External Environment

Audit Report

2020-21

ANAND VIHAR COLLEGE

FOR WOMEN BHOPAL

ENERGY AUDIT REPORT

PREPARED BY:

CONCEPT ENGINEERING

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ACKNOWLEDGEMENT

We acknowledge with a sense of gratitude, the confidence reposed on us by Management of Anand Vihar College for Women Bhopal awarding the work of conducting the Energy Audit of Anand Vihar College for Women Bhopal (M.P.)

We are also thankful to Principal Madam and Staff for continuous cooperation and hand holding during the audit work with her limitations, in best possible way she has arranged for Operating staff for providing us the necessary help during collection of data and field measurements.

At last we are thankful to all persons, officials of different Departments and audit team who directly or indirectly helped in completing this prestigious project.

GYANENDRA SAXENA
EA – 10567, CERTIFIED ENERGY AUDITOR

BUREAU OF ENERGY EFFICIENCY-
GOVT.OF INDIA

CONCEPT ENGINEERING
PLACE: BHOPAL

EXECUTIVE SUMMARY

Energy cost is one of the major components in a commercial building operation. With the advancement of energy efficiency practices and technologies, it is possible to cut down energy cost significantly in the buildings without reducing comfort and productivity of the building occupants. This can normally be achieved by initiating a systematic energy assessment/ audit of their building, followed by implementation of cost effective energy efficiency measures.

The basic purpose of developing this report is to raise awareness on the energy audit/assessment process, and also guide them on the process of identifying and implementing energy savings opportunities that exist in their buildings. The report also aims to provide useful inputs to the energy auditors and consultancy organizations to standardize their building energy audit/assessment approach and ensure quality assurance in carrying out the energy audits in buildings.

The building energy assessment process presented in this report gives the building owner a step-wise approach starting from pre-assessment of energy consumption and costs in the building to the hiring of a specialized energy auditor or energy service company to carry out an in-depth assessment. Through the assessment process, the building owner is likely to have better understanding of their building facilities energy consumption levels and patterns, and the possible approaches through which they can reduce the energy consumption levels. The report provides the owner with an overview of what each level of assessment that includes level of effort, data collection requirement for effective analysis, type of energy efficiency measures and their associated costs towards their implementation, and the expected energy savings.

Realizing that not every energy audit can be converted into energy efficiency project, this report also introduces the concept of degree days to weather normalize energy consumption data. This is very useful if energy audits are going to be used as a source of reliable end-use energy consumption data for developing a framework for benchmarking energy performance of buildings.

The report also delves into the post-assessment issues that relate to the implementation of specific energy saving measures and capital-intensive projects identified through the assessment process. These include financing of Measures/ projects and deployment of energy service companies to secure energy saving monetary gains.

SR. NO	OBSERVATIONS	ESTIMATE ANNUAL ENERGY SAVING KWH	ESTIMATE MONETARY SAVING RS/YEAR	INVESTMENT Rs.	PAY BACK Months	PAGE NO.
1	Saving by Replacement of all the Conventional 40W FTL by Led Tube Light	2160	17280.00	4000.00	02	**26**
2	Saving by Retrofit of all the Conventional 36W PLL X 2 Nos. Lamp Fitting by 36w LED Light	1108.8	8870.40	13300.00	15	**27**
3	Saving by replacement of all conventional 75W fan by 30W Energy efficient fan	29646	237168.00	640500.00	30	**28**
	TOTAL	**32914.8**	**263318.40**	**657800.00**	**47**	

DETAILS OF CONSUMER

Name of consumer	ANAND VIHAR COLLEGE
Name of Contact Person	Dr. (Mrs.) Madhu Mishra
Address of the Consumer	Link Road No. 1,74 Bungalow Tulsi Nagar Bhopal
Name of suppliers	M.P Madhya Kshetra Vidyut Vitran Company Ltd.
Consumer Code	3383904111
Tariff	HV 3.2 – A 11KVNon Industrial Urban
Capacity of Installed Transformer	200 KVA
Contract Demand	75 KVA

1. AIM AND OBJECTIVES OF ENERGYAUDIT

1) The First objective is to acquire and analyze data and finding the energy consumption pattern of these facilities.

2) The second objective will be to calculate the wastage pattern based on the results of the first objective and Analysis of load Distribution network

3) Thermography of H.T Yard and Distribution Panels.

4) The final objective is to find and suggest solutions that are acceptable and feasible

NOTE: -

Attempt is made to carry out the measurement of various parameters to the extent practically possible. In event of inability of measurements due to some constraints, reasonable estimation is made.

2. PRESENT ENERGYCONSUMPTION

The Anand Vihar College Building has High voltage connection from M.P Madhya Kshetra Vidyut Vitran Company Limited. At present the Contract Demand of the organization is 75 KVA and it has been placed under tariff HV – 3.2.A for Non Industrial HV Category. The distribution company supplies the electricity at single point.

Solar Power Pack of 40KW with Net Metering is also installed.

We have collected the electricity bills from admin office for the purpose of analysis of energy consumption pattern. We have worked out the total units consumed and the total cost of the power on monthly basis.

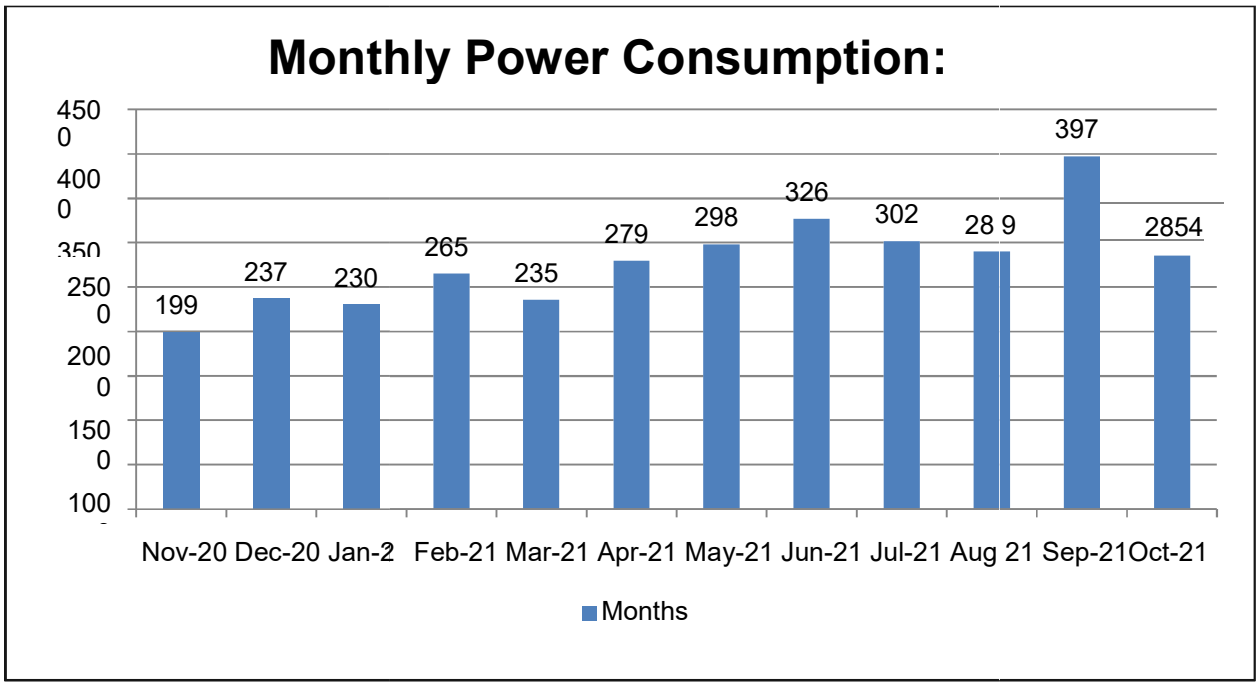
The average energy consumed in this premises is 2788.25 Units per Month.

The average Electricity bill Amount is Rs. 54418.50 per Months.

Per unit electricity cost varies from Rs 12.1 to 31.39 per Units

All the electric connections are under Non Industrial Urban feeder tariff plan.

