

# **ENERGY AUDIT REPORT**



**S. S. G. M. COLLEGE KOPARGAON, DISTRICT-  
AHMEDNAGAR**

**ENERGY AUDITED DURING DT-17-2-2022 TO DT-19-2- 2022**



**AUDITED BY  
ADITI ENGINEERING SERVICES, NASHIK**

## Acknowledgement

Energy Audit of system is key instrument in knowing the present level of efficiency of various components and establishing the areas of shortfall for improvement.

We are very thankful for Hon. Principal Dr. Shri- Sanap R. R. (M.Sc. PhD) S.S.G.M. College Kopargaon Dist- Ahmednagar for having given opportunity to conduct Energy audit of various facilities in college campus. We are also thankful for Dr. Shri- Sangale M.D Assistant Professor, Dr. Shri- Malpure N.V. Assistant Professor, various respected HOD, Lecturers, Hostel Rectors & their respective subordinate staffs who have given their valuable contribution for guiding & supporting us during campus round for data collection, network study & measurement for accomplishing successful Energy audit. We also appreciate & thanks for hospitality given to us during audit period.

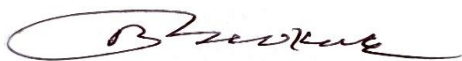
This report made with sincere efforts gives details of the relevant data collected during energy audit study, observation, analysis & recommendations made pertaining to different facilities in campus.

Several Energy Conservation Opportunities( Measures) have been identified & proposed in course of our study & these options when implemented , are expected to bring in lasting benefits( saving) in term of energy as well as cost saving to the management.

We are pleased to submit this Detailed Energy Audit Report to Hon. Principal Dr. Shri- Sanap R. R. (M.Sc. PhD) S.S.G.M. College Kopargaon Dist- Ahmednagar representing on behalf of management of Rayat Shikshan sanstha Satara and wish him all the best for implementation of identified Energy Conservation Opportunity as well as recommendations after sincere study & observations.

Aditi Engineering services Nashik is willing to support management technically toward implementation of Energy Saving Measures for deriving energy conservation & cost effective benefits.

**For Aditi Engineering services Nashik**



Mr. B.L. Deokar

BEE Certified Energy Auditor & Team

## ENERGY AUDIT TEAM

<b>Name</b>	<b>Company</b>	<b>Designation</b>
Dr. Shri Malapure N. V.	S.S.G.M. College , Kopargaon	Assistant Professor
Shri- Chandole	S.S.G.M. College , Kopargaon	M.C. V. C. Depart.
Er. Deokar Bhausahab &Team	Aditi Engineering Services Nashik	Certified Energy Auditor

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# 1. INTRODUCTION

S.S.G.M. College Kopargaon Dist- Ahmednagar is situated at Kopargaon in Ahmednagar District Maharashtra state. This college is affiliated with Savitribai Phule University Pune. This college is established in June 1965 by Rayat Shikshan Sanstha Satara, premier educational institution founded By Hon .Late Padvibhushan Dr. Shri- Karmveer Bhaurao Patil veteran social activist which has been imparting higher education up to PG level in science, commerce & Art faculty. In addition to this college also provides education in M.C.V.C. Stream.

S.S.G.M. College campus consists of buildings named as Block- A, Block- B, Block –E in which administrative office, various HOD cabins, staff rooms, classrooms, various laboratory like Physics, chemistry, botany, biology as well as MCVC laboratory various faculty departments are functioning with basic motto to impart quality, employment, entrepreneur and Agro oriented higher education to mostly rural as well as marginal urban student. Besides this there are multistoried hostel building identified by Boys Hostel Sanjivani, Boys Hostel Indrani, Girl Hostel No-1& 2 for facilitating student accommodation to many rural boys & girl students. This college also provides gymkhana facility to student undergoing through various type of physical education. There is also beautiful Central library building Block, where student studying in various branches have facility to refer books. The college developed garden in campus. College has been progressing in water management by rain water harvesting.

## A) Scope of Energy Audit-

The task of energy audit undertaken by Aditi Engineering Services Nasik has objective to identify energy saving & conservation opportunity with electrical network & equipment load study with measurement & to recommend action plan with saving & financial calculation for implementation to materialize energy saving & conservation opportunity to save input energy cost. **The energy audit was conducted during 17-2-2022 to 19-2-2022 & also reviewed implementation of energy saving & conservation opportunity already identified.**

- 1) Review of total Inventory of various electrical load
- 2) MSEDCL bill study & working out average cost of power & identify cost saving opportunity.
- 3) Identification of various energy conservation measures & saving opportunity.
- 4) Review of Awareness program if any for optimum use of electricity as well as its saving.
- 5) Review of implemented non-conventional energy installation & their performance evaluation in input power mix in college campus.( Solar power, Solar heater)
- 6) UPS Loading study
- 7) Motor loading study to identify energy saving opportunity.
- 8) Preparation & submission of technical Energy Audit Report.

