

Laxmi Shikshan Sanstha & Krida Mandal's College Code :- 524

**Late Nirdhanrao Patil Waghaye Arts, Commerce &
Science College Andhalgaon**
Ta: Mohadi Dist: Bhandara 441914
(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

Email Id: - latenpwcandhalgaon@gmail.com

Website: - www.npwcandhalgaon.org

Ref. No. :- NPWC/

Date:-

College has conducted many environmental promotional activities beyond the campus:

The activities include:

1. Tree plantation at various places like Grampanchayat, Other schools, PHC etc.
2. Forest conservation activities in the social forestry in collaboration with Forest Department Tumsar.
3. Promotional campaign for avoiding use of one time usable plastic. In this activity college distributed steel plates, spoon to road side vendors to stop use of OTU and distribution of cloth bags in vegetable market to stop the use of polythene bags with low micron.
4. Electricity saving habits and distribution of booklet for electricity saving tips in society. Awareness is created about the punishment of illegal use of electricity.
5. College taking lot of efforts to conserve heritage trees which are in nearby area. Students are visiting every year to such trees.
6. Staff and students of college were visited during Gaimukh Yatra every year for the helps of pilgrims, clean the place, to collect the plastic and wastage food etc.. For this work college got appreciation letter from police station Andhalgaon.
7. College is creating awareness about not to throw the plastics and other materials in water drainage system.
8. College students are cleaning the areas in Grampanchayat, Rashtrasant Tukdoji Maharaj Bhavan under the Gramgeeta promotions.



PRINCIPAL
Late N.P.W. College
Andhalgaon Dist.-Bhandara

Some of the Photos of Activities are given below:



Distribution of steel plates and spoon to the road side vendor to avoid the use of plastic bags, plates and spoons.



Some of the Photos for Plantation of trees and sapling at Z.P School Andhalgaon and Grampanchayat Andhalgaon and at beyond the campus



Photo for the college students visited to the Heritage tree at Andhalgaon



Students collecting plastic waste materials at nearby place of Andhalgaon



Students visited to the Gramgeeta Sanskrutik Bhavan for the Gramgeeta Vachan



Students visited to the Gaimukh Place for the help of pilgrims during Mahashivratri Yatra

GREEN AUDIT REPORT

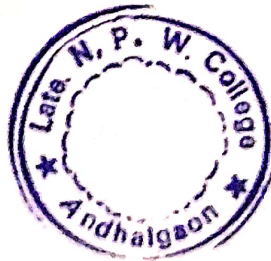
Of

Laxmi Education Society's

Late N.P.W. Arts, Commerce & Science College Andhalgaon.

Green Audit Committee

Year: 2022-23



Introduction:

Date 20/06/2023

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of College. Its goal is to examine environmental practices both inside and outside the college that may have an effect on the environment. A green audit is an effective way for a college to identify the areas and processes where the most energy, water, or other resources are being used. The college can then think about how to implement changes and save money. However, environmental sustainability is becoming an increasingly important issue for the nation; the role of higher educational institutions in relation to environmental sustainability is more prevalent

Green Audit Assessment Team

The team of green audit committee works under the guidance of Dr. A. A. Shringarpure, Principal N.P.W. Arts Commerce and Science College Andhalgaon and environmental awareness committee. The Green Audit Committee is given as below:

(Internal Auditor)

Dr. A.A. Shringarpure Member

Dr. S.R. Rahangdale Member

(External Auditor)

Scope of the Audit :

The Green Audit of an institution is now of utmost importance for the institution's self-evaluation, as it represents the institution's contribution in reducing the current environmental issues. Since its foundation, the college has made attempts to maintain a clean atmosphere. As a result, the current green audit's goal is to identify, quantify, explain, and prioritize the environmental sustainability framework in accordance with the relevant laws, policies, and standards. The main objectives of carrying out Green Audit are:

- a) To identify the Geographical Location of the college
- b) To document the ambient environmental condition of weather, air, water and noise of the college
- c) To document the waste disposals system
- d) To estimate the Energy requirements of the college
- e) To report the expenditure on green initiatives during the last five years
- f) To make energy saving management
- g) To make E-waste and solid waste management.

