



PowerTech Energy Solutions
Conserve to Consume

Energy & Green Audit Report of Navjeevan Law College, Nashik



Submitted By

PowerTech Energy Solutions

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ENERGY & GREEN AUDIT COMPLETION CERTIFICATE

This is to certify that following utility has carried out Energy & Green Audit as per guidelines laid down in The Energy Conservation Act, 2001 in the month of December 2021 for the academic year 2020-21

Name of the Installation	Navjeevan Law College , Nashik
Details of Facilities Audited	All departments, Laboratories, Library , Etc.
Date of Energy and Green Audit	27 December 2021
Name of Certified Energy Auditor	Mr. Swapnil Gaikwad
Certification No.	EA 20121
Validity of the Certificate	26 December 2022

Authorised Signatory

(Atul Kakad)

Executive Summary – Energy Audit

Sr. No.	Area	Proposed Action	Expected Result	Saving Potential, kWh	Estimated Annual CO ₂ Reduction	Estimated Annual Monetary Saving (Rs.)	Estimated Investment (Rs.)	Simple Payback Period (Months)
1	Fan system (Ceiling Fan)	Replace present ceiling fan consuming 75W with energy efficient fans consuming 40W. In the campus where usage is high this conservation measure will produce good savings	<ul style="list-style-type: none"> • Total number of fans in the campus =65 Nos. • Total number of fans used in the campus (considering Usage factor) = 65 Nos. • Number of fans to be replace = 65 Nos. • The Total Current Consumption =936 kWh • The Expected fan Consumption =499 kwh • Total KWh saved per month = 936-499= 437 kWh 	437	4.14	27099	195000	86
Total				437	4.14	27099	195000	86

Executive Summary – Green Audit

Sr.No	Area	Observations	Remark
1	Rain Water Harvesting	Rain water harvesting plant is installed in college to utilize rain water efficiently. Ground water is being recharged through rain water	Good initiative by college toward water conservation
2	Plastic and Paper free campus	College is taking imitative by displaying posters/banners about awareness of plastic and paper free campus	Good initiative by college towards to implement plastic free campus

Scope for Improvement

Sr.No	Area	Observations	Remark
1	Solid Waste Management	At present, there is no any solid waste management system available	It is recommended to explore feasibility of vermicompost plant in campus
2	E-waste	There is no policy to dispose the E – waste	It is recommended to make policy to dispose E-waste of college. It should be disposed through authorized E-waste collector
3	Solar PV System	There is no any renewable energy generation	It is recommended to install solar PV system to generate the electricity from renewable energy sources

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1 About College

Navjeevan Law College, Nashik is permanently affiliated to University of Pune, Recognised by Govt. of Maharashtra, reaccredited by NAAC with B grade & Bar Council of India, under the Navjeevan Education Society, upholds the Society's philosophy of Discipline, Dedication, and Determination. It is Premier institution with a goal of catering to contemporary requirement of the society to have trained Lawyers. Navjeevan Law College ensures that its students get an opportunity towards holistic development and leaves no stone unturned to provide them with all the facilities, amenities and ambience required for development of the career as well as personality of the students. The institution is avowed and dedicated to create a new breed of responsible and equipped Law Graduates who will be capable of contributing to the legal fraternity, to the country and to the humanity. Navjeevan Law College is a place which provides a unique combination of international educational ambience with the traditional Indian rigors of training. All educational facilities including free-ship, Scholarships are available for the students of backward categories.

2 Vision

To provide quality legal education, meet the global challenges and to enhance the standard of legal education along with creating legal awareness in society and increasing the participation of people, particularly of the rural and economically disadvantaged people”

3 Mission

“To offer to society, makers and upholders of law, instilling into them virtues of Integrity, Loyalty and Social Values”

4 Energy Audit

An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s). In commercial and industrial real estate, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprints.