## B) ENERGY AUDIT METHODOLOGY:-

The audit involves visiting physical position of load & carry out inventory of load. Due measurement of

electrical load of equipment & circuit is carried out. Energy bill received from MSEDCL is audited & studied for KWH requirement & how efficiently energy is used. Various positions are interacted, familiarized with energy audit & involved for successful & result oriented energy audit. Energy conservation & saving opportunities are identified during round & measurement for implementation

**C) SYSTEMS STUDIED DURING ENERGY AUDIT:-**

- 1) Review of total Inventory of various electrical load
- 2) MSEDCL bill study & working out average cost of power & identify cost saving opportunity.
- 3) Identification of various energy conservation measures & saving opportunity.
- 4) Review of Awareness program if any for optimum use of electricity as well as its saving.
- 5) Review of implemented non-conventional energy installation & their performance evaluation in input power mix in college campus.( Solar power, Solar heater)
- 6) UPS Loading study
- 7) Motor loading study to identify energy saving opportunity.

It is reviewed about Awareness program if any for optimum use of electricity as well as its saving undertaken at college level. **Instruction cum Request Sign board found displayed near each switch-board to influence & guide to user to arrest misuse & wastage of power. There is still scope to create awareness among user about efficient & optimum use of energy to save**

**2. EXECUTIVE SUMMARY**

S.S.G.M. College Kopargaon Dist- Ahmednagar has been imparting higher education to Junior & senior level student in science & Art faculty. It uses majorly electricity as input energy source for application of various college activities. The electricity is procured from MSEDCL by various 18 No LT connection (single phase & three phase) located in various college building. MSEDCL serves monthly electricity bill for payment & on receipt of monthly electricity bill it is paid. Standby power source DG set of 36 KW is available to use during power failure from MSEDCL.

**A) Average Cost of Power-**

There are various type of electricity connection being power supplied by MSEDCL. Monthly electricity bill is served by MSEDCL against electricity used & is paid by college. **Average cost of power is worked out by summing up total KWH of all connections & their amount. By dividing total amount by total KWH works out average cost of power per KWH.**

Location	C,E, MCVC	A- Block Building	A- Block Building	B- Block Building
Connection No-	164810020248	164810020132	164810020141	164810074526

Meter No-	7805478044		7805059120		7805059121		9060125601	
Tariff Category	LT VII B I		LT VII B I		LT II Com 0-20KW (March 21-Feb22)		LT VII B I (March 21-Feb22)	
Month	KWH	Bill Amount in Rs	KWH	Bill Amount in Rs	KWH	Bill Amount in Rs	KWH	Bill Amount in Rs
Jan-21	173	1793	2623	20965	609	6810	466	3920
Feb-21	569	4891	2375	19024	720	7920	2045	9210
Mar-21	723	6096	3222	25652	519	6150	682	5040
Apr-21	168	1715	2437	18785	402	10770	511	9230
May-21	92	1143	2252	17393	577	6320	511	4160
Jun-21	218	2092	2275	17566	565	6200	732	5720
Jul-21	419	3608	2590	19936	652	7070	809	-11310
Aug-21	383	3333	2535	19522	682	7390	280	-8860
Sep-21	332	2949	2622	20177	685	7470	201	-7000
Oct-21	480	4062	2736	21034	708	7646	787	-2350
Nov-21	340	3009	2649	20380	851	9100	822	3980
Dec-21	515.0	4326	2893	22215	680	8000	759	5910
Total	4412	39017	31209	242649	7650	90846	8605	17650

Location	Boys Hostel Borewell		Boys Hostel Sanjivani		Boys Hostel Sanjivani		Indrani Hostel Bore well	
Connection No-	164818829747		164810019801		164810019797		164810020094	
Meter No-	15383853		15383851		15383852		199392	
Tariff Category	LT VII B I		LT VII B I		LT VII B I (March 21-Feb22)		LT VII B I (March 21-Feb22)	
Month	KWH	Bill Amount in Rs	KWH	Bill Amount in Rs	KWH	Bill Amount in Rs	KWH	Bill Amount in Rs
Jan-21	632	4797	119	1315	586	4820	616	5050
Feb-21	517	3995	105	1208	743	5950	623	5060

Mar-21	619	4695	298	2658	539	3860	559	2240
Apr-21	0	373	112	1241	387	7140	491	6270
May-21	0	373	30	649	389	3240	302	2620
Jun-21	0	373	101	1162	349	2950	314	2700
Jul-21	0	373	145	1480	353	2980	271	2390
Aug-21	0	373	142	1458	413	3410	244	2200
Sep-21	0	373	169	1653	410	3390	388	3230
Oct-21	0	373	244	2194	424	3530	518	4200
Nov-21	1905	13174	211	1956	502	4080	510	4150
Dec-21	0	373	202	1891	400	3320	479	3900
Total	3673	29645	1878	18865	5495	48670	5315	44010

Location	Indrani Hostel ( Ladies Hostel, Street Light)		Indrani Hostel		Indrani Hostel		Indrani Hostel	
Connection No-	164810020108		164810019932		164810019967		164810019975	
Meter No	199391		5376043466		5376043472		5376043470	
Tariff Category	LT VII B I (March 21- Feb22)		LT VII B I (March 21- Feb22)		LT VII B I (March 21- Feb22)		LT VII B I (March 21- Feb22)	
Month	KWH	Amount in Rs	KWH	Amount in Rs	KWH	Amount in Rs	KWH	Amount in Rs
Jan-21	881	7036	161	1620	0	362	98	1156
Feb-21	2018	15449	141	1470	0	365	181	1771
Mar-21	2115	15703	159	1580	4	462	141	1451
Apr-21	2209	16381	159	1580	3	454	111	1234
May-21	2522	18641	159	1580	9	498	165	1624
Jun-21	3140	23100	159	1580	0	373	144	1472
Jul-21	2721	20078	159	1580	8	490	149	1508
Aug-21	2932	21603	159	1580	1	440	203	1898
Sep-21	2051	15240	159	1580	1	440	304	2628
Oct-21	492	3985	159	1600	1	440	214	1978
Nov-21	697	5465	159	1590	2	447	208	1934
Dec-21	838	6480	159	1580	3	454	170	1660
Total	22616	162125	1892	18920	32	5225	2088	