Green audit report:

The core objective of the Green Audit committee is to develop and conserve green initiative in College Campus. Green audit create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-



enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Observations Noted : Some programs implemented by college towards green initiatives include;

Plastic free campus: The utilization Plastic bags are strictly avoided in the campus and campus is “no plastic zone”. College motivates staff as well as students to utilize cotton or jute bags.

Paperless office: The office of our college is partially paperless. The different types of office information are delivered using email and SMS. College has created class wise whatsapp groups to deliver important instantly

Tree Plantation: The College has a system for green auditing of its facilities which is carried out by NSS. The college Student and staff have planted several tree samplings during various plantation programs organized by the college through NSS and all the trees are taken care of and maintained. NSS students from our College conducts tree plantation and public awareness program every year

Carbon free campus: The care of the campus surrounding is taken so that environment has maintained at low level of carbon emission and pollution. College avoids burning of waste materials which is collected from campus surrounding. The degradable and non degradable bio waste has been segregated and separated to recycle further.

Bio-degradable Waste: The shortlisted bio degradable waste which is collected from campus is decomposed to form compost which is further used in gardens as excellent manure.

Non degradable waste: The collected waste which is not degradable like unused plastic, glass bottles, electronic waste etc. is sent for recycling by selling it to scrapper. Students are motivated to design different objects like bags, foot wipes, show pieces etc. Students also motivated to donate unused but wearable cloths to poor peoples. The recycling of this non biodegradable waste is also helpful in soil quality conservation.

Electricity saving: Some older appliances and equipment, such as refrigerators and computers which are energy inefficient and producing more carbon to generate heat. These old instruments are replaced with Energy Star-rated models and encourage energy-conscious behavior among staff and students which are more energy efficient and power saving.

An investment in energy-efficient upgrades and practices is projected to yield substantial cost savings over time. A detailed cost-benefit analysis is included in the table

Appliance	Move	Monthly Saving (Rs)	Yearly Saving (Rs)
Bulb	from Incandescent to CFL	156	1,877
Tubelight	from Regular to T5	52	626
Computers	from Desktop to Laptop	313	3,754
Cooler	From old to new	472	2,361
Refrigerator (200 Lts)	from 1 Star to 5 Star	261	3,128
Fan	Old to New	122	1,460



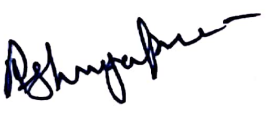
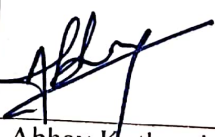
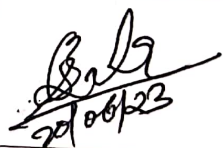
Saving Water in Campus: The College consumes a substantial amount of water for various purposes, including irrigation, sanitation, and cooling systems. Significant water leakage was detected in laboratory as well as toilet taps, leading to water wastage. The waste water and rain water has been recycled by rainwater harvesting which promotes both energy as well as water conservation. Rainwater harvesting improves quality and quantity of ground water.

A water audit is an on-site survey and assessment of water-using hardware, fixtures, equipment, landscaping, and management practices to determine the efficiency of water use and to develop recommendations for improving water-use efficiency. In simple words, a water audit is a systematic review of a site that identifies the quantities and characteristics of all the water uses. The quantity of water required in Late N.P.W. Arts, Commerce & Science College Andhalgaon is mentioned in the table given below

Sr. No.	Water Consumption area	Average Water Consumed (liters/day)
1	Laboratories	15
2	Toilets	50
3	Garden	50
4	Drinking water	70
Total Average Usage		185

Waste Material Collection :

