line energy consumption pattern.
- ✚ Measurements and monitoring with the help of appropriate instruments including continuous and/ or time-lapse recording, as appropriate and visual observations were made to identify the energy usage pattern and losses in the system.
- ✚ Computation and in-depth analysis of the collected data, including utilization of computerized analysis and other techniques as appropriate were done to draw inferences and to evolve suitable energy conservation plan/s for improvements/ reduction in specific energy consumption.
- ✚ Draft Report submission on the findings of the audit.

- Final report submission after incorporating the observations/ comments made by College management team.



2.4 LIST OF INSTRUMENTS USED

Table 5: List of instruments

Sr. No.	Instruments	Make	Image
1	Three Phase Power Analyser, ALM 31	Krykard	
2	Ultrasonic Water Flow Meter	Handheld Ultrasonic	
3	Anemometer	Testo	
4	Hygrometer	Testo	
5	Digital Thermometer	Leaton	
6	Infrared Thermometer	Fluke	
7	Pressure Gauge	Guru	
8	Lux Meter	Lutron	

2.5 OPERATING HOURS CONSIDERED FOR CALCULATION PURPOSE

Table 6: Operating hours of electrical equipment

Particulars	Values
Office Building Lighting (8 hrs./day, 260 Days/Annum 6 Days/week)	2080 hrs. per annum
Compound Lighting (10 hrs./day, 365 days a year)	3650 hrs. per annum
Air Conditioning (8 hrs./day, 215 Days/Annum & 6 days a week)	1720 hrs. per annum
Ceiling Fans for Office Building (8 hrs./day, 215 Days/Annum)	1720 hrs. per annum

3. POWER SUPPLY SYSTEM AND ENERGY CONSUMPTION PATTERN

3.1 POWER SUPPLY SYSTEM

The Power (grid electricity) Supply to the building is sourced from the Pashchimanchal Vidyut Vitran Nigam Limited at LT supply. Billing is on kVAh basis. The additional power is generated in-house by 2 DG Sets having 15kVA & 10kVA capacity operated time to time as per requirement and load profile in the campus. **College has also installed solar power plant on roof top of the buildings having 10.0 kWp capacity, which showing the keen interest of the institute about renewable energy system.**

Single line diagram of existing system is mentioned below:

