

# **ENERGY AUDIT REPORT**

**Session: 2020-21**



**MULTANI MAL MODI COLLEGE,  
Patiala, India**

## Introduction

Multani Mal Modi College Patiala is an Academic institution located in the city of Patiala (Punjab) and was established in 1967. The college is conducting this audit as an energy consciousness and social responsiveness of the institution. The importance of Energy Audit can also be ascertained with the fact that the National Assessment and Accreditation Council (NAAC) stress the practices adopted by the college under Criterion 7.

## Objectives

- To sensitize students and staff towards a Sustainable Environment.
- To optimize the use of energy.
- To use LED/CFL bulbs and other energy-saving devices on the campus.
- Encourage the use of public transport and car-pooling for minimizing fuel consumption.

## Audit Committee

The following are the members for conducting the Green and Environment Audit and to prepare the report.

S.No.	Name, Designation & Address	Capacity
1	Sh. Surindra Lal Former Principal & Professor (Retired), Department of Physics, Multani Mal Modi College Patiala	Chairman
2.	Sh. Amardeep Gill Joint Director Local Bodies, Govt. of Punjab	Member
3	Sh. S.K. Gupta Associate Professor (Retired) & Head Department of Zoology Multani Mal Modi College, Patiala	Member
4	Sh. M.L. Malhotra, Retired Associate Professor & Head, Department of Botany, Multani Mal Modi College, Patiala	Member
5	Sh. Amandeep Sekhon, Coordinator, Swachh Bharat Abhiyan (Urban), Municipal Corporation, Patiala	Member

## Methodology of the Audit

This audit is a physical inspection of the college campus, observation and review of the documentation, interviewing key persons, measurements taken and recommendations for future improvements. This audit works on various parameters of Energy Conservation like use of automobiles, paperless work, energy practices etc. The criteria, methods and recommendations used in the audit were in accordance with the identified aspects which are given as;

