Energy Audit: 2021-2022
Jawaharlal Nehru College, Boko

According to Energy Conservation Act, 2001, Energy Audit is the verification, monitoring and analysis of the 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.

Energy and electricity audit cover the average consumption of Electrical and Natural Gas energy within the campus. Electricity audit tries to give an idea about the consumption of average Electricity power within the various Academic and Administrative Blocks of the college campus. On the other hand, within the Hostel's Natural gases (LPG cylinders) are primarily used for cooking purpose. Moreover, J N College is taking its initial initiatives to utilize renewable energy such as solar power energy to generate electricity to compensate the necessity of electrical energy within the campus. To achieve that goal, 15 Nos of Integrated Solar Street light are already been installed within the different parts of the campus each of which generates 74KWH per day. On the other hand, to minimize the consumption of electrical energy highly efficient and low power consumable LED light panels are installed within the various departments as well as hotels and Guest House.

On an average 2, 548 units per month of electricity energy has been consumed by the College in the year 2021-22. In the previous year 2020-21, average power consumed by the same was 2, 013 units per month. It has been observed that, there is a sharp increase of 127% in the monthly average electricity energy consumption by the College, and it is due to increasing number of infrastructural developments within the campus. Table drawn below shows the average consumption of electrical energy per month from the financial year 2016 – 17 to 2021 – 22.

Sl. No	Financial Year	Average Energy consumption per Months (KVA)	Average Monthly Electricity Bill (Rupees)
1	2021 – 22	2548	28, 498/-
2	2020 – 21	2013	26, 421/-
3	2019 – 20	3187	36, 013/-
4	2018 – 19	3095	34, 533/-
5	2017 – 18	2797	32, 547/-
6	2016 – 17	3034	33, 088/-

Figure 1 given below shows the comparison of monthly average power consumption within the College campus.

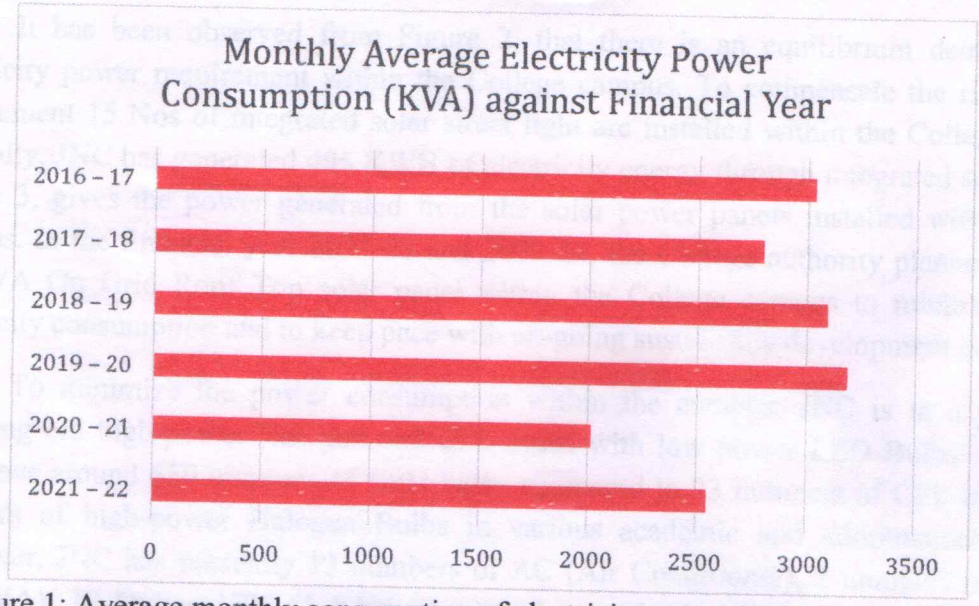

Figure 1: Average monthly consumption of electricity power in the campus since 2016-17 to 2021-22