Location	Indrani Hostel	Indrani Hostel	Indrani Hostel	Indrani Hostel
Connection No-	164810019991	164810020001	164810020019	164810020027



Meter No	5376043471		5376043469		5376042727		5376042723	
Tariff Category	LT VII B I (March 21-Feb22)		LT VII B I (March 21-Feb22)		LT VII B I (March 21-Feb22)		LT VII B I (March 21-Feb22)	
Month	KWH	Amount in Rs	KWH	Amount in Rs	KWH	Bill Amount in Rs	KWH	Bill Amount in Rs
Jan-21	0	362	13	518	0	362	0	362
Feb-21	0	373	109	1234	0	373	0	373
Mar-21	0	373	32	664	0	373	0	373
Apr-21	0	373	4	462	0	373	0	373
May-21	0	373	13	527	0	373	0	373
Jun-21	0	373	33	671	0	373	0	373
Jul-21	0	373	23	599	0	373	0	373
Aug-21	0	373	20	577	0	373	0	373
Sep-21	0	373	10	505	0	373	0	373
Oct-21	0	373	66	909	0	373	0	373
Nov-21	4	462	18	563	0	373	0	373
Dec-21	0	373	15	541	0	373	0	373
Total	4	4554	356	7770	0	4465	0	4465

Location	Indrani Hostel		Indrani Hostel		Indrani Hostel		Indrani Hostel	
Connection No-	164810020035		164810020043		164810020051		164810020086	
Meter No	5376042726		5376042721		5376042722		5376042724	
Tariff Category	LT VII B I (March 21-Feb22)		LT VII B I (March 21-Feb22)		LT VII B I (March 21-Feb22)		LT VII B I (March 21-Feb22)	
Month	KWH	Amount in Rs	KWH	Amount in Rs	KWH	Amount in Rs	KWH	Amount in Rs
Jan-21	0	362	0	362	0	362	0	362
Feb-21	0	373	0	373	0	373	0	373
Mar-21	0	373	0	373	0	373	0	373
Apr-21	0	373	0	373	0	373	0	373
May-21	0	373	0	373	0	373	0	373
Jun-21	0	373	0	373	0	373	0	373
Jul-21	0	373	0	373	0	373	0	373
Aug-21	0	373	0	373	0	373	0	373
Sep-21	0	373	0	373	0	373	0	373
Oct-21	0	373	0	373	0	373	0	373
Nov-21	0	373	0	373	0	373	0	373
Dec-21	0	373	0	373	0	373	0	373

Total	0	4465	0	4465	0	4465	0	4465
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Location	College campus		College campus		College campus		Day care centre	
Connection No-	164813133264		164813133256		164813133230		164810302481	
Meter No	6500240540		7641046252		7641043208		6700728824	
Tariff Category	LT -I B (Res) 1-phase (March 21-Feb22)		LT -I B (Res) 1-phase (March 21-Feb22)		LT -II Com 1-phase (March 21-Feb22)		LT -II Com 1-phase (March 21-Feb22)	
Month	KWH	Amount in Rs	KWH	Amount in Rs	KWH	Amount in Rs	KWH	Amount in Rs
Jan-21	70	515	4	139	52	1061	78	1334
Feb-21	417	4332	4	139	53	1077	78	1325
Mar-21	417	4294	4	139	0	415	78	1325
Apr-21	417	4294	4	139	0	415	78	1325
May-21	417	4294	4	139	0	415	78	1325
Jun-21	2197	5671	4	139	0	415	78	1325
Jul-21	209	1766	4	139	0	415	78	1325
Aug-21	217	1861	4	139	0	415	78	1325
Sep-21	276	2444	4	139	0	415	78	1325
Oct-21	8	163	4	139	0	415	78	1325
Nov-21	7	157	4	139	0	415	78	1325
Dec-21	0	102	4	139	0	415	78	1325
Total	4652	29893	48	1668	105	6288	936	15909

Location	Zerox Centre		<b>Total</b>		
Connection No-	164815120941				
Meter No	7514023020				
Tariff Category	LT VII B I (March 21-Feb22)				
Month	KWH	Amount in Rs	KWH	Amount in Rs	Average Cost of power Rs/KWH
Jan-21	0	362	7181	66107	9.21
Feb-21	0	373	10698	87404	8.17

Mar-21	0	373	10111	85408	8.45
Apr-21	0	373	7493	84792	11.32
May-21	0	373	7520	67925	9.03
Jun-21	0	373	10309	76493	7.42
Jul-21	0	373	8590	57411	6.68
Aug-21	0	373	8293	61648	7.43
Sep-21	0	373	7690	59942	7.79
Oct-21	0	373	6919	54627	7.90
Nov-21	0	373	8967	74937	8.36
Dec-21	0	373	7195	65615	9.12
<b>Total</b>	<b>0</b>	<b>4465</b>	<b>100966</b>	<b>842309</b>	<b>8.34</b>

**Average cost of power per KWH works out to be Rs- 8.34/KWH**

### **B) Permanent Disconnection of service connection from MSEDCL-**

College is holding many service connection of MSEDCL to procure power for various activity in college. However following connections are identified which are making pay fixed charges & average bill without use. This is making financial loss to college. So it is advised herewith to divert the load on nearest MSEDCL NET meter to utilized solar power generation for own & get these connection permanently disconnected from MSEDCL to save cost.