4.1 Electricity Bill Analysis

Consumer	Navjeevan Education Society		
Consumer No.	49015176228		
Utility	Public Service		
Tariff	073 /LT VII (B)		
Bill Month	Consumption(units/kWh)	Bill Amount	Per Unit Charges
21-Jan	1527	12,360.00	8.09
21-Feb	1551	12,560.00	8.10
21-Mar	1600	12,850.00	8.03
21-Apr	1807	14,461.36	8.00
21-May	1525	11,923.91	7.82
21-Jun	1523	11,908.86	7.82
21-Jul	1588	12,397.86	7.81
21-Aug	1646	12,834.19	7.80
21-Sep	1614	12,593.46	7.80
21-Oct	1657	12,916.94	7.80
21-Nov	1676	13,059.88	7.79
21-Dec	1651	12,871.80	7.80
Total	19,365.00	1,52,738.26	
Average	1,614	12,728	8

4.2 Observations

Sr.No.	Parameter	Observation	Remark
1	Unit consumption	Minimum unit consumption recorded is 1523 kW in the month of June 2021	No action required
		Avg. unit consumption recorded is 1614 kWh	No action required
		Max. unit consumption recorded is 1676 kWh in the month of Nov 2021	No action required
2	Total bill	Avg. monthly electricity bill is 12728 Rs.	No action required
		Total annual electricity bill is 152738.26 Rs.Lakh	No action required

5 Connected Load

Connected Load

Building-Location	Light/Lumin	Qty	Wattage	kW Load	Hours of Usage	No. of Days in Month	Hrs/Month	Daily Consumption (kWh)	Monthly Consumption (kWh)
-Ground Floor	LED Tube Light-1X20W	31	20	0.62	8	24	192	4.96	119.04
-1st Floor	LED Tube Light-1X20W	12	20	0.24	8	24	192	1.92	46.08
2 nd Floor	LED Tube Light-1X20W	19	20	0.38	8	24	192	3.04	72.96
		62		1.24				9.92	238.08

Fan Load –

Building-Location	Fan	Qty	kW Load	Hours of Usage	Hrs/Month	Monthly Consumption (kWh)	New kW	Monetary saving in Rs	Investment	Payback period in months
Ground Floor	Ceiling fan-75w	24	1.8	8	192	345.6	0.96	1790	72000	40
Ground Floor	Exhaust Fan-15w	5	0.3	8	192	57.6	0.3	0	0	-
1st Floor	Ceiling fan-75w	21	1.575	8	192	302.4	0.84	1566	63000	40
2 nd Floor	Ceiling fan-75w	20	1.5	8	192	288	0.8	1488	60000	40
		70	5.175			993.6	2.9	4844	195000	40

Computer –

Building-Location	PC Type-Wattage	Qty	Usage Factor	Wattage	Hours of Usage	Monthly Consumption (kWh)
Navjeevan Law College-Ground	Desktop+CPU-300w	36	0.77	150	2	201.6
Navjeevan Law College-1nd Floor	Desktop+CPU-300w	5	1	150	2	36
Total		41				237.6

Other Equipment -

Building-Location	Equipment Type-Wattage	Qty	kW Load	Hours of Usage	Hrs/Month	Monthly Consumption (kWh)
Navjeevan Law College-Ground	RO Plant-300w	2	0.6	2	48	28.8
Navjeevan Law College-Ground	Printer	6	0.12	0.3	7.2	0.864
Navjeevan Law College-Ground	Xerox-200w	2	0.4	1	24	9.6
Navjeevan Law College-Ground	AC-4100w	2	8.2	1.3	31.2	255.84
Navjeevan Law College-1nd Floor	Motor-3000w	2	6	1.5	36	216
Total		14	15.32			511.104