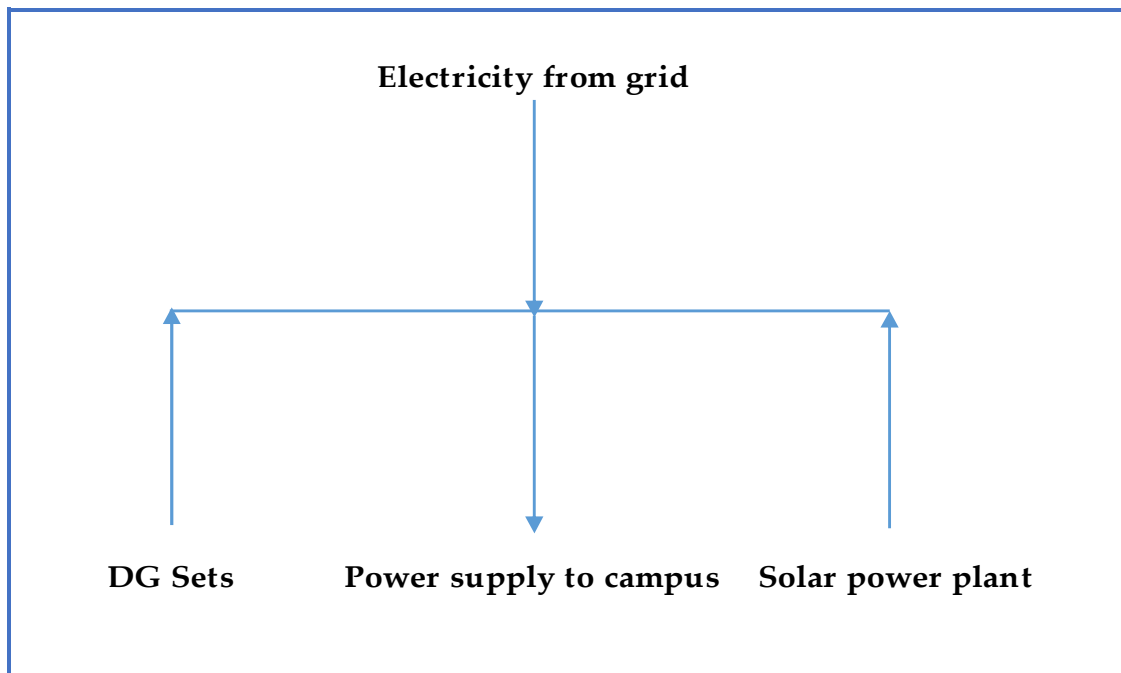


Figure 3: Electrical distribution network

Table 7: Existing DGs Specification

Particulars	DG-1	DG-2
Make	Kirloskar	Eicher
Capacity	15 kVA	10 kVA
Rated Voltage	240 V	230 V
Rated Current	62.5 Amp	43.5 Amp



Figure 4: DGs Pictures

3.2 ELECTRICITY BILL ANALYSIS PURCHASED FROM GRID

Table 8: Electricity Bill Analysis

Month	CD (kW)	MDI (KVA)	Unit Consumed (kWh)	Unit Consumed (kVAh)	Power Factor	Fixed Charges (Rs.)	Energy Charges (Rs.)	Total Bill Amount (Rs.)	Avg. Electricity charge (Rs./kVAh)	Avg. Electricity charge (Rs./kWh)	Energy Charge (Rs/kWh)	Energy Charge (Rs/kVAh)	Billable Demand, kVA
Dec-22	30.6	12.30	3549	3600	0.986	6974	26748	35603	9.9	10.0	7.54	7.43	25.83
Jan-23	30.6	16.82	3025	3074	0.984	6974	22839	30553	9.9	10.1	7.55	7.43	25.83
Feb-23	30.6	18.90	2820	2865	0.984	6974	21287	30920	10.8	11.0	7.55	7.43	25.83
Mar-23	30.6	21.40	3241	3286	0.986	6974	24502	32086	9.8	9.9	7.56	7.46	25.83
Apr-23	30.6	23.40	3960	4035	0.981	6974	29980	40029	9.9	10.1	7.57	7.43	25.83
May-23	30.6	32.51	6708	6792	0.988	8778	50645	67751	10.0	10.1	7.55	7.46	25.83
Jun-23	30.6	34.44	7365	7470	0.986	9299	55502	70370	9.4	9.6	7.54	7.43	25.83
Jul-23	30.6	30.40	6267	6342	0.988	8208	47692	62043	9.8	9.9	7.61	7.52	25.83
Aug-23	30.6	28.35	5265	5385	0.978	7655	40011	46463	8.6	8.8	7.60	7.43	25.83
Sep-23	30.6	26.85	4110	4215	0.975	7250	31318	41965	10.0	10.2	7.62	7.43	25.83
Oct-23	30.6	21.42	3467	3517	0.986	5783	26037	35017	10.0	10.1	7.51	7.40	25.83
Nov-23	30.6	12.30	2985	3015	0.990	6974	22402	32415	10.8	10.9	7.50	7.43	25.83
Total/Avg.	30.6	23.26	52762	53596	0.984	88817	398962	525213	9.9	10.1	7.56	7.44	25.83