Location	C,E, MCVC	Indrani Hostel	Indrani Hostel	Indrani Hostel	Indrani Hostel	Indrani Hostel	Boys Hostel Sanjivani
Connection No-	164810020248	164810019975	164810019991	164810020001	164810020019	164810020027	164810019801
12 Month	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs
<b>Total</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>

Location	Indrani Hostel	Indrani Hostel	Indrani Hostel	Indrani Hostel	College campus
Connection No-	164810020035	164810020043	164810020051	164810020086	164813133256
12 Month	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs
<b>Total</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>

Location	College campus	Xerox Centre	<b>Total</b>
Connection No-	164813133230	164815120941	

12 Month	Amount in Rs	Amount in Rs	Amount in Rs
Total	4476	4476	62664

### C) Total Percentage Of LED Lighting Load In Total Lighting Load-

Type of Load	No	Total Watts	% on Total	Total LED light Load % in total
Fluorescent Tube light	297	13450	55.4	
Tube light LED	368	7352	30.3	30.3
Down light LED	136	2403	9.9	9.9
CFL Down Light	38	1068	4.4	
	839	24273	100	40.2

Particulars	Total Lighting Requirement	Lighting met through LED bulb	Lighting through other type lamp
A) Load in KW	24.27	9.75	14.52
Percentage	100	40.2	59.8
B) Energy in KWH per year	42478	17071	25407
Percentage	100	40.2	59.8

### D) Identified & quantified energy & cost saving opportunity

Sr No	Energy saving & conservation opportunity identified	Annual saving	
		KWH	Amount in Rs

1	Permanent Disconnection of service connection from MSEDCL	0	62664
2	Existing Solar street Light Bracket	197	1644
3	Replacement of existing FTL with LED Tube Light	20642	185782
4	Proposed Installation of Solar street Light Bracket	394	3286
5	Equivalent electricity saving from existing installed solar water heater	62742	523268
	<b>Total</b>	<b>83975</b>	<b>776644</b>

### E) Annual Power Mix Of College Met By Renewable & Non-Renewable Energy Sources

Sr No	Input Energy Mix	Unit	Quantity	% share on Total	Type of energy	Estimated CO2 Green House Gas Emission reduction per year in Ton
1	Total annual Electrical Energy requirement from MSEDCL in KWH	KWH	100966	61.88	Conventional	0
2	Metered added Annual solar power generation	KWH	0	0		0
3	Assessed Annual Electrical Equivalent Solar energy used for heating water through solar heater	KWH	62742	38	Non-Conventional	53

4	Solar Street Light	KWH	197	0.12	Non-Conventional	0.167
<b>Total annual Energy requirement</b>		KWH	163905	100.00		53.167

**Green Energy application per year & CO2 emission reduction**

<b>Total annual Energy requirement KWH</b>	<b>163905</b>
<b>Total application of green Energy in KWH</b>	<b>62939</b>
<b>% share of green energy on total requirement</b>	<b>38.12%</b>
<b>Estimated CO2 Green House Gas Emission reduction per year in Ton</b>	<b>53.167</b>

**3. ANALYSIS OF CONNECTED LOAD IN CAMPUS OTHER THAN MOTIVE POWER**

As Viewed from below table, it understands that lighting & fan load has dominance in total load mix & shares more electrical consumption. This load has most potential to identify energy saving opportunity. College has been taking initiative in energy conservation & energy saving work. As part of this college has replaced FTL with LED light & LED Tube light in significant quantity.

sr No	premises	Block	Room No	FTL			Tub light LED			Down light LED		
				No	watts/unit	total watts	No	watts/unit	total watts	No	watts/unit	total watts
1	Meeting hall	A				0			0	8	18	144
	Porch	A				0			0	7	18	126
2	Administrative office	A				0	2	18	36	46	18	828
3	Auditorium	A	105			0			0	24	18	432
						0			0			0
4	Staff Room	A	104			0	2	18	36	13	18	234
	porch	A		3	40	120			0			0
5	Class Room	A	103			0	2	20	40			0

6	Class Room	A	102			0	2	20	40			0
7	Class Room	A	101			0	2	20	40			0
	First Floor					0			0			0
8	Porch	A		3	40	120			0			0
9	Hystory Department	A	121			0	2	20	40			0
10	Psychology Department	A	121			0	2	20	40			0
11	Hindi Department	A	121			0	2	20	40			0
12	Hindi Department	A	121			0	2	20	40			0
13	Politics Department	A	121			0	2	20	40			0
14	Economics Department	A	121			0	2	20	40			0
15	Marathi Department	A	121			0	2	20	40			0
16	English Department	A	222			0			0			0
	Laboratory					0			0			0
						0			0			0
17	Class Room	A	220			0	2	20	40			0
18	Class Room	A	219			0	2	20	40			0
19	Electronics Department	A	218			0	11	20	220			0
20	Physics Research Laboratory	A	216			0	2	20	40			0
	Porch	A				0	4	20	80			0
21	Staff Room	A	214			0	5	20	100			0
22	Physics Laboratory-1	A	213	2	45	90	2	20	40			0
23	Physics Laboratory-2					0	8	20	160			0
24	Semidark Room	A	212			0	2	20	40			0
25	Dark Room	A	211	2	45	90			0			0
26	Staff Room	A	210			0	2	20	40			0
27	Network Resource Centre	A	209			0			0			0
28	Advance Computational Physics Lab	A	208			0	3	20	60			0
29	Math Department	A	207			0	3	20	60			0