MONTHLY POWERCONSUMPTION CHART IN UNITS



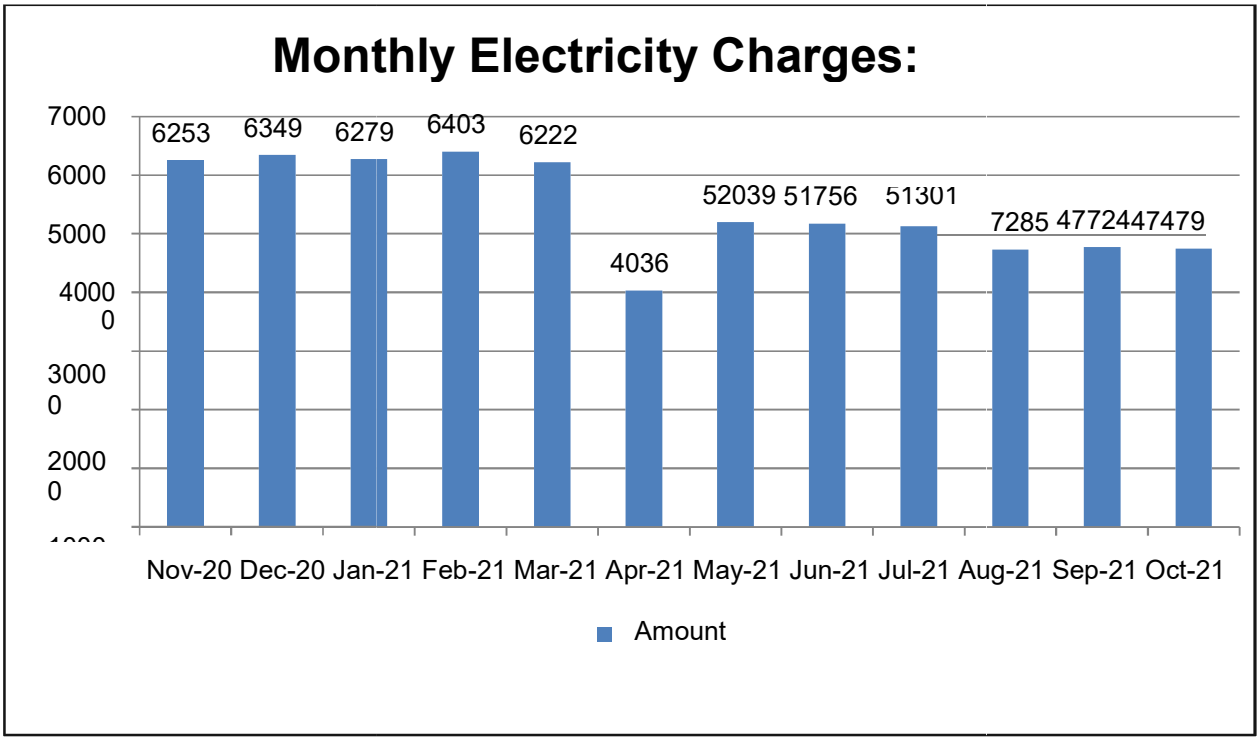
MONTHS	NOV-20	DEC-20	JAN-21	FEB-21	MAR-21	APR-21
UNITS	1992	2372	2300	2650	2356	2795

MONTHS	MAY-21	JUN-21	JUL-21	AUG-21	SEP-21	OCT-21
UNITS	2981	3267	3021	2899	3972	2854

OBSERVATION:

Average Unit Consumption is 2788 Units per Months While Lowest Energy Consumption of 1992 Units was observed in November 2020 and highest Energy Consumption of 3972 is observed in September 2021

MONTHLY ELECTRICITY CHARGES IN RUPEES



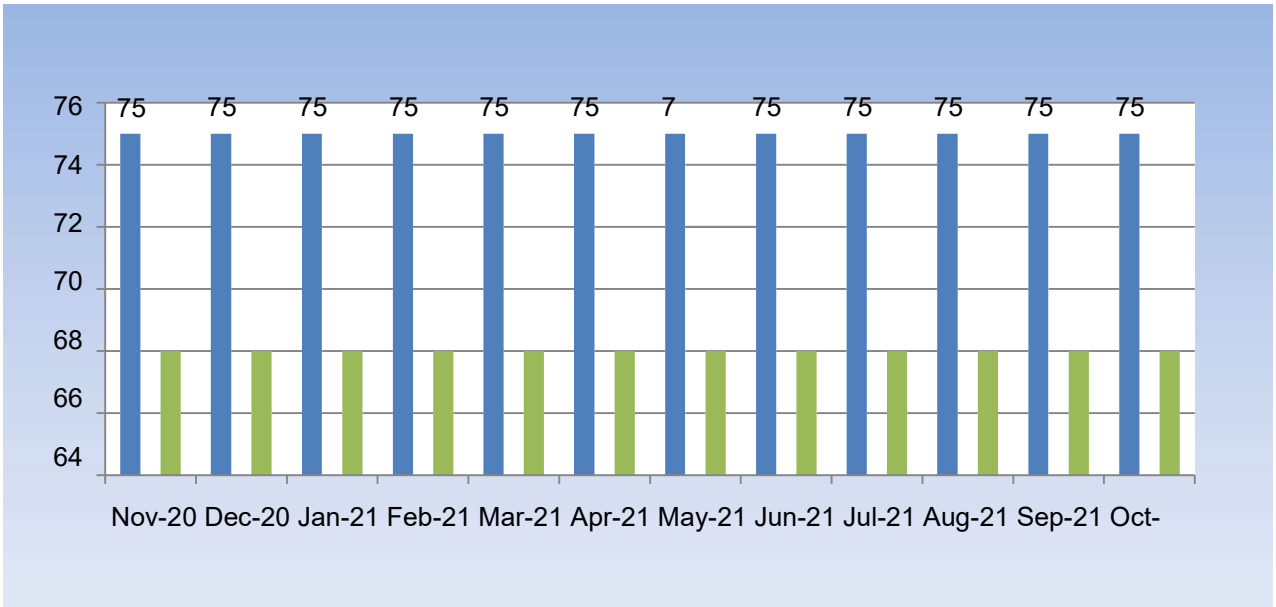
MONTHS	NOV-20	DEC-20	JAN-21	FEB-21	MAR-21	APR-21
AMOUNT	62532	63490	62794	64032	62228	40362

MONTHS	MAY-21	JUN-21	JUL-21	AUG-21	SEP-21	OCT-21
AMOUNT	52039	51756	51301	47285	47724	47479

OBSERVATION:

Average Energy Consumption Amount is Rs.54418.00 per Months While Lowest Energy Consumption of Rs. 40362 was observed in April 2021 and highest Energy Consumption of Rs. 64032 was observed in February 2021.

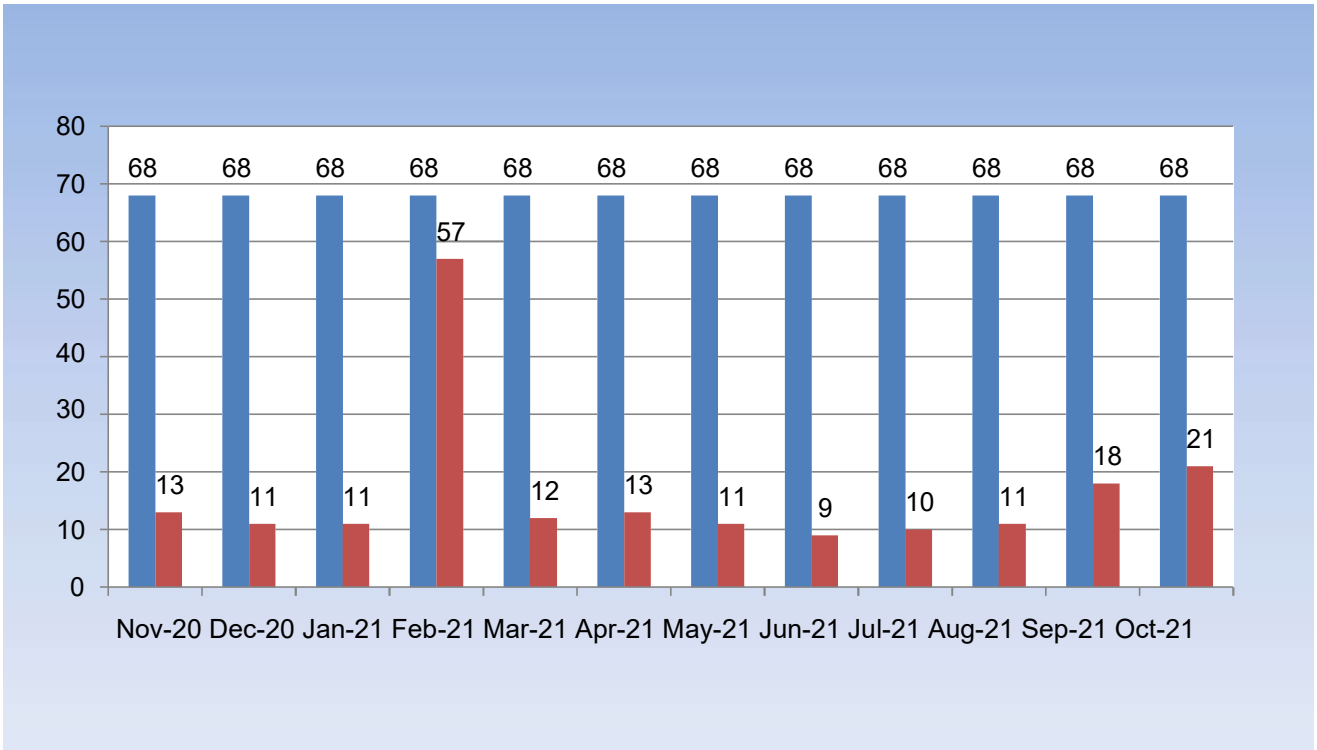
CONTRACT DEMAND VS BILING DEMANDCHART



MONTHS	NOV-20	DEC-20	JAN-21	FEB-21	MAR-21	APR-21
CONTRACT DEMAND	75	75	75	75	75	75
MAXIMUM DEMAND	68	68	68	68	68	68

Months	MAY-21	JUN-21	JUL-21	AUG-21	SEP-21	OCT-21
Contract Demand	75	75	75	75	75	75
Maximum Demand	68	68	68	68	68	68