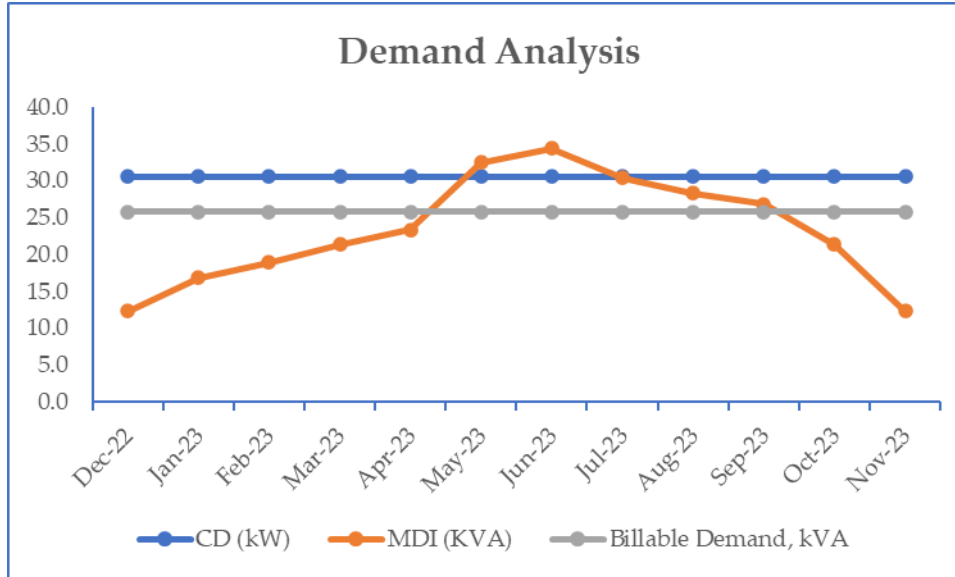


Figure 5: Demand analysis

Remark: Average power factor of the building based on the last one-year electricity bill analysis is 0.984, which is good and well maintained by the college.

3.3 ELECTRICITY AND FUEL ANALYSIS OF DG SETS

Electricity generated and fuel consumption details is shown below in the table based on the data provided by the plant.

Table 9: Yearly Diesel Bill Analysis, 15kVA

Month	Units generated, kWh	Total fuel cost, Rs	Amount of Diesel, Lit	Specific fuel consumption, kWh/Lit	Unit Cost, Rs/kWh
Dec-22	190.7	5529	61.3	3.11	29.0
Jan-23	154.0	4573	50.7	3.04	29.7
Feb-23	229.1	5520	61.2	3.74	24.1
Mar-23	214.6	6255	69.35	3.10	29.1
Apr-23	237.9	6368	70.6	3.37	26.8
May-23	219.6	6616	73.35	2.99	30.1
Jun-23	226.2	6837	75.8	2.98	30.2
Jul-23	200.4	5926	65.7	3.05	29.6
Aug-23	189.1	5746	63.7	2.97	30.4
Sep-23	190.6	6048	67.05	2.84	31.7
Oct-23	183.1	5881	65.2	2.81	32.1
Nov-23	165.4	5854	64.9	2.55	35.4
Total/Avg.	2400.7	71154	788.85	3.05	29.86

Detailed Energy Audit of Govt. Raza Post Graduate College, Rampur

Table 10: Yearly Diesel Bill Analysis, 10kVA

Month	Units generated, kWh	Total fuel cost, Rs	Amount of Diesel, Lit	Specific fuel consumption, kWh/Lit	Unit Cost, Rs/kWh
Dec-22	158.8	4492	49.8	3.19	28.3
Jan-23	157.2	4352	48.25	3.26	27.7
Feb-23	150.8	4438	49.2	3.06	29.4
Mar-23	163.5	4618	51.2	3.19	28.2
Apr-23	172.4	4880	54.1	3.19	28.3
May-23	157.1	5083	56.35	2.79	32.4
Jun-23	196.0	5250	58.2	3.37	26.8
Jul-23	165.9	4902	54.35	3.05	29.6
Aug-23	151.8	4618	51.2	2.96	30.4
Sep-23	143.3	4429	49.1	2.92	30.9
Oct-23	146.7	4262	47.25	3.11	29.0
Nov-23	141.1	4303	47.7	2.96	30.5
Total/Avg.	1904.6	55626	616.7	3.09	29.29

Energy charges from different sources has been analysed, basic energy charges is described below in the table:

Table 11: Basic energy charges

Particulars	Values
Basic Energy Charges for Grid Electricity	Rs 7.56 per kWh
Basic Energy Charges for DG Set	Rs 29.57 per kWh
Power Rate considered for energy savings calculation in the report	Rs 7.56 per kWh

4. AIR CONDITIONING SYSTEM

4.1 AIR CONDITIONING SYSTEM

Majority of cooling load is met by split ACs. Details of installed ACs are mentioned below in following table.

Table 12: Installed Air conditioners detail

Sr. No.	Type of AC	Star Rating	Capacity	Quantity	Brand
1	Split AC	3 Star	1.5 Ton	6	LG
2	Split AC	3 Star	1.5 Ton	5	Onida

Suggestions: It is suggested to operate all the ACs at minimum 24-degree celsius set temperature to minimise the energy consumption of air conditioning systems, as suggested by the Bureau of Energy Efficiency (MoP). Work load of the compressors of AC increased at minimum temperature which allows more energy consumption compared to slightly higher temperature.