30	Class Room	A	206			0	10	20	200			0
31	Botany Department	A	205			0	2	20	40			0
32	Botany Laboratory-1	A	204	5	45	225			0			0
33	Botany Laboratory-2	A	203	7	45	315	2	20	40			0
34	Botany Laboratory-3	A	201	6	55	330			0			0
35	Zoology Laboratory	B	205	11	45	495			0			0
				6	55	330			0			0
36	HOD & Staff Room	B	204	1	55	55	2	20	40			0
37	Chemistry Laboratory- V	B	201 to 203	11	55	605			0			0
38	PG Class Room Chemistry	B	101	2	45	90	1	20	20			0
39	Computer Laboratory	B	102	4	55	220			0			0
40	Chemistry Laboratory- III	B	103	2	45	90	1	20	20			0
41	Chemistry Laboratory- II	B	104	7	40	280	1	20	20			0
42	Staff Room	B	105	2	45	90			0			0
43	HOD	B	106	2	45	90			0			0
44	Chemistry Laboratory- I	B	107	4	45	180	3	20	60			0
45	Junior Chemistry Department	A		15	40	600	8	20	160			0
46	Chemistry Laboratory VI	A	112	3	45	135	6	20	120			0
47	Examination Department			3	50	150			0			0
48	Class Room	A	310	2	45	90			0			0
49	Porch					0	3	20	60			0
50	Class Room	A	309			0	2	20	40			0
51	Class Room	A	308	1	55	55			0			0
52	Class Room	A	307	1	55	55			0			0
53	Department of Geography	A	306	4	45	180			0	8	18	144
54	Porch	A		3	45	135			0			0
55	Class Room	A	302			0			0			0
56	Class Room	A	303			0			0			0



57	Class Room	A	304			0			0			0
58	Department of Commerce Staff Room	B				0			0	4	18	72
59	Porch			3	45	135			0			0
60	Class Room	B	306			0	4	20	80			0
61	Class Room	B	305			0	5	20	100			0
62	Office	B	304	2	40	80	5	20	100			0
63	E-Commerce	B	303			0	1	20	20			0
64	Class Room	B	302			0	5	20	100			0
65	Class Room	B	301			0	5	20	100			0
66	Class Room	A	111			0	9	20	180			0
67	Class Room	C	101			0			0			0
68	Class Room	C	104			0			0			0
69	Class Room	C	108			0			0			0
70	Class Room	C	106			0			0			0
71	Staff Room	C	105			0	1	20	20			0
72	Class Room	E	101			0	4	20	80			0
73	Language	E	102			0	2	20	40			0
74	Class Room	E	103			0			0			0
75	Porch	E				0	7	20	140			0
76	Class Room	E	104	2	45	90	3	20	60			0
77	Department of Mathematics	E	105	2	45	90			0			0
78	Commerce faculty	E	106			0	3	20	60			0
79	Vice Principal Cabin	E				0	2	20	40			0
80	Junior E. Science Department	E	311			0	2	20	40			0
81	Class Room	E	308	3	45	135	2	20	40			0
82	Class Room	E	309	5	40	200	2	20	40			0
83	Class Room	E	111	5	40	200	2	20	40			0
84	Examination Department	E	110			0	2	20	40			0
85	JR Zoology Lab	E	201			0	7	20	140			0
86	Biology staff Room	E	202			0	3	20	60			0
87	Jr Botany Lab	E	203			0	14	20	280			0
88	Physics Laboratory	E	206			0	16	20	320			0
89	Staff Room Physics	E	207			0	3	20	60			0

90	Department of Vocational Electronics	E	208			0	12	20	240			0
91	Class Room	E	301	3	40	120			0			0
92	Class Room	E	303	1	40	40	1	20	20			0
93	Computer Laboratory					0			0			0
94	Class Room	E	304			0	4	20	80			0
95	Class Room	E	305	2	40	80			0			0
96	Class Room	E	309	2	40	80	1	20	20			0
97	Class Room	E	310	2	40	80	1	20	20			0
98	Class Room	E	312	2	40	80	1	20	20			0
99	Boys Hostel ( Total Room- 52 No)			25	40	1000	27	20	540			0
100	MCVC Building					0			0			0
	Construction Technology	D	101 to 104			0	7	20	140			0
	Electrical Technology	D	201 to 204	1	110	110	4	20	80			0
	Electronics Technology	D	301	1	55	55			0			0
101	Central Library					0			0			0
	Stacking Section			8	55	440	7	20	140			0
				11	45	495			0			0
	Library			7	45	315			0			0
	Reading Room No-1			15	45	675			0			0
	Reading Room No-2			21	45	945			0			0
	Journal Magazine Section			2	45	90			0			0
102	Senior & PG Ladies Hostel					0			0			0
	Porch			1	45	45	9	20	180			0
	Ground Floor Room No		101 to 113			0	11	20	220			0
	First Floor Room No		201 to 219	19	45	855			0			0
	Porch					0	10	20	200			0