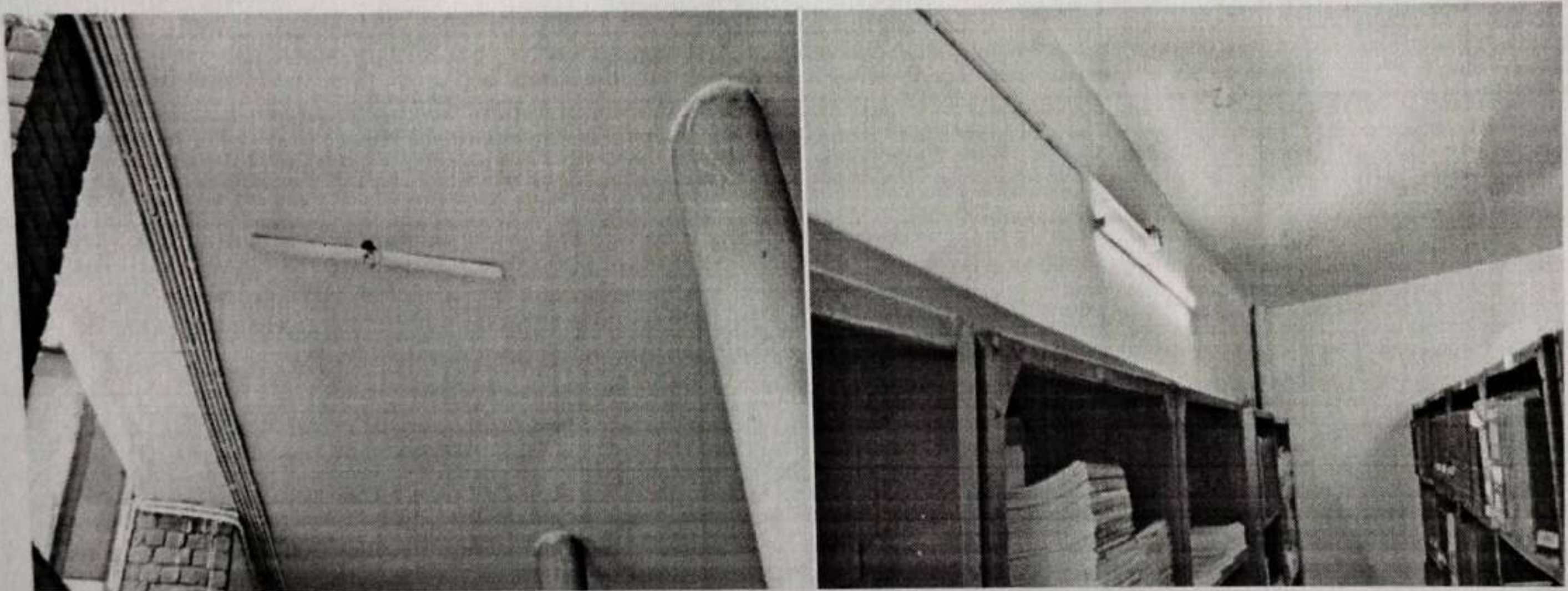
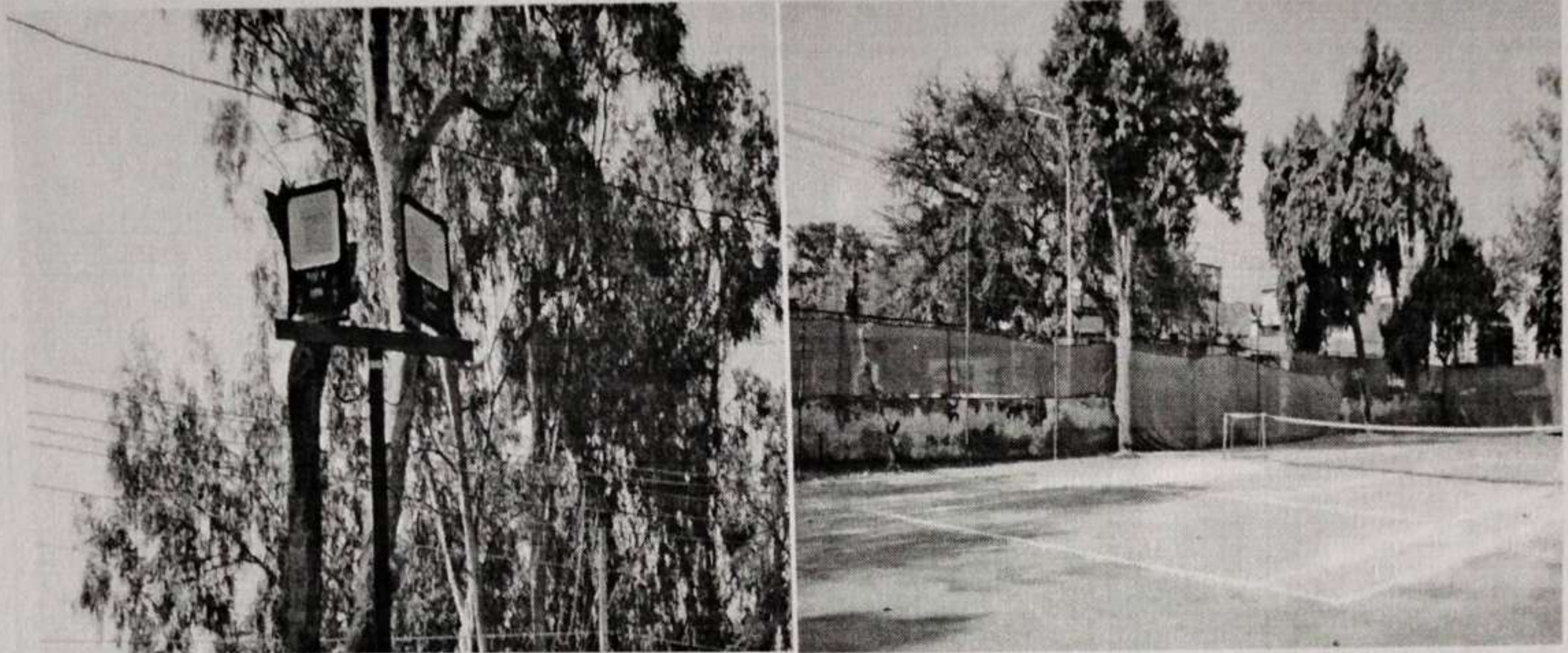
<b>1) Energy Audit</b>	<b>1.1 Energy Efficient Practices</b> <b>1.2 Restricted Entry of Automobiles</b>
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### 1) ENERGY AUDIT