“Normal human body temperature is between 36-37 degree Celsius. It is generally observed that in large commercial establishments, hotels, Airports and offices, the AC operating staff, try to set the lower temperature (around 18-21 degree Celsius), believing that it indicates a better cooling performance of AC system. However, technically this is not true and the cooling action of compressor is same at other settings also. On the other hand, setting the temperature in the range of 18-21 degree Celsius results into a very cool internal ambient conditions, which compels people to wear warm clothing leading to wastage of energy. As per the comfort chart, the temperatures up to 25 deg. C are quite comfortable for human body, along with desired humidity and air movement values.

Bureau of Energy Efficiency (Ministry of Power) has issued the guidelines to major commercial establishments with the objective of conserving energy through optimum temperature settings for the Air Conditioners, within the comfort zone /chart. It is estimated that changing the temperature from conventional 20-21 degree Celsius can result in approximately at 24 per cent of energy savings”

5. LIGHTING AND FANS

5.1 LIGHTING SYSTEM

Installed lighting system in the building is mentioned below in table:

Table 13: Quantity of Installed lighting detail

Sr. No.	LED Bulb		LED Tube light	LED Street Light
	15W	25W	20W	45W
1	138	115	65	10

Suggestions: Nowadays, most of the commercial buildings have adopted Automisation in lighting system to maintain the operational hours by reducing unnecessary operations. Atomisation can be adopted for both type of lighting system using the sensors. It is described below;

- Movement sensors are good option for indoor lighting system to control the operating hours of the luminaires. It switched off the lights when no any activity detected by any human being inside the room. A single movement sensor can be equipped with all the lighting system installed in a single room. Whenever anyone enters the room, it senses the activity and allows luminaires to glow.
- Timers/Photosensors for outdoor lighting system. Outdoor lighting systems are required at night. Manually operations are not efficient for outdoor lighting system, every single minute of unnecessary operation of street light is wastage of the energy. Timers allows the street lighting system to glow within the hours only which commanded to it and photosensors operation based on the outdoor level of the sky light allows street lights to operate. A single sensor can be equipped with all the street lights.

Energy saving calculation is attached in annexure.

5.2 FANS

Installed Fans in the building is mentioned below in table:

Table 14: Installed Fan detail

Sr. No.	Old Ceiling Fan	New Ceiling Fan
	100W	60W
1	43	166

Suggestions: Existing ceiling fans installed in the rooms of the building are 60-watt and 100-watt AC fans. At current, most energy efficient ceiling fans are BLDC (Brush less direct current) fans which consumes 28-30 watt power at the same output as 60 watt AC fans. It is suggested to replace existing AC ceiling fans by BLDC fans to minimise the energy consumption almost half. Energy saving calculation is attached in annexure.

6. ENERGY EFFICIENCY MEASURES

6.1 BY INCREASING THE TEMPERATURE OF AC FROM 16°C TO 24°C

Table 15: EEM-1

Sr. No	Description	UOM	Value
1	Total no. of Existing Air Conditioner	Nos	11
2	Annual Running Hours (Estimated)	Hrs	1720
3	Estimated Energy Consumption per AC	kW/Hr	1.0
4	Annual Energy Consumption of AC	kWh	18920
5	Power cost Per KWh (Approx)	Rs	7.56
6	Reduction in Energy consumption per hour after increasing the Temp 18°C to 24° C, Approx Saving 10 % of Total Consumption	kWh	0.1
7	Annual Energy Saving	KWh	1892
8	Annual Monetary saving	Rs	14303.5

6.2 INSTALLATION OF BLDC CEILING FANS IN PLACE OF AC CEILING FANS

Table 16: EEM-2


Sr. No	Description	UOM	Value
1	Total no. of Existing Ceiling Fan (60 watt)	Nos	166
2	Total no. of Existing Ceiling Fan (100 watt)	Nos	43
3	Annual Running Hours	Hrs	1720
4	Energy Consumption of BLDC Fan	Watt	30
5	Estimated Energy saving	KW	8.0
6	Power cost Per KWh	Rs	7.6
7	Estimated cost 1 No. of BLDC Fan	Rs	2000
8	Total Estimated Investment	Rs	418000
9	Annual Energy Saving	KWh	13743
10	Annual Monetary saving	Rs	103896
11	Pay Back Period	Month	48