	Second Floor Room No		301 to 319	19	45	855			0			0
	Porch			1	45	45	9	20	180			0
103	Junior Ladies Hostel					0			0			0
	Ground Floor Room No		1 to 6	6	45	270			0			0
	First Floor Room No		1 to 6	6	45	270			0			0
	Second Floor Room No		1 to 5	5	45	225			0			0
	Porch			3	45	135	5	20	100			0
	Indrani Boys Hostel Room No		1 to 36			0	36	20	720			0
104	Principal cabin					0	3	20	60	12	18	216
105	Karmvir Dalan					0			0	9	18	162
106	Solar Street Light					0			0			0
	Total			297		13450	368		7352	131		2358

sr No	premises	Block	Room No	CFL Down Light			Ceiling fan			Exhaust/ wall fan		
				No	watts/unit	total watts	No	Watt/no	total watts	No	Watt/no	total watts
1	Meeting hall	A				0	5	75	375			0
	Porch	A				0			0			0
2	Administrative office	A				0	14	75	1050			0
3	Auditorium	A	105			0	9	75	675			0
						0	6	45	270			0
4	Staff Room	A	104			0	7	75	525	2	45	90
	porch	A				0			0			0
5	Class Room	A	103			0			0			0
6	Class Room	A	102			0			0			0
7	Class Room	A	101			0			0			0
	First Floor					0			0			0
8	Porch	A				0			0			0

9	Hystory Department	A	121			0	1	75	75			0
10	Psychology Department	A	121			0	1	75	75			0
11	Hindi Department	A	121			0	1	75	75			0
12	Hindi Department	A	121			0	1	75	75			0
13	Politics Department	A	121			0	1	75	75			0
14	Economics Department	A	121			0	1	75	75			0
15	Marathi Department	A	121			0	1	75	75			0
16	English Department	A	222	36		0	3	75	225			0
	Laboratory			26		0			0			0
				36		0	6	75	450			0
17	Class Room	A	220			0	1	75	75			0
18	Class Room	A	219			0	1	75	75			0
19	Electronics Department	A	218			0	8	75	600			0
20	Physics Research Laboratory	A	216			0	2	75	150			0
	Porch	A				0			0			0
21	Staff Room	A	214			0	3	75	225			0
22	Physics Laboratory-1	A	213			0	3	75	225			0
23	Physics Laboratory-2					0	5	75	375			0
24	Semidark Room	A	212			0	2	75	150			0
25	Dark Room	A	211			0	2	75	150	1	45	45
26	Staff Room	A	210			0	2	75	150			0
27	Network Resource Centre	A	209			0	2	75	150			0
28	Advance Computational Physics Lab	A	208	10	18	180	2	75	150			0
29	Math Department	A	207			0	3	75	225			0
30	Class Room	A	206			0	8	75	600			0
31	Botany Department	A	205			0	1	75	75			0
32	Botany Laboratory-1	A	204			0	5	75	375			0
33	Botany Laboratory-2	A	203			0	9	75	675			0
34	Botany Laboratory-3	A	201			0	6	75	450			0

35	Zoology Laboratory	B	205			0	10	75	750			0
						0			0			0
36	HOD & Staff Room	B	204			0	2	75	150			0
37	Chemistry Laboratory- V	B	201 to 203			0	5	75	375	4	45	180
38	PG Class Room Chemistry	B	101			0	1	75	75			0
39	Computer Laboratory	B	102			0	1	75	75			0
40	Chemistry Laboratory- III	B	103			0	2	75	150			0
41	Chemistry Laboratory- II	B	104			0			0			0
42	Staff Room	B	105			0	1	75	75			0
43	HOD	B	106			0	1	75	75			0
44	Chemistry Laboratory- I	B	107			0			0	3	45	135
45	Junior Chemistry Department	A				0	5	75	375	9	45	405
46	Chemistry Laboratory VI	A	112			0			0			0
47	Examination Department					0	4	75	300			0
48	Class Room	A	310			0			0			0
49	Porch					0			0			0
50	Class Room	A	309			0			0			0
51	Class Room	A	308			0	1	75	75			0
52	Class Room	A	307			0	2	75	150			0
53	Department of Geography	A	306			0	6	75	450			0
54	Porch	A				0			0			0
55	Class Room	A	302			0			0			0
56	Class Room	A	303			0			0			0
57	Class Room	A	304			0			0			0
58	Department of Commerce Staff Room	B				0	2	75	150			0
59	Porch					0			0			0
60	Class Room	B	306			0	3	75	225			0
61	Class Room	B	305			0	5	75	375			0
62	Office	B	304			0	3	75	225			0
63	E-Commerce	B	303			0	3	75	225			0
64	Class Room	B	302			0	5	75	375			0