The staff members and students lead initiatives to save significant electricity and have developed a policy for reducing electricity consumption by using LED and replacing the old filament bulbs/tube lights with LEDs. All the computer monitors have been replaced with LED/LCDs displays. Replacement of old appliances like lights, fans with energy-efficient appliances is underway. Staff and students were regularly aware for the wise use of energy and its conservation. Small activities like switching off lights, fans and computers when not in use were completely practiced by all members of college. The 4-wheelers of students are not allowed at campus and pooling at 2-wheelers is encouraged.

#### 1.1 Energy Efficient Practices:

Replacement of light (CFL, tube lights and halogen street lights) by LEDs has been in process for last 2 years. College is using LED and star rated electric equipments which consume lesser electricity with better illumination and results in energy conservation. Conversion of conventional type to LED type tubes and bulbs are being processed for indoor and outdoor lighting in the campus and around 14.32 KW conventional lighting load is reduced to 6.123 KW LED load. College procures electrical equipments which have energy star rating as per Bureau of Energy Efficiency (BEE) standard to save electricity consumption against the luminaries loads at College. The conversion of lights into LED has saved 57.11% electricity. The following table depicts the energy savings after installation of LED fittings.



### Energy Efficiency Practices: LED Conversion

S.No.	Location	Quantity	Per Unit Wattage	Wattage Before LED Conversion	Per Unit Wattage	Wattage After Conversion	Energy Saving in Watts
1	Gants Washroom Adjacent to Registrar Office	1	60	60	9	9	51
2	Registrar Office	4	40	160	20	80	80
3	Chemistry Lab. 1	5	40	200	20	100	100
4	Chemistry Staff Room	1	40	40	20	20	20
5	Chemistry Lab. 2	5	40	200	20	100	100
6	Research Lab. 1 Chemistry	2	40	80	20	40	40
7	Corridor Registrar Office to English Department	4	40	160	20	80	80
8	Pharmaceutical Lab.	4	60	240	9	36	204
9	PG Room 1	1	40	40	20	20	20
10	PG Room 2	1	40	40	20	20	20
11	Research Lab. 2	1	60	60	9	9	51
12	English Dept. Washroom	2	40	80	20	40	40
13	Room 5	1	40	40	20	20	20
14	Room 4	3	40	120	20	60	60

S.No.	Location	Quantity	Per Unit Wattage	Wattage Before LED Conversion	Per Unit Wattage	Wattage After Conversion	Energy Saving in Watts
15	Room 3	1	40	40	20	20	20
16	Room 2	1	40	40	20	20	20
17	Corridor Room 1 to 5	5	40	200	20	100	100
18	Dark Room Physics Lab. 1	1	40	40	20	20	20
19	Dark Room Physics Lab. 2	1	40	40	20	20	20
20	Account Office	1	40	40	20	20	20
21	Corridor Account Office and Physics Dept.	6	40	240	20	120	120
22	Boy Washroom Adjacent Room 14	1	40	40	20	20	20
23	Room 14	1	40	40	20	20	20
24	Gymnasium	4	40	160	20	80	80
25	Room 11	1	40	40	20	20	20
26	Room 8 Seminar Hall	2	40	80	20	40	40
27	History Room	4	40	160	20	80	80
28	Dean Student Welfare	1	40	40	20	20	20
29	UGC Cell	1	40	40	20	20	20
30	Entrance Main Block	1	40	40	20	20	20
31	Corridor Registrar Office to Room 14	3	40	120	20	60	60
32	Music Room	2	40	80	20	40	40
33	General Office	2	40	80	20	40	40
34	Steno Office	1	40	40	20	20	20
35	Principal Office	7	40	280	20	140	140
36	Common Room Girls	1	40	40	20	20	20
37	Corridor General Office	3	40	120	20	60	60
38	Conference Room	5	40	200	20	100	100
39	Staff Washroom Adjacent to Room 1	1	40	40	20	20	20
40	Biotechnology Lab. 1	2	40	80	20	40	40
41	Biotechnology Lab. 2	1	40	40	20	20	20
42	Biotechnology Lab. 3	2	40	80	20	40	40
43	Zoology Lab.	1	60	60	9	9	51
44	Corridor Room 22 to Room 29	2	40	80	20	40	40
45	Room 22	1	40	40	20	20	20
46	Physics Lab.	2	40	80	20	40	40
47	Washroom Girls Food & Nutrition Lab.	1	40	40	20	20	20
48	Room 18	3	40	120	20	60	60
49	Room 17	1	40	40	20	20	20
50	Room 16	3	40	120	20	60	60
51	Room 15	1	40	40	20	20	20
52	Geography Dept.	4	40	160	20	80	80
53	Library 1 <sup>st</sup> Floor	8	40	320	20	160	160
54	Library Gallery	11	40	440	20	220	220
55	Multimedia Lab.	5	40	200	20	100	100
56	Software Lab.	5	40	200	20	100	100
57	PTE Test Centre	12	40	480	20	240	240
58	Chairman Room & Washroom	4	40	160	20	80	80