BILLING DEMAND VS MAXIMUM DEMAND CHART



MONTHS	NOV-20	DEC-20	JAN-21	FEB-21	MAR-21	APR-21
MAXIMUM DEMAND	68	68	68	68	68	68
BILLING DEMAND	13	11	11	57	12	13

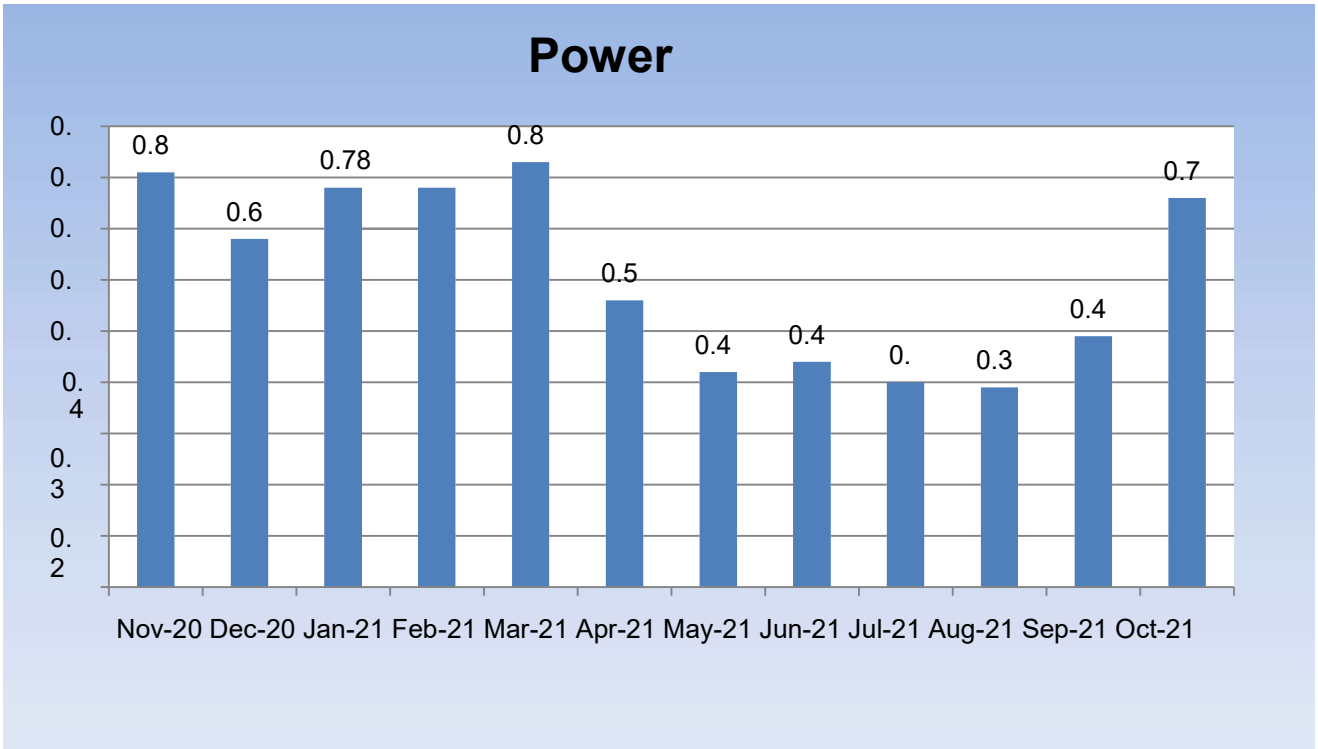
MONTHS	MAY-21	JUN-21	JUL-21	AUG-21	SEP-21	OCT-21
MAXIMUM DEMAND	68	68	68	68	68	68
BILLING DEMAND	11	9	10	11	18	21

OBSERVATION:

Average Billing Demand is 16 per Months While Lowest Average Billing Demand of 9 was observed in June 2021 and highest Average Billing Demand of 57 was observed in June 2021.After Solar Generation demand is drastically reduced.

We suggest to reduce Contract Demand at the earliest to reduce your Energy Bill.

POWER FACTOR CHART



MONTHS	NOV-20	DEC-20	JAN-21	FEB-21	MAR-21	APR-21
POWER FACTOR	0.81	0.68	0.78	0.78	0.83	0.56

MONTHS	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21
POWER FACTOR	0.42	0.44	0.4	0.39	0.49	0.76

OBSERVATION:

It is suggested to repair APFC Panel and ensure Power Factor > 0.95 to convert penalty into incentive

3. OVERVIEW &ANALYSISOFEXISTINGSYSTEMS

LOAD INVENTORY SURVEY

Total numbers of fixtures at Anand Vihar College Bhopal (M.P) are 534.

Following table shows the details of the fixtures installed:

SR. NO.	FIXTURE	WATT	QTY	TOTAL
1	2X36 CEILING LIGHT	80	7	560
2	9W BULB	9	7	63
3	AC 1.5TON	1800	1	1800
4	15W CFL	15	1	15
5	COMPUTER	120	49	5880
6	EXHAUST	80	2	160
7	FAN	75	183	13725
8	FRIDGE	250	1	250
9	FTL	48	20	960
10	INUCTION	2000	1	2000
11	LED TUBE LIGHT	20	222	4440
12	OLD CRT COMPUTER	250	9	2250
13	OLD MODEL FAN	150	4	600
14	PHOTO COPY M/C	1750	1	1750
15	PRINTER	150	8	1200
16	PROJECTOR	250	1	250
17	TV	250	1	250
18	WALL FAN	50	1	50
19	WATER COOLER 40/80 LTR	500	2	1000
20	WATER COOLER 150 LTR	1500	1	1500
21	MOTOR 5HP	3750	1	3750
22	SUBMERSIBLE PUMP 3HP	2250	1	2250
23	LIFT	2850	1	2850
	TOTAL		525	47553

ILLUMINATION:

The lighting level produced by a lighting installation is usually qualified by the illuminance produced on a specified plane. In most cases, this plane is the major plane of the tasks in the interior and is commonly called the working plane. The illuminance provided by an installation affects both the performance of the tasks and the appearance of the space.

LUX (LX)

This is the illuminance produced by a luminous flux of one lumen, uniformly distributed over a surface area of one square meter. One Lux is equal to one lumen per square meter.

COLOUR RENDERING INDEX (CRI)

Colour Rendering Index (CRI) is a measure of the degree to which the colours of surfaces illuminated by a given light source confirm to those of the same surfaces under a reference illuminant; suitable allowance having been made for the state of Chromatic adaptation.

4 ECBC Standards and comparison

As per the Energy Conservation Building Code (ECBC) – 2006, published by the Bureau of Energy Efficiency (BEE), Govt. of India, the recommended Illuminance are as given below in Table 5.1

TABLE 5.1: STANDARD ILLUMINANCE LEVELS FOR DIFFERENT PURPOSES

Type of Interior or Activity	Minimum Illuminance required (In Lux)
General	200
Reading Room	200
Reading tables	200
Bathrooms	50
Computer Workspace	300
Interior Parking Area	20
Music Rooms	200
Sports halls	200
Corridors, passageways &Stairs	50
Canteens, Cafeterias, Dining Rooms and Mess Rooms	150
Food Preparation and Cooking	300

MEASUREMENT OF LUX LEVEL AT VARIOUSLOCATIONS

S.NO.	FLOOR	LOCATION	LUX LEVEL		
1	GROUND FLOOR	PRINCIPAL CABIN	186	176	174
		ADMINISTRATIVE OFFICE	185	175	149
		PASAGE AREA	62	46	59
2	FIRST FLOOR	ROOM	180	170	177
		PASSAGE AREA	54	77	63
3	SECOND FLOOR	LIBRARY	190	186	172
		B ED CLASS ROOM	183	180	174
		HOD COMMERCE	181	173	190
		PASSAGE	85	104	98
4	THIRD FLOOR	SEMINAR HALL	189	175	186
		STAFF ROOM	186	189	172
		HOD B ED.	182	171	173

OBSERVATION:

Illumination needs to be little upgraded as per Indian Standard – 3646 (Part 1): 1992 And ECBC Guideline.