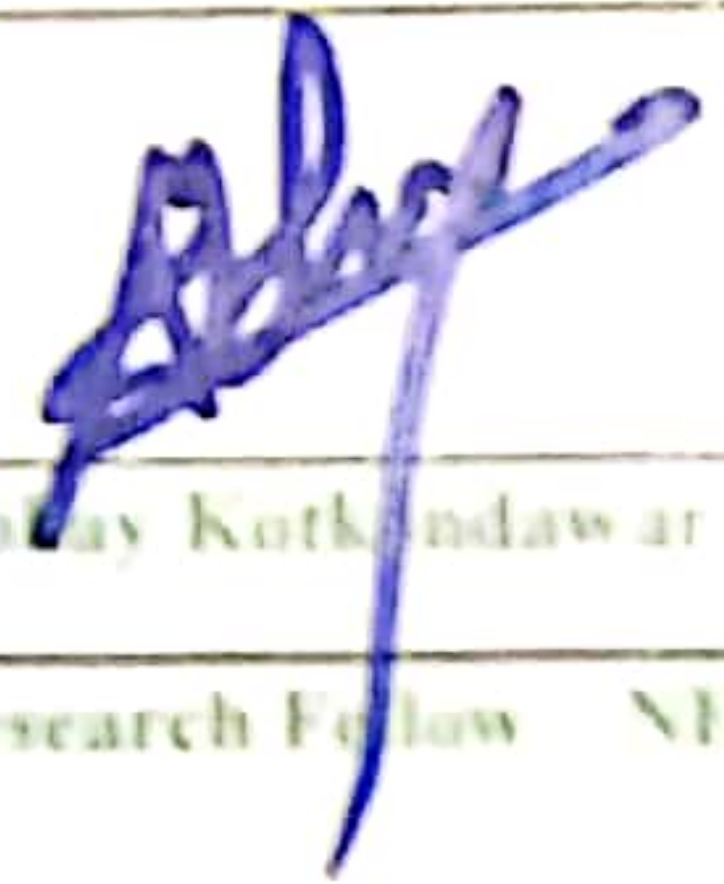
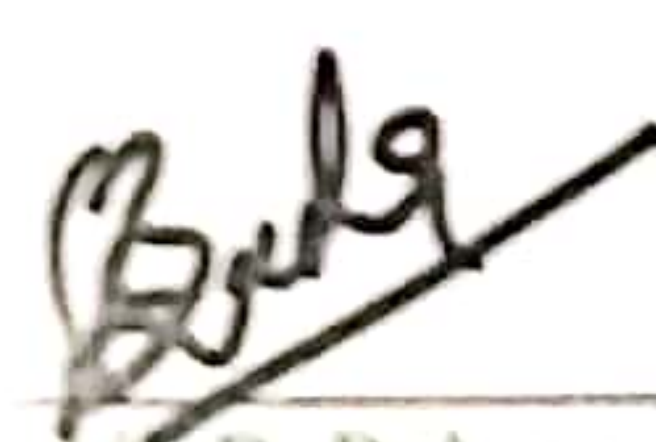
Sr. No.	Type of Waste Material	Quantity in a year
1	Biodegradable Waste	70 kg
2	Non degradable Waste	2.5 kg
3	Hazardous Waste	Nil

			
Prof. Harsha M. Thakare	Dr R.A. Shringarpure	Abhay Kotkondawar	Dr. Sachin R. Rahangadale
M.Sc. Botany	M.Sc. Chemistry	Research Fellow NEERI	M.Sc. Physics
Internal Auditor	External Auditor	External Auditor	Research Fellow NEERI
Green Audit Committee			
Internal Auditor			



