

Report

On

Green, Energy & Environment Audit

For

**Navneet Education Society's
Navneet College of Commerce & Science
Mumbai 400008**

Prepared

By

**Senergy Consultants Pvt Ltd
Mumbai 400 088**

November – 2023

Helping You to Conserve Energy

Contents

Sr. No	Description	Page
I	Introduction	3
II	Executive Summary	4
III	Electrical System	6
IV	Environmental System	9
V	Water Management	11
VI	Waste Generation & Management	13
VII	Infrastructure & Safety	14
VIII	Green Culture	17
IX	Renewable Energy	22

Helping You to Conserve Energy

I Introduction

Green, Energy & Environment Audit was undertaken at Navneet Education Society's Navneet College of Commerce & Science, Gilderlane Municipal School Building, Belasis Bridge, Opp. Railway Station, Mumbai Central, Mumbai - 400 008 during the month of November 2023.

The organization is very keen to promote green culture wherever possible, as a commitment towards better environment and conservation of energy. A lot of efforts have already been put up to bring down the carbon footprint. To further optimize consumption and identify saving opportunities, M/s Senergy Consultants was assigned to carry out Green & Environment Audit of the premises.

This Audit Report presents the analysis of the data collected, observations made at the facility and is governed by the objectives, scope of work, methodology etc. discussed in the ensuing paragraphs.

Team:

The team members of the audit study.

- Mr. Ravindra Datar
- Mr. Nitesh Kharche
- Mr. Tushar Kamble

Acknowledgment:

We wish to express our gratitude towards Dr. Harsha Badkar for having given us the opportunity for conducting the study and the support provided during the study.

II

Executive Summary

The premises were evaluated against the various criteria laid down by the National Assessment and Accreditation Council (NAAC). The major observations are.

Air Quality & Ventilation:

- The classrooms and other area are well ventilated to ensure proper air quality.
- The fans are appropriately installed to ensure proper air circulation
- The indoor as well as outdoor plants have also been provided to improve the environment.
- The air conditioned rooms are provided with proper ventilation and fresh air.

Lighting System:

- The usage of natural light is optimized through well designed structure and windows.
- It is suggested to automate switching of lamps in the common areas and washrooms with sensor based control.
- Most of the light fitting are provided with high efficiency LED lamps. The remaining lamps are being replaced with LED lamps.

Green Campus Initiative:

- The movement of vehicle inside the campus is restricted with vehicles of Special Dignitaries and VIP Guests are allowed to enter the campus.
- Pedestrian friendly pathways have been constructed for easy movement inside the campus.
- There is a completely ban plastic usage inside the campus.
- The campus is surrounded with a lot of greenery, trees, and proper landscaping.

Environment & Energy Initiative:

- The college has formed internal committees and student groups / clubs for promoting environmental and conservation activities.
- Green Consumerism and Green Entrepreneurship workshops are conducted to create awareness related to the environment.
- Various Tree Plantation programs have been carried out within and outside the campus.
- Various Beach Clean-up drives were undertaken by students and staff members.

Water Quality & Conservation:

- The water is supplied by the Municipal Corporation, which is a common practice in Mumbai, Thane & Navi Mumbai.
- Water purifiers & coolers are provided at convenient locations.
- The distribution network and piping are more or less satisfactory and adequate.
- The toilets are provided with water efficient (low usage) fittings.
- The rainwater harvesting pit is provided for ground water recharge.

Waste Management:

- The effluent water is discharged in the common municipal drain, which is a common practice in and around Mumbai Thane & Navi Mumbai.
- The organic waste is segregated and disposed through municipal system; which may be converted in to manure by installing composting pits / waste collector machine.
- The electronic gadgets / waste is either donated if useful or handed over to appropriate waste collectors.
- The general solid waste is disposed through municipal corporation.

Green IT culture:

- The Energy efficient computers and laptops have been procured.
- The electronic communication is encouraged to minimize usage of papers.
- Most of the papers are reused for doubled sided printing to further minimize usage of paper.

Helping You to Conserve Energy

Green, Energy and Environment Audit Report
Navneet College of Commerce & Science

Air Conditioning System:

- The Air Conditioners are operated as required with manual control. The operation is minimal consequently automation may not be economical.
- The room temperature is maintained at 24 to 25 °C, which is well within the recommended values.
- The Air Conditioners are serviced regularly and properly maintained.
- Most of the Air Conditioners units are energy efficient with star rating of 3 and above.
- The air conditioned space is properly sealed to prevent air ingress / cold air loss.