7. ELECTRICITY BILL OF COLLEGE

PASHCHIMANCHAL VIDYUT VITRAN NIGAM LIMITED
पश्चिमांचल विद्युत वितरण निगम लि०

सहायता के लिए संपर्क करें/ For Assistance Dial 1912
एलएनएन नंबर के लिए <For Bill SMS BILL> <Account No> 5616195
अपने बिल का भुगतान करें Pay your bill on < www.upenergy.in >

विद्युत बिल Electricity Bill

अकाउंट नं./Account No	1210624000	वर्ग/Division	DIV120541	Scan & Pay your Bill 
नाम/Name	PRINCIPAL	उपवर्ग/Subdivision	SDO1205419	
पिता/पति का नाम Father/Husband name		संश्लेषित शक्ति/Sanctioned Load	30.60 kW	
पता/Address	GOVT DEGREE COLLEGE KHUSROO BAGH ROAD, RAMPUR, UP, IND	मीटर का नंबर/Meter S.No	21519441	
मोबाइल नंबर/Mobile No		दर/Rate	LMV4	
ईमेल/Email		सप्लाई टाइप/Supply Type	44	
संयोजन तिथि/Connection Date		सुरक्षा जमा/Security Deposit	122400	
		बिल अंतर/ Bill Difference	0	

बिल नंबर /Bill No	121258901905	बिल आधार/ Bill Basis	OK	बिल तिथि Due Date	25-DEC-2023
बिल की तिथि/Bill Date	11-DEC-2023	बिल की मात्रा/Billed Demand	25.83	बिल तिथि का पूर्व/ Due Date Rebate	0
बिल माह/Bill Month	DEC-2023	प्रगामी सहायता/Progressive Subsidy amount	0	बिल तिथि तक/ Payable By Due Date	53875
नेट बिल्ट/ Net Billed Unit	3015.00	अग्रिम भुगतान/Advance Payment	0.00	अपसंयोजन तिथि/Disconnection Date	01-JAN-2024
		अकार्यशील राशि/Inoperative Amount	0.00		

यह बिल अगुनि संश्लेषण 2005 की धारा 17.1 के तहत अंतिम नोटिस के तहत है। पुराने बिलों पर बिजली की जांच को अगुनि बिल की जा सकती है।
This bill will be constituted as final notice under section 17.1 of Supply Code 2005. Supply can be disconnected at any date on old dues.

Details	Gross Amt	Subsidy	Amount	Details	Amount
ऊर्जा शुल्क/Energy Charges	22401.45	0.00	22401.45	अग्रिम ब्याज/Interest on Security	0.00
स्थिर मांग शुल्क/Fixed Demand Charges	6974.1	0.00	6974.1	अग्रिम भुगतान पर ब्याज/Interest on Advance Payment	0.00
न्यूनतम शुल्क/Min Charge	0	0.00	0	टी.डी.सी. शुल्क/TDS Amount	0.00
उत्पादक शुल्क/Green EC			0	टी.डी.सी. शुल्क/TCS Amount	0.00
विद्युत कर/Electricity Duty			2203.17	सी.जी.एस.टी./CGST	0.00
अतिरिक्त मांग दण्ड/Excess Demand Penalty			0.00	एस.जी.एस.टी./SGST	0.00
कम पी.एफ. अतिरिक्त/Low P.F. Surcharge			0.00	वर्तमान विलम्ब भुगतान अतिरिक्त/Current LRSC	836.28
अनंतिम समायोजन/Provisional Adjustment			0.00	नेट करंट बिल/Net Current Bill	3245.00
दर/रेटिंग्स/ Tariff Adjustments			0.00	दैनिकी, पूर्व/Prev. Due Date Rebate Adj	0.00
क्रेडिट/Credit			0.00	अग्रिम भुगतान/Arrear Amount	21460.00
डिबिट/Debit			0.00	पूर्व विलम्ब भुगतान अतिरिक्त/Prev. Arrear LPSC	0.00
विविध शुल्क/ Misc Charges			0.00		
अपसंयोजन शुल्क/Armoured Cable Cost			0.00		
पूर्व/Rebate			0.00		
समायोजन राशि/Compensation Amt			0.00	बिल/ Payable Amount	53875
किराया/Installment			0.00		
अमान्य चेक/Dishonor Cheque			0.00		
अमान्य भुगतान/Dishonor Charge			0.00		
चोरी/चिपचोरी/Theft Assessment			0.00		

शब्दों में /In Words: ₹ 53,875 (Three Thousand Eight Hundred Seventy Five Rupees Only)

पूर्व का मांग उठाने और विलम्ब से भुगतान अतिरिक्त से बचने के लिए बिल तिथि तक बिल का भुगतान करें। Pay Bill By Due Date to avail rebate and avoid late payment surcharge.