6 Performance Assessment of Lighting Assessment

Below is the lighting connected load

6.1 Lighting Load -

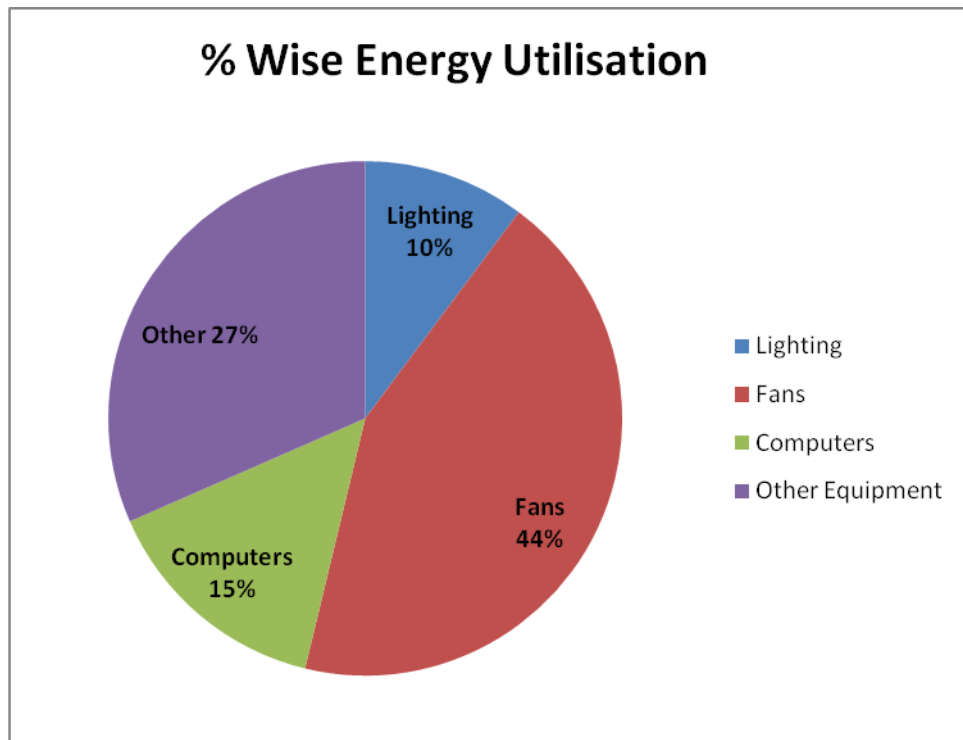
Building-Location	Light/Lumin	Qty	Wattage	kW Load	Hrs/Month	Monthly Consumption (kWh)
Navjeevan Law College-Ground	LED Tube Light-1X20W	31	20	0.62	192	119.04
Navjeevan Law College-1st Floor	LED Tube Light-1X20W	12	20	0.24	192	46.08
Total		43		0.86		165.12

Fan -

Building-Location	Fan	Qty	Wattage	kW Load	Change	Monthly Consumption (kWh)	New Wattage	New kW	New Monthly kWh	Energy Saving in kWh	Monetary saving in Rs	Investment	Payback period in months
Navjeevan Law College-Ground	Ceiling fan-75w	24	75	1.8	Change	345.6	40	0.96	184.3	161.3	1790	72000	40
Navjeevan Law College-Ground	Exhaust Fan-15w	5	60	0.3	No Change	57.6	40	0.20	38.4	19.2	213	15000	70
Navjeevan Law College-1st Floor	Ceiling fan-75w	21	75	1.575	Change	302.4	40	0.84	161.3	141.1	1566	63000	40
		50		3.675		705.6		2	384	322	3569.8	150000	42

6.2 Type Wise Lighting Distribution

Utility	Monthly Energy Consumption (kWh)	% Use
Lighting	165	17%
Fans	706	28%
Computers	238	28%
Other Equipment	511	27%
Total	1619	
Avg. Monthly Energy Consumption as per Bill	1616	
Difference	-3	
% Difference	0%	



7 Energy Saving Measures

7.1 Energy Saving Measure 1 – Replace present ceiling fan consuming 78W with energy efficient fans consuming 40W

Building-Location	Fan	Qty	Wattage	Monthly Consumption (kWh)	New Wattage	New Monthly kWh	Energy Saving in kWh	Monetary saving in Rs	Investment	Payback period in months
Navjeevan Law College-Ground	Ceiling fan-75w	24	75	345.6	40	184.3	161.3	1790	72000	40
Navjeevan Law College-Ground	Exhaust Fan-15w	5	60	57.6	40	38.4	19.2	213	15000	70
Navjeevan Law College-1st Floor	Ceiling fan-75w	21	75	302.4	40	161.3	141.1	1566	63000	40
		50		705.6		384	322	3569.8	150000	42

Total number of fans in the campus =50 Nos.