5. ENERGY EFFICIENCY IN BUILDING - STATUS & PRACTICES

This chapter includes some general suggestions on the basis of observations and the existing status of the building.

Proper wiring system and quality of electrical appliances are important while studying the energy efficiency of a building. Loose electric connections should not be there to avoid Short circuiting and even fire.

The load distribution on each phase should be equal. It is observed that Fire hazard chances are increased if the load distribution in each phase is not equal.

6. WATER CONSERVATION

Usage of water is mainly into Garden, Toilets and Drinking.

Leaky faucets that drip at the rate of one drop per second can waste up to 2700 gallons (Approx 10000 litres) of water each year.

How to save water?

Install separate sub meter for Garden to account for usage of water. Each meter should be read at least monthly and log book should be maintained.
Flow of water in faucets should be controlled by filters or by main top.
It will help to reduce to waste water to zero.
Please make a group of people responsible for water conservation.

THE BENEFITS:

Reducing water use in a facility is a win-win situation. Using less water means lower utility costs. Finding and eliminating long-standing leaks can create a better work environment for building occupants, as well as reduce damage to building components.

Reducing water use can also enhance the public image of a facility.

7. EARTH RESISTANCE

The earthing system, sometimes simply called 'earthing', is the total set of measures used to connect an electrically conductive part to earth. The earthing system is an essential part of power networks at both high- and low-voltage levels. A good earthing system is required for:

- Protection of buildings and installations against lightning
- Safety of human and animal life by limiting touch and step voltages to safe values
- Correct operation of the electricity supply network and to ensure good power quality.

Earth electrode is a metal conductor, or a system of interconnected metal conductors, or other metal parts acting in the same manner, embedded in the ground and electrically connected to it.

Earthing conductor is a conductor which connects a part of an electrical installation, exposed conductive parts or extraneous conductive parts to an earth electrode or which interconnects earth electrodes. The earthing conductor is laid above the soil or, if it is buried in the soil, is insulated from it.

OBSERVATIONS AND SUGGESTIONS

Main Substation Yard earthing is satisfactory.

8. SOME PRACTICES TO BE FOLLOWED FOR ENERGY CONSERVATION

- Make a program for tightening all electrical connections starting from main panels and main switches – Replace power cables and wires with weak insulation
- Maintain all earthlings measure the resistance once in six months. It should be below 2 ohms. Weak earthing should be replaced by Maintenance free Copper Bonded Electrode Earthing with Tested Hygroscopic chemicals
- Maintain all Luminaries in clean condition
- Install cyclic timers with exhaust of all toilets to save energy up to 50% and this will also reduce maintenance cost
- The conventional fans can be replaced by energy efficient fans. The star rated fans also available in the market. They are higher in cost compared with the conventional ceiling fans. The ceiling fans available in different sizes. The cost of energy efficient fans is slightly higher than the normal ceiling fans. It saves about 20 to 25 percentage of energy.

9. SHORT TERM MEASURES

1) **Your Contract demand should be reduced by giving application to Electricity department to save on Energy Bill.**
2) **Repair APFC Panel and you can start getting incentive by maintaining good power factor > 0.95, presently you have paid power factor penalty of Rs. 9776.67 in a year.**
3) **Water Level Controller should be installed to avoid overflow of water in overhead tanks.**
4) **Sub-meters should be used to account for Energy Consumption of School and college separately.**
5) Nominate one officer & electrician /technician to look after the energy conservation measure on regular bases.
6) The tightening of connections should be taken as regular preventive maintenance Activity and there is no capital expenditure required for this activity. Lux level should be little improved in college area by proper installation of LED Lights. The savings in FTL Lighting system can be achieved by replacing all 48W FTL Light by LED TubeLight where ever required.
7) Passage Lighting can be controlled by installing occupancy sensors

10. LONG TERM MEASURES

Energy policy to be made and implemented. Prepare the energy policy for entire office building that focuses on energy Conservation and to make people aware about the importance of energy Conservation.

1) People need to be trained in simple energy conservation and Electrical safety techniques. Energy Club should be made including Staff and students.
2) Energy Audits to be carried out regularly to check the effectiveness of the actions taken.
3) Line up an annual maintenance contract for electrical installation with a provision of preventive maintenance twice in a year.

11. ENERGY CONSERVATION OPTIONS & RECOMMENDATIONS.

11.1 ENERGY SAVING BY REPLACEMENT OF ALL THE CONVENTIONAL LIGHTING BY ENERGY EFFICIENT LIGHTING.

LED is the latest revolution in lighting technology and widely used from indoor to Outdoor lighting due to following benefits:-

1. LED is green and environment friendly, no lead, no mercury, no UV radiation, no environmental pollution.
2. High Efficiency (lm/W).
3. Self Contained units that require minimal maintenance.
4. Long life (typically > 5000 hrs) more than 10 years.
5. 35% Power saving technology as compared to CFL.
6. Better CRI: Excellent visual acuity.
7. Low temperature eliminates the risk of fire.

11.2 ENERGY SAVING BY REPLACEMENT OF ALL THE CONVENTIONAL 40W FTL BY LED TUBELIGHT.

The conventional 40W FTL consumes 48Watt energy including choke losses. We can replace these with FTL by 18W LED Tube Light where ever required. The reduction of energy consumption after replacing all the FTL with 18W LED Fixtures is worked out in the table below.

Total **2160 KWh** can be saved annually by implementation of this scheme. Monetary saving of **Rs 17280.00/-** can be achieved. The investment and simple payback period is also worked out in the table.

SR. NO.	PARTICULAR	VALUE	UNIT
1	Total Nos. 48W FTL Fitting	20	Nos.
2	Load of Conventional Fitting (48W X20) / 1000	0.96	KW
3	Reduction in Load by replacing the Fitting by LED Fixture (48W – 18W) X 20 / 1000	0.6	KW
4	Average Operating hours	12	Hrs/day
5	Estimate Annual Energy Saving @ 300 Days/Year (0.6X 12 X 300)	2160	KWh
6	Estimate Monetary Saving @ Rs.8/Unit) (2160X 8)	17280.00	Rs./Year
7	Saving towards maintenance cost considering one lamp replacement per annum+ labour cost @ Rs.150 /Fitting	3000.00	Rs./Year
8	Total Saving	20280.00	Rs./Year
9	Investment Required for 20 Nos. of LED (20 Nos.@ Rs. 200 per fitting)	4000.00	Rs.
10	Simple Payback Period	**2.3**	**Months**

11.3 ENERGY SAVING BY RETROFIT OF ALL THE CONVENTIONAL 36W PLL X 2 NOS. LAMP FITTING BY 36W LEDLIGHT.

The conventional 36W PLL X 2 Nos. Lamp Fitting consumes 80Watt energy including choke losses. We can replace these with 36W PLL X 2 Nos. Lamp Fitting by 36W LED Light. The reduction of energy consumption after replacing all the 36W PLL X 2 Nos. Lamp fitting with 36W LED Light is worked out in the table below.

Total **1108.8 KWh** can be saved annually by implementation of this scheme. Monetary saving of **Rs. 8870.40/-** can be achieved. The investment and simple payback period is also worked out in the table.

Sr. No.	Particular	Value	Unit
1	Total Nos.36W PLL X 2 Nos. Fitting	7	Nos.
2	Load of Conventional Fitting (80W X 7)	0.56	KW
3	Reduction in Load by replacing the 18W PLL X 2 Nos. Fitting by LED Light (80W – 36W) X 7 / 1000	0.308	KW
4	Average Operating hours	12	Hrs/day
5	Estimate Annual Energy Saving (@ 300Days/Year) (0.308 X 12 X300)	1108.8	KWh
6	Estimate Monetary Saving (@ Rs.8/Unit) 1108.8 X 8	8870.40	Rs./Year
7	Saving towards maintenance cost considering one lamp replacement per annum+ labour cost @ Rs.300 /Fitting	2100.00	Rs./Year
8	Total Saving	10970.4	Rs./Year
9	Investment Required for Nos. of LED (7 @ Rs.1900/- per fitting)	13300.00	Rs.
10	Simple Payback Period	**15**	**Months**

11.4 ENERGY SAVING BY REPLACEMENT OF ALL THE CONVENTIONAL CEILING FANS BY THE ENERGY EFFICIENTFANS

Now days there are many types of star rated fans available in the market. The Bureau of Energy Efficiency has categorized the energy efficient products as two, three, four and five star rated products available in the market. Star rated ACs refrigerators, fans etc saves a considerable energy in domestic us as well as commercial buildings.