Infrastructure usage:

- Ramps are provided on the ground floor to address the needs of differently abled persons.
- The on-campus movement is distributed with multiple entrances as well as staircases.
- The fire extinguishers are provided at key areas.
- The college has initiated appropriate measures to meet the safety requirement.
- The draining system for washrooms is efficient and effective.
- There were no seepages observed in the building premises.

Renewable Energy:

- The possibility of installing Solar Photovoltaic System with NET metering may be assessed to meet part of the electricity consumption.
- The quantity of plate waste (organic waste with higher starch contents) is negligible, consequently, there is no potential for biogas generation.

Helping You to Conserve Energy

III Electrical System

Gadget List

Lamps:

Location	LED Tube Lights
	20 W
Ground Floor	
Hall	27
Male Washroom	2
Female Washroom	2
Ground Floor – Passage	
Passage No. 1	3
Passage No. 2	3
First Floor	
Principal / Administrative Office	9
Block No. 1	7
Block No. 2	7
Information Technology Lab	21
Male Washroom	2
Water Room	2
Block No. 3	7
Block No. 4	7
Block No. 5	7
Block No. 6	7
Block No. 7	7
Block No. 8	7
Block No. 9	7
Block No. 10	7
Girls Common Room	2
Female Washroom	2
Staff Room	2
Staff Washroom	2
First Floor - Passage	
Passage No. 3	11
Passage No. 4	4
Passage No. 5	
Second Floor	
Block No. 11 (Room No. 52)	6
Psychology Lab	
Male Washroom	2
Female Washroom	2
Water Room	2
Library and Reading Room	9
Block No. 12	6
Block No. 13	
Second Floor - Passage	
Passage No. 6	5
Passage No. 7	3

Helping You to Conserve Energy

Green, Energy and Environment Audit Report
Navneet College of Commerce & Science**Ceiling Fans:**

Location	Quantity (Nos.)
Ground Floor	
Hall	14
First Floor	
Principal / Administrative Office	4
Block No. 1	4
Block No. 2	4
Information Technology Lab	4
Block No. 3	4
Block No. 4	4
Block No. 5	4
Block No. 6	4
Block No. 7	4
Block No. 8	4
Block No. 9	4
Block No. 10	4
Staff Room	1
Second Floor	
Block No. 11 (Room No. 52)	4
Library and Reading Room	6
Block No. 12	4

Air Conditioning Units:

Location	Type	Capacity	Quantity (Nos.)
Office	Split	1.5	3
IT Lab	Split	1.5	2
Staff Room	Split	1.5	1

Computers:

Location	Quantity (Nos.)
Principal / Administrative Office	11
Information Technology Lab	48
Staff Room	2
Library and Reading Room	2

Observations & Suggestions:

- Most of the light fitting are provided with high efficiency LED lamps. The remaining lamps are being replaced with LED lamps.
- The fans are of standard efficiency; which may be replaced with high efficiency fans with BLDC motor.
- The Air Conditioning Units are with star rating of 3 and above, which are intrinsically operate at high energy efficiency.

Helping You to Conserve Energy

Green, Energy and Environment Audit Report
Navneet College of Commerce & Science

- The Air Conditioners are operated as required with manual control. The operation is minimal consequently automation may not be economical.
- The temperature is maintained at 24 to 25 °C for air conditioning spaces, which is within the recommended values.
- The rooms are well ventilated and provided with fans at appropriate location for proper air circulation.
- The gadgets are services properly and maintained in good condition.

Electricity Bills:

Consumer Name: Navneet Society	Service Provider: The Brihanmumbai Electric Supply & Transport Undertaking (BEST)
Tariff Category: LT II A	
Meter No: N57980	Consumer No. 815-161-001

Description	Unit	Jun-23	Aug-23	Sep-23	Oct-23	Average
Energy Consumption	KWH	1135	1566	1781	1631	1528
Bill	Rs	12571	17140	19419	17829	16740
Cost	Rs/KWH	11.08	10.95	10.90	10.93	10.95

Observation & Suggestions:

- The power cost is within the normal range.

