Phek Government College

Phek: Nagaland

ENERGY AUDIT REPORT 2023

ACKNOWLEDGEMENT

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Finally, a special thanks goes to all our colleagues and staffs who helped in collecting the dataneeded for the preparation of this audit.

Energy Audit Committee

Lidemo B. Kithan (Assistant Professor, Physics)
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About the college:
Phek Government College is one among the seventeen (17) government colleges in the state of Nagaland. Established in 1981 as Phek College, it was affiliated to the North Eastern Hill University (NEHU) in 1983 and was later taken over by the Government of Nagaland on 1st February, 1990. At present, the College offers B.A. Honours courses (in Political Science, Education, History, English and Economics) and B.Sc. Honours courses (in Zoology, Botany, Chemistry and Physics). The College is NAAC accredited with B Grade in 2019 (First Cycle).

Energy Auditing:
Energy auditing is a routine procedure of monitoring power consumption of the institute performed on annual basis. As per the Energy Conservation Act, 2021, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption". For the successful implementation of an energy efficient campus, Phek Government College has focused a lot on the enhancement and awareness among the students, teachers, and other members of the institution on Energy alternatives such as solar energy. As the issue of saving our environment has attained a global prominence in the contemporary time, Phek Government College has also considered it extremely essential to work sincerely in the matter of environment consciousnessparallelly withgreen energy initiatives. In its strive for a clean, green and energy efficient campus, every possible step is taken by every member or cell of the institution to create a sense of responsibility among the students pertinent to the sustenance ofhealthy environment in the form of various programmes and project works.

Energy conservation:
With the rising awareness on the necessity to save energy, the college has resorted to ways and means for saving electricity.

- The classrooms and laboratories are in such manner that they allow sufficient light and air during class hours and as a result, much electricity is saved.

- In its drive for saving energy, Phek Government College has taken steps to replace all existing bulbs and lights with LED lights phase wise. In fact, all newly constructed buildings have been equipped with LED lights and 5-star rating ceiling fans with a view to reduce consumption of energy.

- As Phek has a moderate climate, use of Air conditioners, fans and other high appliances which consume more energy are not required. Therefore, the collegeis able to save a huge amount of energy.

E-waste management:

E-wastes such as damaged computer parts, batteries, electronic items, electrical appliances, empty toner containers, are disposed as scrap and given away to agencies and the municipal corporation for recycling.

Energy Consumption Data:

The electricity supply for Phek Government College is provided by the state government commercial line 250 kVa 11/.4 kv.

The Contracted Demand is 3.06 KW and the connected load is 2.60 KW. The energy consumption of the whole campus is facilitated through a Transformer havingrating of 250 KVA.

Figure 1: Picture of Solar Street light with sensor installed inside the campus

Figure 2: Rainwater harvesting to minimize the load on water pumps

Fig 3: Diesel Generator

Fig 6: Energy Efficient Lighting

ENERGY AUDIT REPORT

PHEK GOVERNMENT COLLEGE, PHEK NAGALAND

The data collection required for energy audit of **PHEK GOVERNMENT COLLEGE, PHEK NAGALAND**

This audit was conducted to enquiry about the energy competence of the campus and to identify and evaluate opportunities to reduce energy consumption per unit of product output and reduce operating cost through energy conservation and planning. The electrical equipments and appliances that were taken under consideration included total number of lights, fans, AC's, electronic instruments, etc inside the campus together with the unit of electrical power that would be consumed by each of the components in the total electricity consumption.

Following are the list of audit conducted.

1. Analysis of electrical distribution system
2. Analysis of incoming grid supply.
3. Study of equipments wise connected load.
4. Electrical power consumption
5. Recommendations /suggestions

1. Analysis of Electrical Distribution system

SL.NO	PARTICULARS	OBSERVATION	REMARKS
1	Is distribution load satisfactory	Fair	
2	Condition of electrical wiring	Fair	
3.	Type of wiring	Casing	
4	Electrical equipments operating at specific voltage and current	Yes	
5.	Rating of fuse as per standard	Yes	
6	Condition of earthing	Fair	
7.	Earthing connection to equipment	Yes	

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4. Electrical power consumption

Location	Monthly Average bill (AV) bill	Approx monthly cost
College campus	0	1720

Location	Annual Average bill (AV) bill	Approx Annual cost
College campus	0	20640

Note:

Transformer rating : 250 KVa

Consumed connected Load : 2.60 KW

Contract demand : 3.06 KW

5. Recommendation/Suggestions

Based on the audit few observation and recommendation has been made

- It is recommended to use energy saving electrical equipments.
- Work on preventive maintenance of transformers, DG, electrical panel, electrical equipments, earthing etc.
- Suggest to install more solar power plant for harnessing power through renewable energy, this will help the institute to reduce overall electrical electricity power consumption from Grid and carbon emissions the atmosphere.
- Separate Transformer for the college campus

Signature with date and seal

07/02/2024
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8	Cable laying condition	Fair	
9.	Cable termination	Fair	
10.	Single isolation switch provided for the whole campus	Yes	
11.	Earthing pits	Yes	
12	Meter and Main condition	Yes	
13.	Panel board condition	Fair	
14.	Solar panel	No	
15	LED lights and energy saving equipments	Yes	
16.	DG condition and capacity	22KVa	
17	DG with proper neutral earthing	Fair	

2. Analysis of incoming grid supply

Transformers rating	**Phase to phase**	**Phase to neutral**	**Remarks**
250 KVA	420-430V	230-240V	Good

3. Study of Equipments wise connected load

Fans	**LED light**	**CLF light**	**Socket**	**Ac ton**	**Computer**	**Printer**	**Other electrical equipments**	**Motor pump**	**Solar street light**
11	121	19	*6 amps* 70 *16 amps* 93	Nil	37	7	32	Nil	14

Total connected load:

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