65	Class Room	B	301			0	5	75	375			0
66	Class Room	A	111			0	7	75	525			0
67	Class Room	C	101			0			0			0
68	Class Room	C	104			0			0			0
69	Class Room	C	108			0			0			0
70	Class Room	C	106			0			0			0
71	Staff Room	C	105			0	2	75	150			0
72	Class Room	E	101			0			0			0
73	Language	E	102			0	2	75	150			0
74	Class Room	E	103			0			0			0
75	Porch	E				0			0			0
76	Class Room	E	104			0			0			0
77	Department of Mathematics	E	105			0	1	75	75			0
78	Commerce faculty	E	106			0	2	75	150			0
79	Vice Principal Cabin	E		6	26	156	2	75	150			0
80	Junior E. Science Department	E	311			0	2	75	150			0
81	Class Room	E	308			0			0			0
82	Class Room	E	309			0	5	75	375			0
83	Class Room	E	111			0	5	75	375			0
84	Examination Department	E	110			0	1	75	75			0
85	JR Zoology Lab	E	201			0	6	75	450			0
86	Biology staff Room	E	202			0	3	75	225			0
87	Jr Botany Lab	E	203			0	<b>10</b>	75	750			0
88	Physics Laboratory	E	206			0	12	75	900			0
89	Staff Room Physics	E	207			0	3	75	225			0
90	Department of Vocational Electronics	E	208			0	8	75	600			0
91	Class Room	E	301			0	2	75	150			0
92	Class Room	E	303			0	3	75	225			0
93	Computer Laboratory					0			0			0
94	Class Room	E	304			0			0			0
95	Class Room	E	305			0			0			0
96	Class Room	E	309			0			0			0
97	Class Room	E	310			0			0			0
98	Class Room	E	312			0			0			0
99	Boys Hostel ( Total Room- 52 No)					0	52	75	3900			0

100	MVC Building					0			0			0
	Construction Technology	D	101 to 104			0	3	75	225			0
	Electrical Technology	D	201 to 204			0	7	75	525			0
	Electronics Technology	D	301			0	2	75	150			0
101	Central Library					0			0			0
	Stacking Section					0	10	75	750			0
						0			0			0
	Library					0	2	75	150			0
	Reading Room No-1					0	3	75	225			0
	Reading Room No-2					0	4	75	300			0
	Journal Magazine Section					0	1	75	75			0
102	Senior & PG Ladies Hostel					0			0			0
	Porch					0			0			0
	Ground Floor Room No		101 to 113			0	11	75	825			0
	First Floor Room No		201 to 219			0	19	75	1425			0
	Porch					0			0			0
	Second Floor Room No		301 to 319			0			0			0
	Porch					0			0			0
103	Junior Ladies Hostel					0			0			0
	Ground Floor Room No		1 to 6			0	6	75	450			0
	First Floor Room No		1 to 6			0	6	75	450			0
	Second Floor Room No		1 to 5			0	5	75	375			0
	Porch					0			0			0
	Indrani Boys Hostel Room No		1 to 36			0	36	75	2700			0
104	Principal cabin					0	5	75	375			0
105	Karmvir Dalan					0			0			0
106	Solar Street Light					0			0			0
	Total			114		336	437		32595.00	19		855

sr No	premises	Block	Room No	LED Lamp			PC LCD			Printer		
				No	Watt/no	total watts	No	Watt/no	total watts	No	Watt/no	total watts
1	Meeting hall	A				0			0			0
	Porch	A				0			0			0
2	Administrative office	A				0	16	70	1120	11	50	550
3	Auditorium	A	105			0			0			0
						0			0			0
4	Staff Room	A	104			0			0			0
	porch	A				0			0			0
5	Class Room	A	103			0			0			0
6	Class Room	A	102			0			0			0
7	Class Room	A	101			0			0			0
	First Floor					0			0			0
8	Porch	A				0			0			0
9	History Department	A	121			0	1	70	70	1	50	50
10	Psychology Department	A	121			0	1	70	70	1	50	50
11	Hindi Department	A	121			0	1	70	70	1	50	50
12	Hindi Department	A	121			0	1	70	70	1	50	50
13	Politics Department	A	121			0	1	70	70	1	50	50
14	Economics Department	A	121			0	1	70	70	1	50	50
15	Marathi Department	A	121			0	1	70	70	1	50	50
16	English Department	A	222			0	5	70	350	2	50	100
	Laboratory					0			0			0
						0	16	70	1120			0
17	Class Room	A	220			0			0			0
18	Class Room	A	219			0			0			0
19	Electronics Department	A	218			0	10	70	700			0



20	Physics Research Laboratory	A	216			0	2	70	140	1	50	50
	Porch	A				0			0			0
21	Staff Room	A	214			0	1	70	70	2	50	100
22	Physics Laboratory-1	A	213			0			0			0
23	Physics Laboratory-2					0			0			0
24	Semi dark Room	A	212			0			0			0
25	Dark Room	A	211			0			0			0
26	Staff Room	A	210			0	1	50	50	1	50	50
27	Network Resource Centre	A	209			0	12	70	840			0
28	Advance Computational Physics Lab	A	208			0	21	70	1470	1	50	50
29	Math Department	A	207			0	10	60	600	1	50	50
30	Class Room	A	206			0	1	70	70	1	50	50
31	Botany Department	A	205			0			0			0
32	Botany Laboratory-1	A	204			0			0			0
33	Botany Laboratory-2	A	203			0	3	70	210	2	50	100
34	Botany Laboratory-3	A	201			0	1	70	70	1	50	50
35	Zoology Laboratory	B	205			0			0			0
						0			0			0
36	HOD & Staff Room	B	204			0	1	70	70	1	50	50
37	Chemistry Laboratory- V	B	201 to 203			0			0			0
38	PG Class Room Chemistry	B	101			0			0			0
39	Computer Laboratory	B	102			0	6	70	420			0
40	Chemistry Laboratory- III	B	103			0	1	70	70	1	50	50
41	Chemistry Laboratory- II	B	104			0			0			0
42	Staff Room	B	105			0	1	70	70			0
43	HOD	B	106			0	2	70	140			0