GREEN AUDIT CERTIFICATE

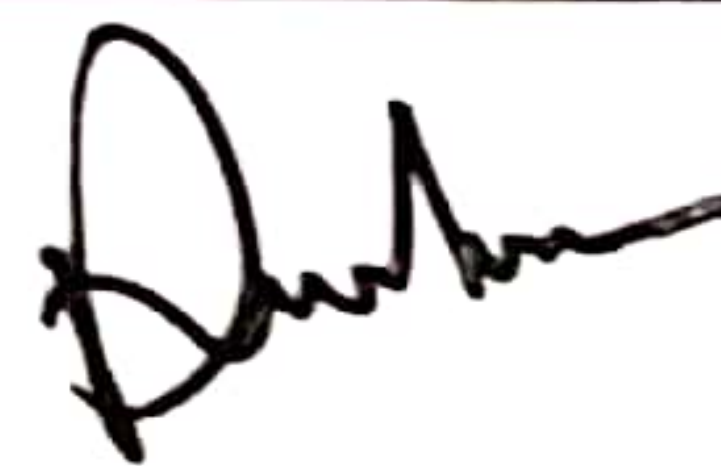
This is the Certificate of Appreciation for remarkable work done by
Nirdhanrao Patil Waghaye College Andhalgaon regarding the Appreciable work
done about Green Initiative, Water Conservation, Energy conservation work and
Waste Management, issued on 20/06/23.

			
Prof. Harsha M. Thakare	Dr. R.A. Shringarpure	Abhay Kotkandawar	Achin R. Rahangadale
(M.Sc. Botany)	M.Sc. Chemistry	Research Fellow - NEERI	Physics, Research Fellow - NEERI
Internal Auditor	External Auditor	External Auditor	Internal Auditor

Green Audit Committee

ENERGY AUDIT CERTIFICATE

This is the Certificate of Appreciation for remarkable work done by
Nirdhanrao Patil Waghaye College Andhalgaon regarding the Energy
Conservation Work and for creating awareness is issued after Audit
on 20/05/2023



Dr. Ajit A. Shringarpure	Harshit S. Dalvi	Rajesh Timane	Dr. Ankumar Munishwar
B.E. (Electrn)	BEE (ELECTRICAL)	B.E.	M.Sc. Physics
Internal Auditor	External Auditor	External Auditor	Internal Auditor

GREEN AUDIT COMMITTEE : ENERGY AUDIT CELL

ENERGY AUDIT REPORT

Of

Laxmi Education Society's

Late N.P.W. Arts, Commerce & Science College Andhalgaon.

Green Audit Committee

Year: 2022-23



Energy Audit Report: Late N.P.W. Arts, Commerce & Science College Andhalgaon

ENERGY AUDIT CERTIFICATE_:

Certificate No:

Date: 20/05/2023

This is to certify that we have conducted an Energy Audit at Late N.P.W. Arts, Commerce & Science College Andhalgaon , in the Year 2021-22.

The College has adopted following Energy Efficient practices:

1. Usage of Energy Efficient LED Fittings
2. Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

Observations Noted :

1. College is not using Energy Consuming devices like A.C., Coolers etc
2. Optimum Utilization of energy.



Energy Audit Report: Late N.P.W. Arts, Commerce & Science College Andhalgaon

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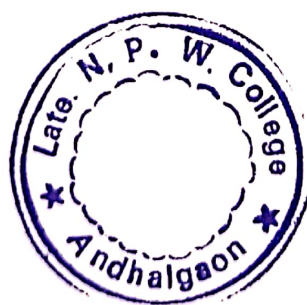


Energy Audit Report: Late N.P.W. Arts, Commerce & Science College Andhalgaon

ACKNOWLEDGEMENT

Green Audit Committee expresses our sincere gratitude to the management of Late N.P.W. Arts Commerce & Science College Andhalgaon for awarding us the assignment of Energy Audit of their Campus for the Year: 2022-23.

We are thankful to all the staff members for their support to us during the Audit.



Energy Audit Report: Late N.P.W. Arts, Commerce & Science College Andhalgaon

EXECUTIVE SUMMARY

The energy audit at Late N.P.W. Arts, Commerce & Science College Andhalgaon was conducted thoroughly, during which we analyzed various aspects of the college's energy consumption. The audit aimed to assess energy efficiency, identify areas with the greatest energy-saving potential, and make recommendations for improvements.