Total number of fans used in the campus (considering Usage factor) = 50 Nos.

Number of fans to be replace = 50 Nos.

The Total Current Consumption =705 kWh

The Expected fan Consumption = 384 kWh

Total KWh saved per month = 705 – 384 = 322 kWh

Total monthly cost savings = Rs.3569.8

Investment = Rs. 150000

Payback Period = 42 Months

8 Requirement of NAAC

8.1 Alternative Energy Initiative

Percentage of power requirement met by renewable energy sources

$$= (\text{Power requirement met by renewable energy sources} / \text{Total power requirement}) \times 100$$

$$= (0/0) \times 100$$

$$= \mathbf{0\%}$$

8.2 Percentage of lighting power requirement met through LED Light

Percentage of lighting power requirement met through LED Light

$$= (\text{Lighting power requirement met through LED Light} / \text{Total lighting power requirement}) \times 100$$

$$= (43/43) \times 100$$

$$= \mathbf{100\%}$$

9 Green Audit

Green audit was initiated with the beginning of 1970s with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. It exposes the authenticity of the proclamations made by multinational companies, armies and national governments with the concern of health issues as the consequences of environmental pollution. It is the duty of organizations to carry out the Green Audits of their ongoing processes for various reasons such as; to make sure whether they are performing in accordance with relevant rules and regulations, to improve the procedures and ability of materials, to analyze the potential duties and to determine a way which can lower the cost and add to the revenue. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. Some of the incidents like Bhopal Gas Tragedy (Bhopal; 1984), Chernobyl Catastrophe (Ukraine; 1986) and Exxon-Valdez Oil Spill (Alaska; 1989) have cautioned the industries that setting corporate strategies for environmental security elements have no meaning until they are implemented.

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade a, Grade B or Grade C according to the scores assigned at the time of accreditation.

The intention of organizing Green Audit is to upgrade the environment condition in and around the institutes, colleges, companies and other organizations. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmental friendly institute.

9.1 Goals of Green Audit

- The objective of carrying out Green Audit is securing the environment and cut down the threats posed to human health.
- To make sure that rules and regulations are taken care of
- To avoid the interruptions in environment that are more difficult to handle and their correction requires high cost.
- To suggest the best protocols for adding to sustainable development

9.2 Benefits of Green Audit

- It would help to shield the environment
- Recognize the cost saving methods through waste minimizing and managing
- Point out the prevailing and forthcoming complications
- Authenticate conformity with the implemented laws
- Empower the organizations to frame a better environmental performance
- It portrays a good image of a company which helps building better relationships with the group of stakeholders
- Enhance the alertness for environmental guidelines and duties

10 Initiatives by College towards Sustainable Environment

10.1 Liquid Waste Management

10.1.1 Rain Water Harvesting

Rain water which is accumulated on terrace of different building is getting utilised by means of rain water harvesting system. Water from the various buildings is transferred to the storage. Rain water is utilized to recharge the ground water (borewell)

. Following are the same images of actual system

Groundwater Recharge



10.2 Plastic and Paper Free campus

Initiative has been taken by college administrative to make the campus plastic and paper free. Most of the information is now shared to the faculty and students by email and social media applications rather than paper notice.

Also college has organized awareness program for students on above topic. It has been decided that 1 day in a month will be celebrate as bicycle day which will avoid the use of motor vehicles

Below is the image of awareness program conducted in college