S.No.	Location	Quantity	Per Unit Wattage	Wattage Before LED Conversion	Per Unit Wattage	Wattage After Conversion	Energy Saving in Watts
59	Library Computer Dept.	4	40	160	20	80	80
60	Corridor Ground Floor Computer Dept.	4	40	160	20	80	80
61	Principal Office Porch	2	40	80	20	40	40
62	Computer Garden	5	500	2500	100	500	2000
63	Computer Porch	1	40	40	9	9	31
64	Computer Lab. IIB	1	40	40	9	9	31
65	Computer Lab. III	3	40	120	9	27	93
66	Computer Staff Room	1	40	40	9	9	31
67	Admission Cell	1	40	40	9	9	31
68	Lab. I Fashion Dept.	1	40	40	20	20	20
69	Lab. II Fashion Dept.	1	40	40	20	20	20
70	Placement Cell	4	40	160	20	80	80
71	Corridor Computer Dept. 1 <sup>st</sup> Floor	2	40	80	20	40	40
72	Commerce Ground Floor Corridor	1	40	40	20	20	20
73	Washroom Commerce	1	40	40	20	20	20
74	Corridor Commerce Dept. 1 <sup>st</sup> Floor	2	40	80	20	40	40
75	Corridor Commerce Dept. 2 <sup>nd</sup> Floor	1	40	40	20	20	20
76	New Building Ramp	1	40	40	9	9	31
77	New Commerce Building Corridor	10	40	400	20	200	200
78	Commerce Computer Lab. 2 <sup>nd</sup> Floor	6	40	240	20	120	120
79	Room 31	8	40	320	20	160	160
80	Room 32	5	40	200	20	100	100
81	Room 33	5	40	200	20	100	100
82	Room 34	5	40	200	20	100	100
83	Room 35	5	40	200	20	100	100
84	Room 37	6	40	240	20	120	120
85	Room 38	8	40	320	20	160	160
86	Commerce Auditorium	27	40	1080	20	540	540
87	Auditorium Near Staff Room	3	40	120	20	60	60
88	2 <sup>nd</sup> Floor Girls Washroom	3	40	120	9	27	93
89	2 <sup>nd</sup> Floor Girls Washroom	4	40	160	20	80	80
90	2 <sup>nd</sup> Floor Boys Washroom	5	40	200	20	100	100
<b>Total Wattage</b>				<b>14320</b>		<b>6123</b>	<b>8178</b>

**\*Electricity Bill (Units) Analysis**

**Addition Illuminated Areas by LEDs**

The energy saved (57.11%) thus is used to illuminate the additional areas of the campus not illuminated earlier.