Helping You to Conserve Energy

IV Environmental System

Ventilation & Air Quality:

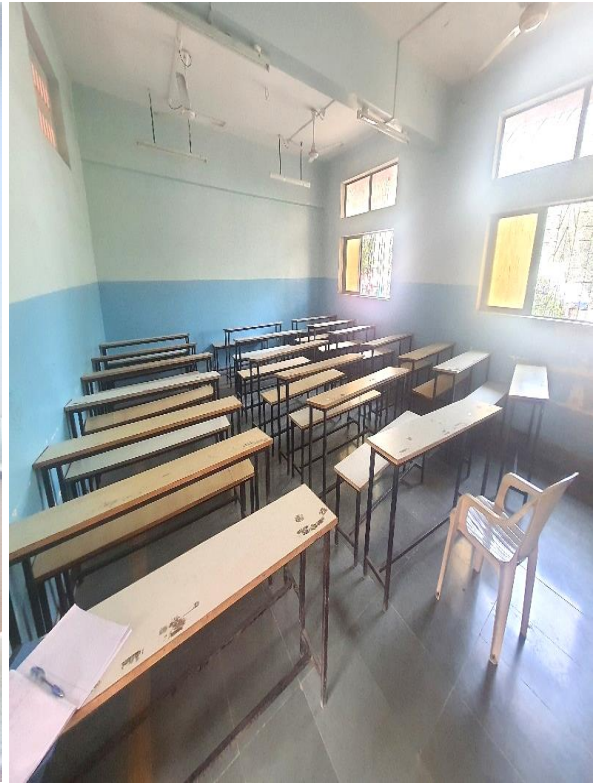
- The air ventilation is adequate.
- Several indoor & outdoor plants have been installed to improve air quality.



- It has been a general practice to switch off the fans & lights in an unoccupied area.
- The air conditioned rooms are provided with proper ventilation and fresh air.



Helping You to Conserve Energy



Helping You to Conserve Energy

V Water Management

Water Source:

The water supplied by the municipal corporation is used for drinking and other requirements. The incoming water from the municipal corporation is metered.

Observation & Suggestions:

- The cost as well as consumption is within the normal range.

Water Purifiers:



Sr No	Location	Quantity (No.)	
		Water Cooler	Water Filter
1	First Floor	1	1
2	Second Floor	0	1

The water purifiers are provided at convenient locations.

Water Distribution System:

The distribution network and piping are more or less satisfactory and adequate.

Helping You to Conserve Energy

**Green, Energy and Environment Audit Report
Navneet College of Commerce & Science**

Rainwater Harvesting:

The rainwater is fed to the rainwater harvesting pit for ground water recharge.



VI Waste Generation & Management

Solid Waste:

- The organic waste is segregated in the college premises.
- The organic waste and other waste are separately disposed through Municipal system.
- There is no generation of hazardous or biomedical waste in the premises.
- Each Floor is provided is with segregated dustbin for Recyclable waste and Non-Recyclable Waste



- The electronic gadgets with residual life are donated while the electronic waste is properly segregated and handed over to appropriate scrap collector.

Sewage & Wastewater:

- The sewage is disposed through municipal system.
- There is no generation of harmful or hazardous effluent.
- The sewage treatment plant is not required due to minimal generation of waste.
- The municipal corporation charges cess for treating and disposing waste water.

Helping You to Conserve Energy

VII Infrastructure & Safety



Observations:

- The premises are provided with multiple staircases with necessary entrances to ensure quick and effective movement in normal as well as emergency conditions.



- The movement of vehicle inside the campus is restricted with vehicles of Special Dignitaries and VIP Guests are allowed to enter the campus.
- There are pedestrian friendly pathways for in-campus movement.

Helping You to Conserve Energy

**Green, Energy and Environment Audit Report
Navneet College of Commerce & Science**

- There is restriction on the usage of plastic, which may be extended to completely ban plastic usage inside the campus.
- There is adequate parking space for vehicles/four wheelers. However, almost all the students and many of the faculty members avail public transport system which is very convenient due to proximity to railway station and bus services.
- Ramp & wheelchair is available for differently abled student.



Draining system:

- The drains from the washrooms are connected to the municipal drainage, which is a common practice in the colleges in and around Mumbai.

Seepage in the building:

- The premise was visually inspected for seepages. No seepages were observed in any of the places.