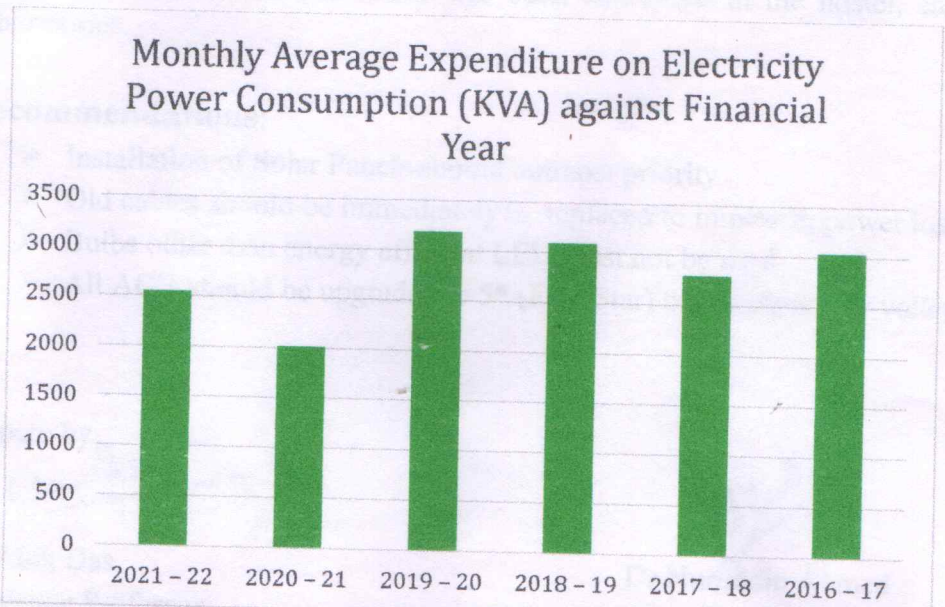

Figure 2: Monthly Average Expenditure on Electricity power consumption

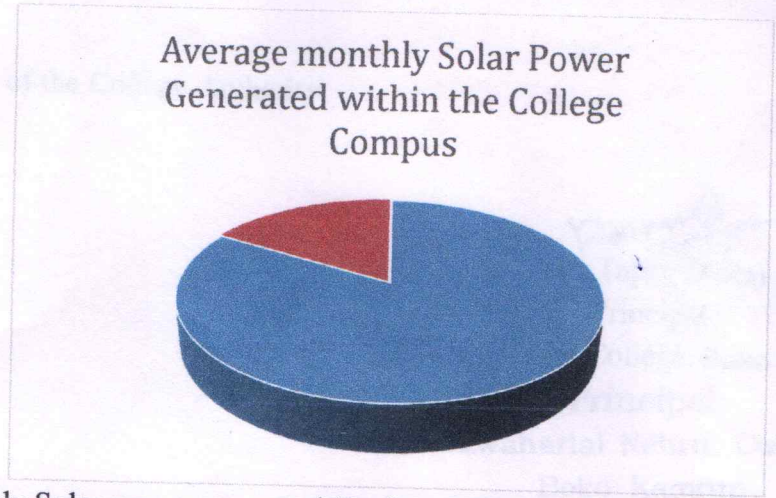

Figure 3: Monthly Solar power generated (Red) and Electric Power Consumed (Blue) within college campus

It has been observed from Figure 2, that there is an equilibrium demand in the electricity power requirement within the College campus. To compensate the rising power requirement 15 Nos of integrated solar street light are installed within the College campus. Annually, JNC has generated **405** KWH of electricity energy through integrated solar panels. Figure 3, gives the power generated from the solar power panels installed within the GU campus. In the financial year 2022-23 and 2023-24, the College authority planned to install 10 KVA On Grid Roof Top solar panel within the College campus to minimize regular electricity consumption and to keep pace with on-going sustainable development goal.

To minimize the power consumption within the campus, JNC is in a process of replacing old high-power Halogen and CFL blubs with low power LED Bulbs. At present JNC have around 650 numbers of LED bulbs compared to 23 numbers of CFL bulbs and 4 numbers of high-power Halogen Bulbs in various academic and administrative blocks. Moreover, JNC has presently 13 numbers of AC (Air Conditioner), 2 numbers of DG Sets (35 KVA), 10 Online UPS (5 KVA each) and around 558 numbers of Fans installed in different academic and administrative blocks. On the other hand, on an average 75 numbers of natural gas (LPG cylinders) per month has been consumed in the hostel, canteen and college laboratories.

Recommendations:

- Installation of Solar Panels should outmost priority
- Old cables should be immediately replaced to minimize power loss
- Bulbs other than energy efficient LED must not be used
- All AC's should be upgraded to 5* (Five Star) operating at low voltage

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