The conventional ceiling fans consume about 75 to 80 watts. This energy conservation scheme can be implementation as a long term energy saving practice, hence the capital investment is high, and that results into very long payback period. It can be planned to replace the fans in phases. They also can plan this practice for Building Wise implementation process. It is suggested for fans those run for maximum hours during the working days. It is suggested to replace those fans first.

Sr. No.	Particular	Value	Unit
1	Total Nos. of Fan	183	Nos.
2	Load of Conventional Fan	75	W
3	Load of Energy Efficient Fan – 30W	30	W
4	Reduction in Load by replacing the Conventional Fan by Energy Efficient Fan (75W – 30W) X 183 / 1000	8.235	KW
4	Average Operating hours	12	Hrs/day
5	Estimate Annual Energy Saving (@ 300 Days/Year) (8.235X 12 X 300)	29646	KWh
6	Estimate Monetary Saving (@ Rs.8/Unit) 29646X 8	237168.00	Rs./Year
7	Saving towards maintenance cost + labour cost @ Rs.100 /Fitting	18300.00	Rs./Year
8	Total Saving	255468.00	Rs./Year
9	Investment Required for Nos. of BLDC fan(183 @ Rs.3500.00 /- per fitting)	640500.00	Rs.
10	Simple Payback Period	**30**	**Months**

12. AUTOMATIC ORGANIC WASTE TO COMPOSTMACHINE:

We can install fully automatic machine to convert organic waste into manure within a day. Entire Process is natural and biological. For higher capacity machine special micro-organism technique is used which break down and de-compost all kind of organism waste into compost. This machine is noiseless and odorless

- Generate a high productive fertilizer from food waste.
- Expensive market with increasing food safety concern,
- Mitigate the food waste problem.
- Saving in transportation and disposal cost.
- Process all type of organic waste like bread, chapatti, curry, eggshells, chicken, bones, fish etc.
- Fish bones, fruits, fruits peels, vegetables, vegetables peels, left over kitchen waste, garden waste like dry leaves and small twigs etc.
- 80to90 percent volume reduction possible.
- No Addition of any micro-organism in small machine.
- No Harmful gases.

What is Waste to Compost Machine?

WTC is a fully automatic composting machine, which converts all kinds of organic waste into compost within 24 hours in your own building/premises and solves your waste management problems completely. It Reduces garbage at source, recycles organic waste into Compost, Reuse compost for garden, plants.

How do we achieve a volume reduction of 85-90%?

WTC uses special micro-organisms to decompose all kinds of organic waste into compost within 24 hrs. with a volume reduction of 85-90%. The entire process is natural and biological.

It is a fully automatic and highly compact composting machine which uses special microorganisms to break down and decompose all kinds of organic waste into compost within 24hrs with a volume reduction of 85-90%. The entire process is natural & biological.

When organic waste is added to it, the heater turns ON and the composting tank gets heated. Due to this, the water content in the organic waste is evaporated and it goes out the atmosphere as water vapor through the exhaust system. As any organic waste contains 70 - 80% Water content, we achieve 70 to 80% volume reduction at this stage.

At the same time, microorganisms then decompose the organic waste into compost, the process is completely noiseless.

Is there any smell?

There is no smell or odour of any sort as it is connected directly to sewage line/storm water drain.

Are any harmful gases emitted?

No gases of any sort are emitted as there is aerobic digestion during the whole process i.e. continuous air intake and air outlet.

Is any operator needed for the machined?

No, the machine is fully automatic, the waste collector has to just open the waste input door, dump the waste and forget about it.

Can the compost be used directly in plants?

Yes. The compost can be used directly in garden or plants. However, as it is concentrated it should be mixed with soil and used in the proportion of 5:1 ratio (Soil: compost).

External Environment

Audit Certificate

2020-21

CONCEPT ENGINEERING

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Mob: 9074211278, 9826086462
Web: www.conceptenergysavers.com, Email:conceptenergysavers@gmail.com

CERTIFICATE OF ENERGY AUDIT

This is to certify that Anand Vihar College for Women, Bhopal opp. 74 Bunglow, Tulsi Nagar Bhopal, Madhya Pradesh - 462003 (India) has conducted Energy Audit in November 2021 for Academic year 2021 to 2022 for knowing present electrical energy consumption, Identification of energy conservation and saving opportunities for implementation to mitigate green house gas emission for environmental protection. This Energy Audit also aimed to assess impact of installed various Renewable energy applications.

DATE: 17/11/2021
PLACE: BHOPAL

For CONCEPT ENGINEERING
for CONCEPT ENGINEERING
Proprietor

GYANENDRA SAXENA
EA – 10567, CERTIFIED ENERGY AUDITOR
BUREAU OF ENERGY EFFICIENCY GOVERNMENT OF INDIA

Internal Environment

Audit Report

2019-20

Anand Vihar College For Women,Bhopal

Green and Energy

(Environment Audit)

Audit Report

2019- 20

Environment Audit Committee

2019-20

1. Dr.(Mrs.) Verlaxmi Indrakanti	**Asst. Prof., Education**
2. Dr.(Mrs.)Shalini Mishra	**Asst. Prof., Education**
3. Dr.(Mrs.)Neelam Mishra	**Asst. Prof., Education**
4. Dr.(Mrs.)Akansha Sharma	**Asst. Prof., Computer**
5. Dr. Siddharthh Saini	**Asst. Prof., Commerce**
6. Mrs Subhashini Verma	**Asst. Prof., Education**

Students Representatives

1. Simran Parashar	**B.A. II Year**
2. Rupal choubey	**B.Ed. II Year**

Figure 1 Main Entrance

Green and Energy Audit 2019-20

Anand Vihar College for women is affiliated to Barkatullah University, Bhopal. It is governed and managed by Vainita Samaj , a society of learned and wise women, dedicated for social welfare. They have been toiling hard to efface darkness of illiteracy by providing higher education to the girls' students in safe serene and secure atmosphere. The college was established in the year 1999. The college is one of the best girl's private college of Bhopal. It is accredited from NAAC in 2016-17. The college has constituted committee for **Environment (Green and Energy Audit**), with 6 faculty members and 2 student representative .The committee has submitted a detailed report of green and energy audit.

The objectives of green audit is-

- To analyses environmental practices within and outside the campus.
- To create an eco-friendly atmosphere in the campus.
- To record and report the measures taken for maintaining greenery in and around the campus.
- To generate awareness and sensitivity towards environment.
- To create and work for conservation of environment through eco-club.

The basic purpose of green audit and energy audit is categorized under the following headings-

- Formation of Eco-club.

- Creating Sensitivity towards environment.
- Recycling of organic waste and garden waste.
- Generating awareness to save water.
- Solar Power Plant.
- Replacing with LED blubs and tube lights.
- E- Waste management.

  The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The 17 SDGs are integrated—they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.

Figure 2 , The Most Important FIVE Sustainable Development Goals

A number of researches over the world wide accepted the fact that gender gap negatively affected the environment and climate change. Women are more dedicated than men to be concerned about the environment and have stronger pro-climate opinions and beliefs. Mounting evidences show that advancements in gender equality could have a profoundly positive impact

on social and environmental well-being. If women are not given due regards and nurtured properly, environment well being cannot be ascertained. Therefore, Anand Vihar College for women is dedicated and feels its utmost responsibility to develop enlightened and responsible citizens (girls) who are aware and sensitive towards environment. The basic purpose of green environment audit is to create such an environment in college campus so that girls are too aware about their role in environment conservation.

The college is having solar panel on the roof top of college which helps in power saving.

Figure 3, Solar Panel On Roof Top

The campus is" no vehicle zone". Inside the campus only up to main gate only vehicles are allowed .The compost bin of the college reduce organic waste and the compost is reused in our garden.