बिल/पेड का भुगतान इनके पक्ष में करें: अधिसूची अधीन: Pay DD/Cheque in favor of: EXECUTIVE ENGINEER- EDD I RAMPUR

Meter Lab Number	Meter Position	Recorded Demand	Last Date	Last Read	Current Date	Current Read	Difference	Meter Coefficient	Meter Unit	Period Month	Meter No
21519441	A	0.82	02-NOV-23	5643	08-DEC-23	5842	199	15	12.3 KVA	1	OK
21519441	A		02-NOV-23	00.00.00	08-DEC-23	5936	201	15	2985 KWH	1	OK
21519441	A		02-NOV-23	00.00.00	08-DEC-23	5936	201	15	3015 KVAH	1	OK

Netta Meter Assessed Unit	Opening Surplus Solar Units	0.00	Closing Surplus Solar Units	0.00	मीटर पुराना Meter Units	3015
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यूनिट/Unit	दर/Rate	राशि/Amount	विवरण/Desc	अग्रिम भुगतान राशि/ Last Paid Amount	53365
793	7.43	5891.99	Energy Charge	अग्रिम भुगतान तिथि/ Last Paid Date	29-NOV-2023
1111	7.43	8254.73	Energy Charge		

दिनांक/Print Date: 13-Dec-23 18:27 PM

अधिसूची अधीन-EXECUTIVE ENGINEER- EDD I RAMPUR

8. CONCLUSION

Considering the fact that the organization is a well-established, long time run establishment with good reputation, there is significant scope for conserving energy and make the campus as self-sustained in it. The energy conservation initiatives taken up by the institution are substantial. Energy efficient lighting schemes, awareness created among stakeholders and necessary power backups are being practiced by the institution.

There are some best Practices followed on Energy Audit in the Organization like installation of solar power system. Generators and UPS are protected properly with fencing and kept awareness boards on 'Dangers' and 'Warnings'. It is observed that the most of places, sign board of 'Switch ON' and 'Switch OFF' are kept towards saving energy measures to the stakeholders. Electrical wires, switch boxes and stabilizers are properly covered without any damage which will cause any problems to the staff and student members.

Few recommendations, in addition, can further improve the energy savings of the Organization. This may lead to the prosperous future in context of Energy Efficiency Campus and thus sustainable environment and community development to the stakeholders in coming years to come.

9. GENERAL TIPS FOR ENERGY CONSERVATION

9.1 ILLUMINATION

Natural light should be used as far as possible to meet the required illumination level. Especially requirement of artificial light is less during daytime. While using the artificial lights care should be taken so as the lights in each area can be switched off partially when not in use. (e.g. The illumination level required for working on computers is 150 - 300 lux, but when the area is not used for work illumination level of 110 lux is sufficient. (This can be achieved by switching off some of the lights.) Also, proper naming or numbering of the switches will facilitate the use of them by occupants or staff.

9.2 PREVENTIVE MAINTENANCE

Inspect & monitor equipment operations. Maintain regular operation & maintenance log for major equipment. Fix minor problems before they result in major repairs. For this regular inspection of all equipment by trained staff is necessary. If necessary, maintenance shutdown should be taken at least once in 6 months. During this wiring, contacts & other components should be thoroughly inspected for voltage imbalance, loose connections or self-heating. If major repairs are required, evaluate the economic benefit of replacing the old equipment with more efficient and compact equipment before doing the repairs. Such study should be done well in advance, so that in case of breakdown a decision can be taken quickly.

9.3 TRAINING & AWARENESS

Maintenance & operating staff should be trained / informed about the energy management issues & procedures. To implement an effective preventive maintenance program, the operational staff must be given comprehensive training on each type of equipment, regarding system fundamentals, use of reference material & manuals, maintenance procedures, service guidelines & warranty information. Proper maintenance schedules could be supplied to them for different equipment.

9.4 DATA LOGGING FORMAT FOR DG SET

Month/Year:...../.....				Generator Operator Name:.....						
Date	Generator Name	Capacity Location	Time		Meter Reading		Fuel Added	Total Runing Hrs	Total Meter Reading	Signature of Operator
			Start	End	Start	End				