Present Connected Load & Annual Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	0.50	Kw
2	Annual Energy Consumption	602	Kwh
3	Annual CO ₂ Emissions	511.7	MT

Energy Performance Index:

No	Particulars	Value	Unit
1	Total Annual Energy Consumed	602	Kwh
2	Total Built up area of college	372	m ²
3	Energy Performance Index = (1) / (2)	1.6	Kwh/ m ²

Study of Lighting Power Density & % of LED Lighting

No	Particulars	Value	Unit
1	Lighting Power density		
2	% of Usage of LED Lighting to Total Lighting Load		

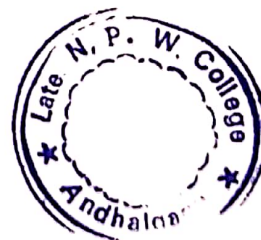
Renewable Energy & Energy Efficiency Projects:

Usage of Energy Efficient LED Fittings

Maximum usage of Day Lighting

Assumption:

1 kWh of Electrical Energy releases 0.85 Kg of CO₂ into atmosphere



Energy Audit Report: Late N.P.W. Arts, Commerce & Science College Andhalgaon

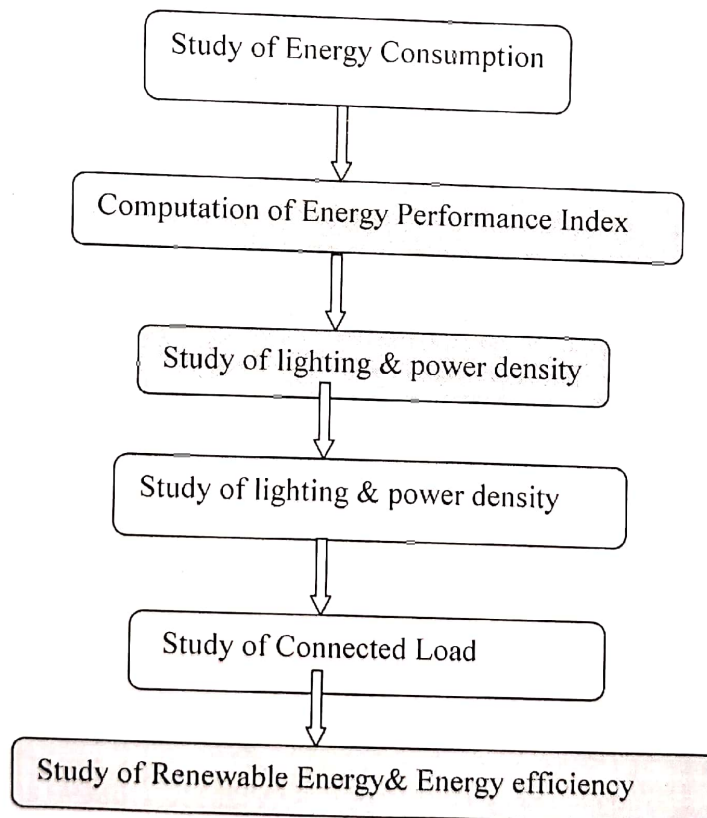
INTRODUCTION

Introduction: An Energy Audit is conducted at Late N.P.W. Arts, Commerce & Science College Andhalgaon. The guidelines followed for conducting the Energy Audit are:

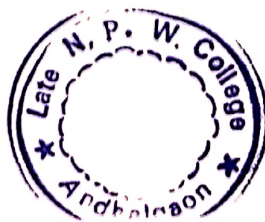
BEE India's Energy Conservation Building Code: ECBC-2017

Maharashtra State Electricity Distribution Co. Ltd

Audit Procedural Steps:



Institute Location Image:

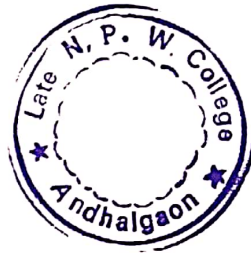


Energy Audit Report: Late N.P.W. Arts, Commerce & Science College Andhalgaon

STUDY OF CONNECTED LOAD

The major contributors to the connected load of the Institute include:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	20 W LED Tube Fitting	15		
2	66 W Ceiling Fan Fitting	15		
3	Computers	10		
4	Printer & Scanner	3		
5	Other Equipment			



STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy Consumption. Table: Electrical Bill Analysis-2021-22:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1.	Mar-23	0.35	
2.	Feb-23	0.18	
3.	Jan-23	0.34	
4.	Dec-22	0.24	
5.	Nov-22	0.40	
6.	Oct - 22	0.61	
7.	Sep-22	0.66	
8.	Aug-22	0.75	
9.	July-22	1.07	
10.	Jun-22	0.59	
11.	May-22	0.78	
12.	Apr-22	0.54	
	Total yearly consumption	6.51	
	Maximum	1.07 July	
	Minimum	0.18 Feb	
	Average consumption	0.54	

STUDY OF ENERGY PERFORMANCE INDEX

Energy Performance Index: Energy Performance Index of a Building is its Annual Energy Consumption in Kilo Watt Hours per square meter of the Building It is determined by:

$$EPI = (\text{Annual Energy Consumption in kWh}) / (\text{Total Built-up area in m}^2)$$

Now we compute the EPI for the Institute as under

Table: Computation of Energy Performance Index:

Sr	Particulars	Value	Unit
1	Total Annual Energy Consumed		
2	Total Built up area of Institute		
3	Energy Performance Index = (1) / (2)		

Summary:

The energy audit at Late N.P.W. Arts, Commerce & Science College Andhalgaon was conducted over a period of last five years, during which we analyzed various aspects of the college's energy consumption, including lighting, insulation, and appliances. The audit aimed to assess energy efficiency, identify areas with the greatest energy-saving potential, and make recommendations for improvements.



Energy Audit Report: Late N.P.W. Arts, Commerce & Science College Andhalgaon

Audit Findings:

Lighting:

70 % of lighting fixtures are using outdated incandescent or fluorescent bulbs, which consume more energy than modern LED lights.

Suggested action: Replace outdated lighting fixtures with energy-efficient LED bulbs and install occupancy sensors to ensure lights are only on when needed.

Insulation: Insulation in some buildings is insufficient, leading to heat loss in the winter and increased cooling demands in the summer.

Suggested action: Improve insulation in buildings, particularly in areas with noticeable energy leakage.

Suggested action:

Replace outdated appliances with Energy Star-rated models and encourage energy-conscious behavior among staff and students.

Energy Efficiency Recommendations:

Based on our findings, we recommend the following energy-saving measures:

Lighting:

1. Retrofit outdated lighting fixtures with LED bulbs.
2. Install occupancy sensors and timers to control lighting.
3. Implement a policy to turn off lights when not in use.

Insulation:

1. Conduct a thorough assessment of insulation in all buildings.
2. Address insulation gaps and improve energy efficiency.

Appliances:

Encourage energy-efficient behavior among staff and students.

Cost-Benefit Analysis:

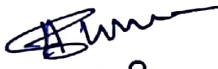
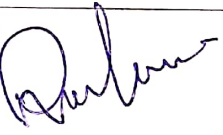
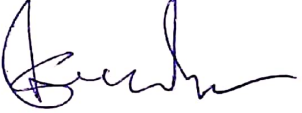
An investment in energy-efficient upgrades and practices is projected to yield substantial cost savings over time. A detailed cost-benefit analysis is included in the appendix.



Energy Audit Report: Late N.P.W. Arts, Commerce & Science College Andhalgaon

Conclusion:

By implementing the recommendations outlined in this energy audit report, Late N.P.W. Arts, Commerce & Science College Andhalgaon can significantly reduce its energy consumption, lower utility costs, and contribute to a more sustainable and environmentally friendly campus. We are committed to assisting you in the implementation of these measures and can provide further guidance and support as needed.

 20.5.23	 2015		
Dr. Ajit A. Shringarpure	Harshit S. Dalvi	Rajesh Timane	Dr. Sudhirkumar Munishwar
B.E. (Electrn)	BEE (ELECTRICAL)	B.E.	M.Sc. Physics
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