Figure 4 Compost Bin

Figure 5, Green And Clean Campus

Figure -6, Near Main Entrance of The College-The Green Corner

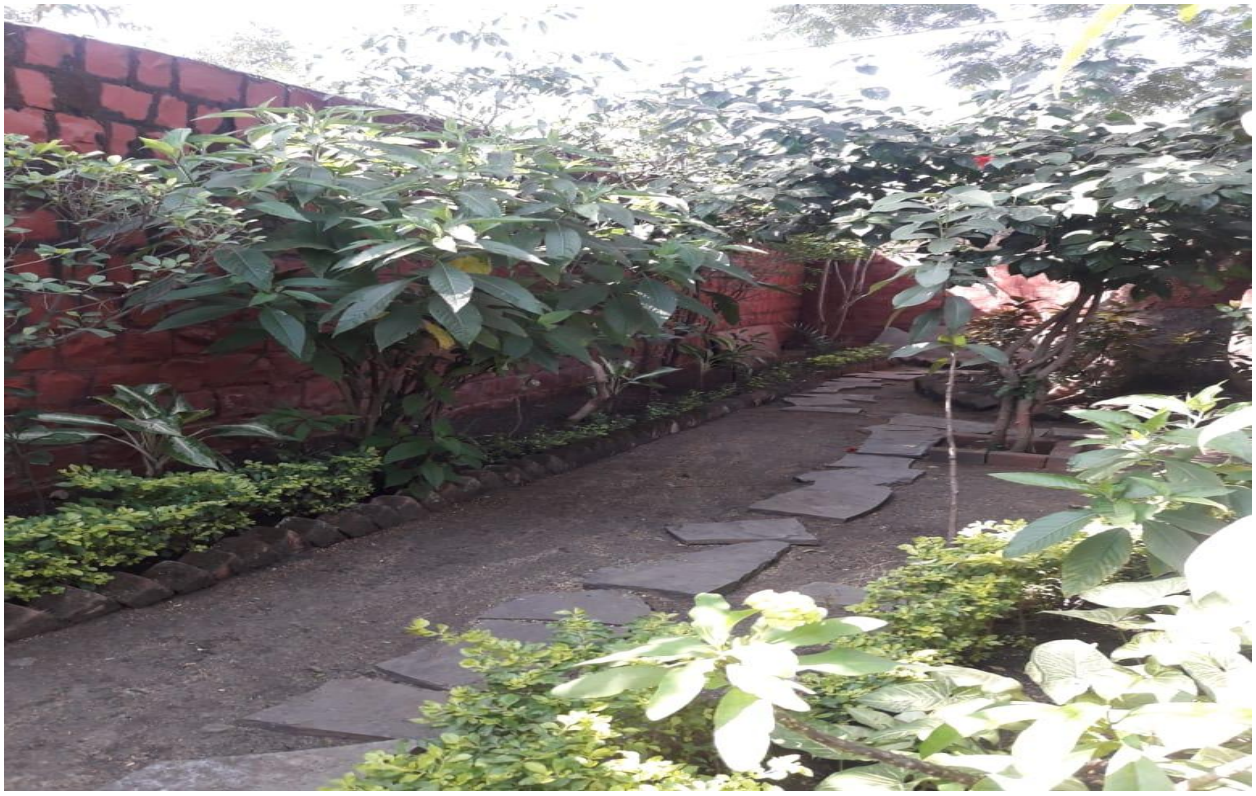

Figure -7 Ashok Vatika, Green Corners Near The Entrance.

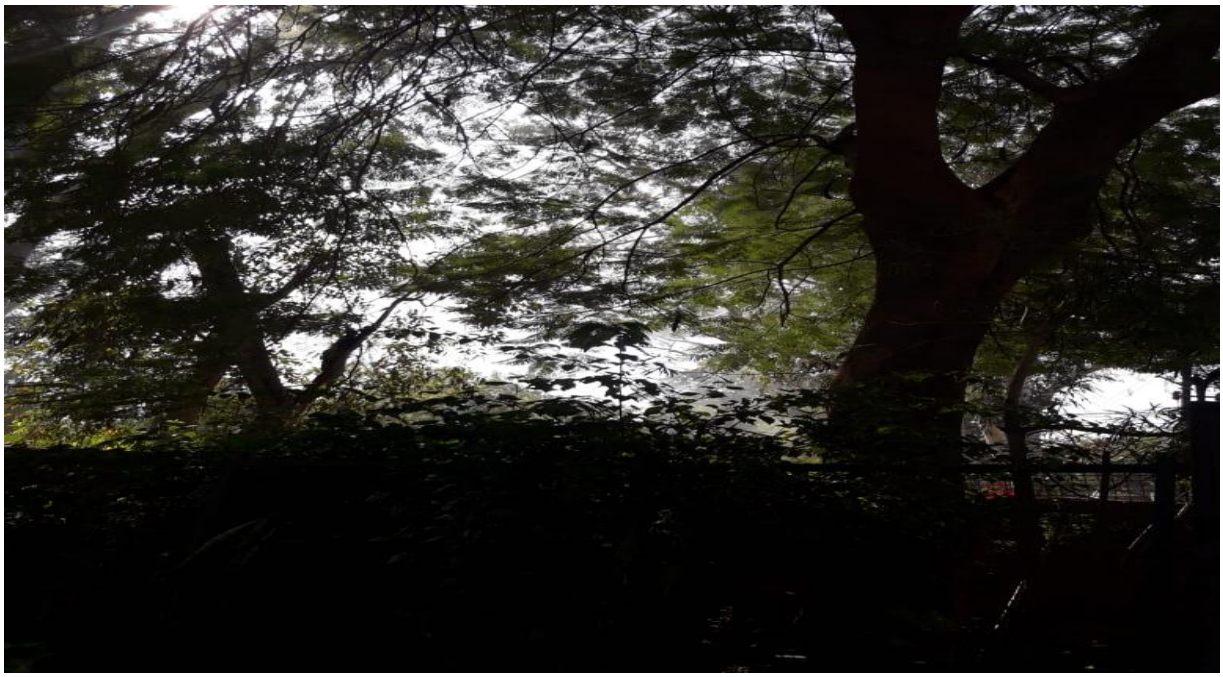

Figure -8, The Big Gulmohar Tree Near the Main Entrance.

Figure- 9 Green Campus -Healthy and Hygienic Atmosphere.

Figure -10, Ashok Vatika, Near the Main Entrance.

Figure 11, Aerial View of Plantation in Pots , Inside the Campus.

Figure 12 Inside the Campus - Seasonal Flowering Plants.

Anand Vihar College is committed to create environment consciousness among its students. Throughout the year college conducts various activities - like skit, poster making cartoon making etc., for conservation and preservation of environment and generating awareness.

The details of the activities conducted in 2019-20 are as under-

- AVCW in collaboration with IGNOU Planted Asoka Plants outside the campus near the boundary wall of the college.
- Swachata pakhwada (15days cleanliness drive) was organized by college. The college principal delivered talk on the importance of cleanliness in life and our precious surroundings.

Date	Activity	Topic	Organised by
23/7/19	Plantation of medicinal plants in college campus	Plantation	NSS and Eco club unit of college
1/9/19	Ten samplings of Ashok tree are planted at the boundary wall	Plantation	AVCW and IGNOU, RC. Bhopal
21/9/19	Cleanliness fortnight was augmented by NSS unit of college at second	Cleanliness	NSS Unit

	stop market area with graceful presence of counsellor of the area Mr. Amit Sharma		
24/9/19	Cleanliness awareness rally was organised in nearby area of the college. Paper Bags were also distributed in Godbasti	Paper Bags distribution and Rally	NSS unit of the college.
16/1/20	Plantation in campus	Swachata pakwada in college	AVCW
17/1/20	Various competitions on environment	Theme – Water, energy, poster making, conservation of forests etc.	AVCW
18/1/20	Cleaning of campus	Ashoka vatika and parking area cleaned by staff	AVCW
21/ 1/20	Best out of waste	Competition for students.	AVCW
22/1/20	Speech competition	On topics of environment conservation speech competition was organised	AVCW
23/1/20	Nukkad Natak	Nukkad Natak was enacted by students to create awareness among society	AVCW
5/6/20	National Webinar	On the topic-" *Impact of Covid -19 pandemic on Environment* "	Online National webinar

20/8/20	Eco friendly Ganesh	Workshop on Eco Friendly Ganesh	Organised by Gayatri Shakti peeth , Yuva shakti , Bhopal
23/8/20	Swacha Bharat Mission-'Grameen Gandagi Mukt Abhiyan'	Poster making and slogan writing competition	NSS unit of AVCW, Bhopal ,
2/9/20	Plantation and cleaning the surroundings	" Jaha Hariyali waha Khushhali"	NSS, AVCW, Bhopal
29/9/20	"A positive step towards Environment " ,Poster making competition for students.	" Environment without Plastic"	AVCW
5/9/21	Students and faculty members of college took oath for the cleanliness of campus on teacher's day.	Oath Taking	AVCW

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Plantation of medicinal plants in college campus

Ten saplings of Ashok tree are planted at the boundary wall

Cleanliness fortnight was augmented by NSS unit of college at second stop market area with graceful presence of counsellor of the area Mr. Amit Sharma

Cleanliness awareness rally was organised in nearby area of the college. **Paper Bags were also distributed in Godbasti**