S. No.	Location	Quantity	Per Unit Wattage	Wattage
1	Cricket Academy	14	100	1400
2	Tennis Court	10	100	1000
3	Staff Parking	2	50	100

S. No.	Location	Quantity	Per Unit Wattage	Wattage
4	Girls Parking & Commerce	3	100	300
5	IT Lawn and Main Gate	2	100	200
6	Botanical Garden	4	100	400
7	Statue of Modi Seth near Computer Dept.	1	50	50
<b>Total</b>				3450 or 3.45 KW

All the switch boards on the campus are pasted with stickers requesting the students to switch off when leaving the room lab.

### 1.2 Restricted Entry of Automobiles

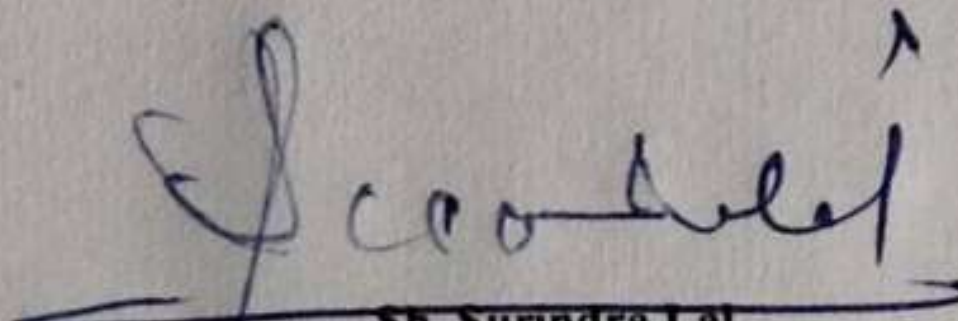
The college extends the Bus Pass facility to students who come from distant places. Out of total strength of the college i.e., 3933, 25.48% has been facilitated to avail the bus pass facilities provided by the state government during the session 2019-20. The institute encourages students to use the public transport instead of their vehicles for safety, security, fuel conservation and to reduce environmental pollution. During the session 2020-21, due to the lockdown students did not avail the bus pass facility. Staff/students residing near the campus are encouraged to practice walking or the use of bicycles to come to the campus.

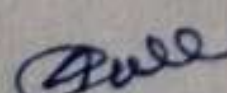
## OBSERVATION OF THE COMMITTEE

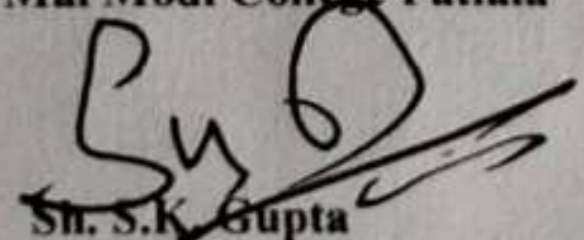
- The environmental awareness initiatives adopted by college witnessed to the fact that the college is sensitive to the environmental concerns are praise worthy.
- Energy conservation by means of replacing the energy saving equipments and switch off when not in use are appreciable.
- Reducing the energy consumption upto 57.11% in some appliances is highly appreciable.
- Minimizing the use of automobiles for commuting to college by students is good initiative.

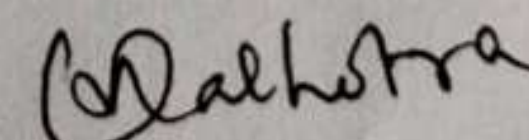
## RECOMMENDATIONS OF THE COMMITTEE

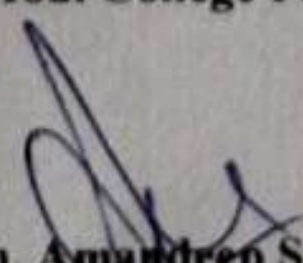
1. Every year sufficient budget should be assigned to continue the energy saving practices.
2. Solar power plant/lights should be installed within the campus to conserve more energy.
3. College should hold Energy Audit every year and the report should be published in the Annual Report of the College.
4. College should more encourage the use of pollution free vehicles and E-rickshaw.
5. College should conduct seminars, lectures and workshops to address the energy conservation issues.

  
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