Helping You to Conserve Energy

**Green, Energy and Environment Audit Report
Navneet College of Commerce & Science**

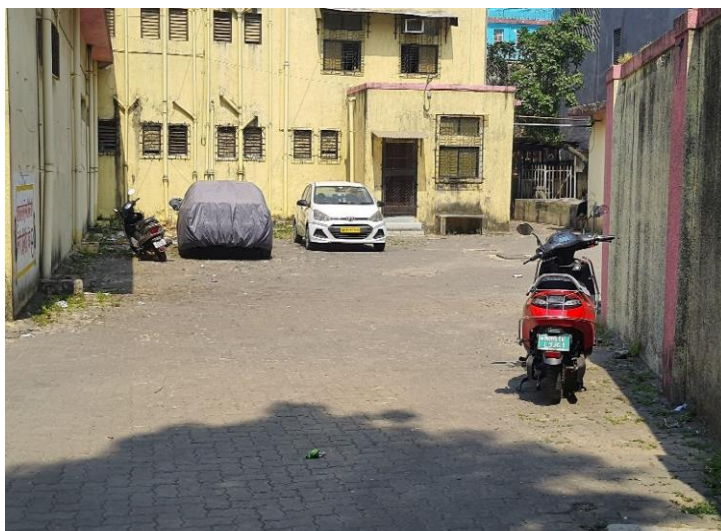
Firefighting & fire escape system:



Sr No	Location	Type	Quantity
1	First Floor	Powder	2
2	Second Floor	Powder	1

- There are efficient fire extinguishers in the premises, which are checked / refilled as per the stipulated frequency.
- The premise is provided with multiple staircases with requisite entrances to ensure quick and effective movement in emergency conditions.

Parking space:



- There is adequate parking space for vehicles/four wheelers. However, almost all the students and many of the faculty members avail public transport system which is very convenient due to proximity to railway station and bus services.

Helping You to Conserve Energy

VIII Green Culture



Computers:

Location	Quantity (Nos.)
Principal / Administrative Office	11
Information Technology Lab	48
Staff Room	2
Library and Reading Room	2

Observations & Suggestions:

- The LED / LCD monitors & Laptops has been procured, which are energy efficient.
- These monitors are not only energy efficient but also generate minimal heat and cut down on air conditioning load.
- The electronic communication is encouraged to minimize usage of papers.
- Most of the papers are reused for doubled sided printing to further minimize usage of paper.

The following steps may be initiated to further enhance efficiency of the systems.

1. An efficient power management system may be incorporated to
 - a. Switch off the display if not in use.
 - b. Put the computer in Sleep mode / switching off the machines, if not used for prolonged period.
2. Optimize brightness of the screen.
3. Discourage use of screen savers, which has similar power consumption.

Paper-less communication:

The major internal as well as external communication is through electronic medium.

Re-using one sided paper for printing:

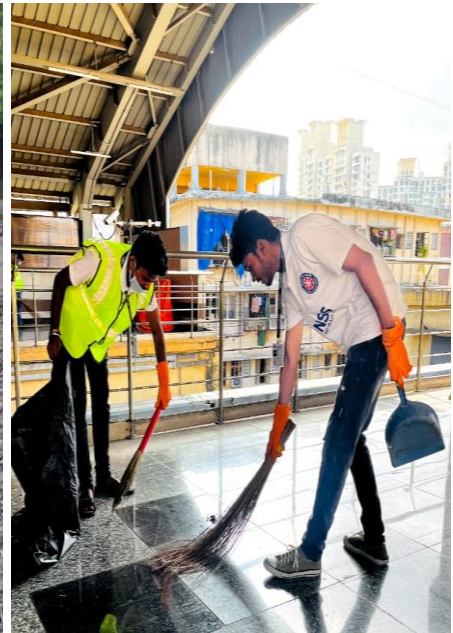
It was observed that two side printing / printing on the back side of used paper in more than 80% of the cases.

Helping You to Conserve Energy

NSS Environmental Conservation Activities conducted by students & staff members:



Helping You to Conserve Energy



Helping You to Conserve Energy



Helping You to Conserve Energy

Green, Energy and Environment Audit Report
Navneet College of Commerce & Science



Helping You to Conserve Energy

IX Renewable Energy

Solar Photovoltaic:

It is suggested to install rooftop solar panels with net metering for captive usage.

Solar Thermal:

There is no application of solar thermal system and does not find attractive in this case.

Biogas Plant:

There is no possibility of installing biogas plant for cooking as the quantity of plate waste is negligible.