Swachata Pakhwada

Nukkad Natak

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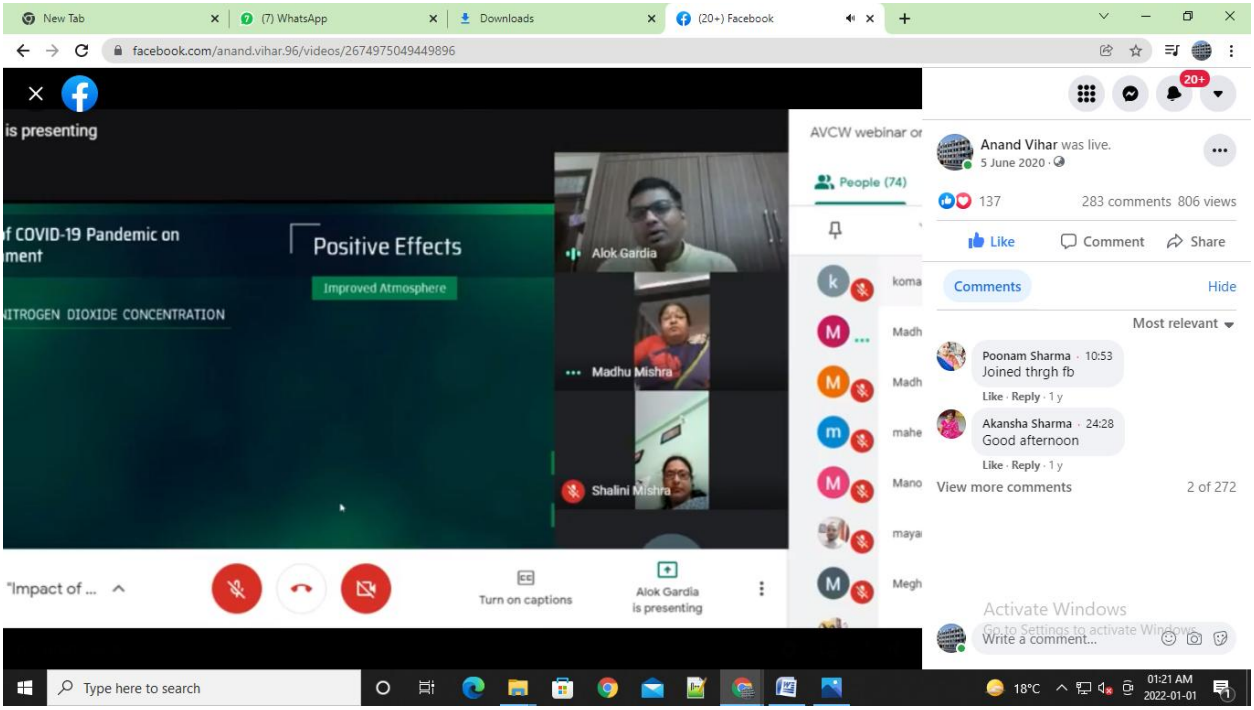
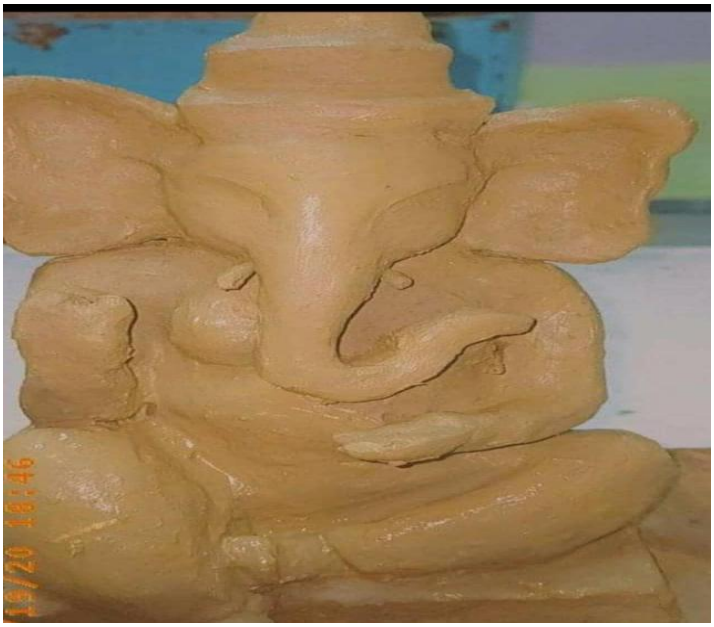
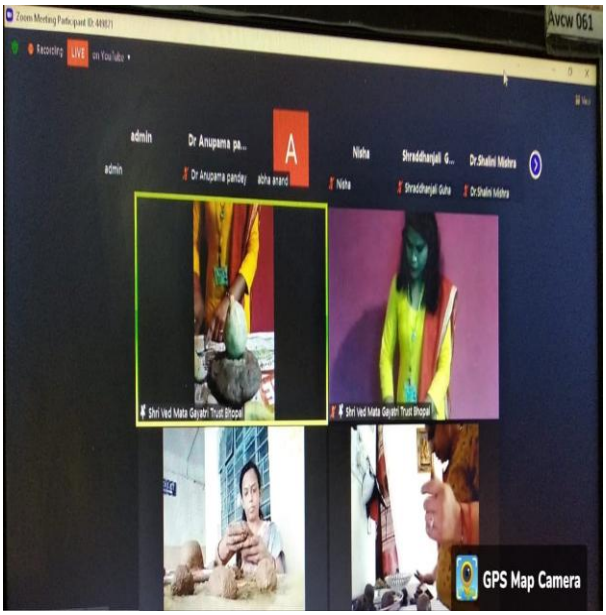


National Webinar On the topic-“ ***Impact of Covid -19 pandemic on Environment*** “

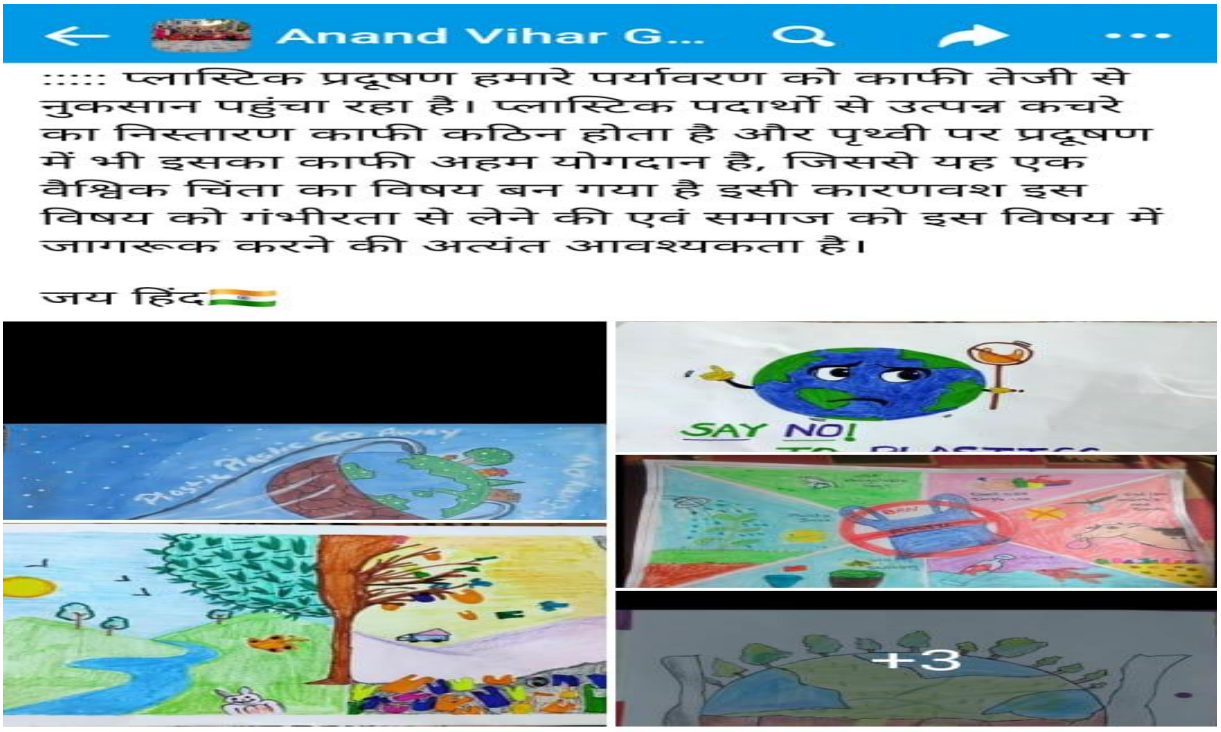




Workshop on Eco Friendly Ganesh Ji

Poster Making and Slogan Writing Competition

Plantation and cleaning the surrounding



Positive step towards environment “Environment without Plastic”

Oath taking

The role and responsibility of higher education institution in conservation of environment and creating environmental consciousness is very important.

Our college is surrounded with greenery all around and committed to **contribute for sustainable future.** AVCW has an added advantage of its location in posh locality, our college is adjacent to green belt area with medicinal plant nursery and on the other side of the road we have government plant nursery. In our college also the eco club has created medicinal plant corner which has more than 15 varieties of medicinal plants. In the campus we have Neem, arnadi, meethe neem, snake plants and many other plants.

Figure 13 Meaning of Sustainability

Best Practices/ Initiatives for Environment-

Energy source	Its utilization in the campus
1) Renewable source of energy	

a) Solar panel capacity of 40kw on the rooftop of building is commissioned and operational and will supply approximately 60% of total power used in campus .Thus saving electricity and billing tool b) A clean source of energy is utilized in the campus. c) Efforts are being taken for carbon neutrality.	Solar panel on the roof top 
2) Biodiversity Conservation flora and fauna Conservation .	College is having lush green campus with varieties of plants and trees and medicinal plants and provide habitat to various species like house crow ,pigeons, parrot , sparrow, sunbird , black kite, dove and many other beautiful colourful birds.
3) Tree plantation drives - Regular plantation drive in campus and beyond campus are organised on the special occasions.	Periodically and on special days like Sawan utsav, environment day, Gandhi Jayanti etc. plantation drive by students and faculty members
4) Ground water recharge Rain water harvesting system	Yes, 100% recharge of rain water in our regular water sump.
5) Pollution reduction-personal vehicles(	Reduction in Air pollution through vehicular emission and make pedestrian friendly pathways .

students and staff) are not allowed at campus beyond a point.	
6) E-waste management -collection of E-waste from college, and by staff and students .	Yes- E-waste is collected in college and there is a proper management of its disposal and recycling of e -waste through authorised vender .
7) Solid waste management:- Lifting of garbage from campus on daily bases by municipal corporation .	Different mechanism for proper disposal and recycling of solid waste by BMC , college pays regular fees for solid waste management. The college is taking extra care by reducing paper waste and reusing the one sided papers. The raddiwala (Scrap dealer- Paper recycling vender every year)
8) Corporate Social responsibility	NSS unit and Eco club of college regularly organise rallies and awareness program in the society through community based activities.
9) Water Conservation	Yes , water saving push taps are fitted in the drinking water zone and the toilets to avoid the wastage . proper Bore well/open well recharge with tanks and bunds are available and appropriate maintenance of water bodies and distribution system in the campus.

Recommendations:-

- Communication of environmental policy initiatives to all its stakeholders prepared by the college.
- Reduction in use of paper waste by 'go digital system.'
- Maintain the waste management and energy saving records on regular basis.
- Regular recharge of rain water harvesting system.
- Increase in environment promotional activities for spreading awareness in the society through community based activities.
- Collaboration with Govt. agencies and Non govt. Organizations to promote environmental consciousness activities.

Conclusion –

This audit involved consultation and discussion with all team members and interactions with key personas as wide range of issues related to environmental aspects needed expert view too. The audit report has identified several observations making the campus premises more environmental friendly.

The audit team member opines that the overall site is maintained well from environmental perspective. There is no major observation identified by the committee but few recommendations were suggested to initiate immediately.

Environment Audit Committee

2019-20

1 Dr. Verlaxmi Indrakanti

2 Dr. Shalini Mishra

3 Dr. Neelam Mishra

4 Mrs. Akansha Sharma

5 Mrs. Subhashini Verma

6 Dr. Sidhatrth Saini

Student Representatives

1 Simran Parashar

2 Rupal Choubey

Principal
Anand Vihar College for Women

PRINCIPAL
ANAND VIHAR COLLEGE FOR WOMEN
Principal

Certificate of the

Clean Campus Award

2020-21

Clean Campus Recognition /Award

Beyond the Campus

Environmental

Promotional Activities

Beyond The Campus Environmental Promotional Activity

Anand Vihar College for women is dedicated for creating awareness among local population about green and clean environment and its importance in keeping oneself healthy and responsible towards the environment in which you live. Therefore, the college organizes many activities throughout the year inside and beyond the campus. The NSS unit of our college and Eco club unit plant and nurture the greenery inside the campus. College students and faculty members participate in Van Vihar activities one year during October and November .

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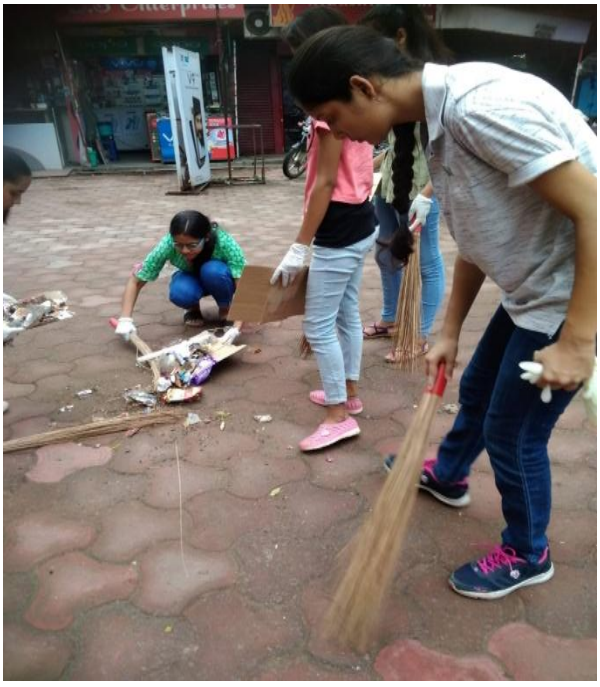
In 2016 17 Cleanliness activities in Government school by college NSS unit

2017-18 College students (NSS unit) participated in Swach Bharat summer Internship and planted trees wrote slogans on the walls and distributed soaps to aware people about the healthy environment and good health.

2018-19 Students participation in Swachh Bharat Rally organized by M.P. Government , Bhopal

2019-20, beyond the campus- Green and Healthy environment activity -Plantation by college students and faculty members.

2019-20 NSS unit of College - Cleanliness drive by students in various parts of Bhopal for creating awareness

2020-21, During corona time, online plantation activity was organized by college " Jahan Hariyali vaha Khushali" students planted plants in and around their houses and cleaned the surroundings of their houses to create awareness about cleanliness during corona. The college students participated in many other activities organized by M.P. Government.

2021-22 Students cleaned nearby basties and Signal Squares to create awareness about cleanliness and environment.

29th Sept 2021 Nukkad natak-To create awareness about green and clean environment and save water.

Students cleaning the market area near our college - Beyond the campus activities

Cycle Rally organized on 14th March 2021 for Cleanliness awareness and Voter awareness

(Swachha and Matdata Jagrukta Ralley)

2021-22-, Cleanliness and environment awareness activities at Goad basti and Road Square (चौराहों).

The college organizes various co curricular activities throughout the year along with organizing quiz, debates, poster making Rangoli, celebration of sawan utsatv etc. The college has organized many conferences and webinars in which resource persons from world around were invited as expert speakers. On world Earth Day was observed in the college and NSS students spread the message of 'Save Earth' through '**Paper Bag Making Workshop** '.On World Environment day student planted sampling in the campus. Students and teachers participate every year in "Wild Life Conservation Week". On the festivals like Ganesh chaturthi normally colorful and plaster of paris Ganesh pratima are used, but to encourage our students college organized eco

friendly ganesh workshop by Gayatri Shakti peeth , Bhopal. College organized poster making competition on the topic **"Environment without Plastic" for students. In collaboration M.P. Tiger Foundation Society, A quiz competition was organized.**

The college organized expert talk on "Waste management Environment Conservation" by Mr. Prakash Chadokar, Director, Mastery InfoTech, Waste Management Service. A national workshop was organized on the topic "Future of National Resources and Biodiversity, Need for their conservation". A panel discussion was organized on the topic **"Sustainable Development of Eco system and Natural Resource Management".** A National virtual conclave was organized on the topic- **"Role of Higher Education Institutions in Enhancing awareness and Sensitivity Towards Environment". The college organized intercollegiate poster making competition on 75th Independence Day (Azadi ka Amrit Mahotsav) and the theme was " Swatntra Bharat: Swacha or Swastha Bharat" (Independent India: Clean and Healthy India) . All the talks were organized online during lockdown and Corona time. The experts invited were from all over India, who are working in the field of environment education and keeping our earth healthy and save for future generation.**

Principal

Anand Vihar College For Women

ANAND VIHAR COLLEGE FOR WOMEN
BHOPAL