44	Chemistry Laboratory- I	B	107			0		0			0	
45	Junior Chemistry Department	A				0	1	70	70	1	50	50
46	Chemistry Laboratory VI	A	112			0		0			0	
47	Examination Department					0	3	70	210	3	50	150
48	Class Room	A	310			0		0			0	
49	Porch					0		0			0	
50	Class Room	A	309			0		0			0	
51	Class Room	A	308			0		0			0	
52	Class Room	A	307			0		0			0	
53	Department of Geography	A	306			0	4	70	280	1	50	50
54	Porch	A				0		0			0	
55	Class Room	A	302			0		0			0	
56	Class Room	A	303			0		0			0	
57	Class Room	A	304			0		0			0	
58	Department of Commerce Staff Room	B				0	2	70	140	1	50	50
59	Porch					0		0			0	
60	Class Room	B	306			0		0			0	
61	Class Room	B	305			0		0			0	
62	Office	B	304			0	2	70	140	2	50	100
63	E-Commerce	B	303			0	14	70	980			0
64	Class Room	B	302			0		0			0	
65	Class Room	B	301			0		0			0	
66	Class Room	A	111			0		0			0	
67	Class Room	C	101			0		0			0	
68	Class Room	C	104			0		0			0	
69	Class Room	C	108			0		0			0	
70	Class Room	C	106			0		0			0	
71	Staff Room	C	105			0	1	70	70			0
72	Class Room	E	101			0		0			0	
73	Language	E	102			0		0			0	
74	Class Room	E	103			0		0			0	
75	Porch	E				0		0			0	
76	Class Room	E	104			0		0			0	
77	Department of Mathematics	E	105			0	1	70	70	1	50	50
78	Commerce faculty	E	106			0	1	70	70	1	50	50

79	Vice Principal Cabin	E			0	1	70	70			0
80	Junior E. Science Department	E	311		0			0			0
81	Class Room	E	308		0			0			0
82	Class Room	E	309		0			0			0
83	Class Room	E	111		0			0			0
84	Examination Department	E	110		0			0			0
85	JR Zoology Lab	E	201		0			0			0
86	Biology staff Room	E	202		0	1	70	70	1	50	50
87	Jr Botany Lab	E	203		0	1	70	70			0
88	Physics Laboratory	E	206		0			0			0
89	Staff Room Physics	E	207		0	1	70	70	1	50	50
90	Department of Vocational Electronics	E	208		0	1	70	70			0
91	Class Room	E	301		0			0			0
92	Class Room	E	303		0	15	70	1050	1	50	50
93	Computer Laboratory				0			0			0
94	Class Room	E	304		0			0			0
95	Class Room	E	305		0			0			0
96	Class Room	E	309		0			0			0
97	Class Room	E	310		0			0			0
98	Class Room	E	312		0			0			0
99	Boys Hostel ( Total Room- 52 No)				0			0			0
100	MCVC Building				0			0			0
	Construction Technology	D	101 to 104		0			0			0
	Electrical Technology	D	201 to 204		0			0			0
	Electronics Technology	D	301		0			0			0
101	Central Library				0			0			0
	Stacking Section				0			0			0
					0			0			0
	Library				0			0			0

	Reading Room No-1					0			0			0
	Reading Room No-2					0			0			0
	Journal Magazine Section					0	10	70	700	1	50	50
102	Senior & PG Ladies Hostel					0			0			0
	Porch					0			0			0
	Ground Floor Room No		101 to 113			0			0			0
	First Floor Room No		201 to 219			0			0			0
	Porch					0			0			0
	Second Floor Room No		301 to 319			0			0			0
	Porch					0			0			0
103	Junior Ladies Hostel					0			0			0
	Ground Floor Room No		1 to 6			0			0			0
	First Floor Room No		1 to 6			0			0			0
	Second Floor Room No		1 to 5			0			0			0
	Porch					0			0			0
	Indrani Boys Hostel Room No		1 to 36			0			0			0
104	Principal cabin					0			0			0
105	Karmvir Dalan					0			0			0
106	Solar Street Light			5	9	45			0			0
	Total			5		45	176		12200	46		2300

sr No	premises	Block	Room No	Xerox machine			split ac			fridge		
				No	Watt/no	total watts	No	Watt/no	total watts	No	Watt/no	total watts

1	Meeting hall	A				0	3	1615	4845			0
	Porch	A				0			0			0
2	Administrative office	A		1	1500	1500			0			0
3	Auditorium	A	105			0			0			0
						0			0			0
4	Staff Room	A	104			0			0			0
	porch	A				0			0			0
5	Class Room	A	103			0			0			0
6	Class Room	A	102			0			0			0
7	Class Room	A	101			0			0			0
	First Floor					0			0			0
8	Porch	A				0			0			0
9	History Department	A	121			0			0			0
10	Psychology Department	A	121			0			0			0
11	Hindi Department	A	121			0			0			0
12	Hindi Department	A	121			0			0			0
13	Politics Department	A	121			0			0			0
14	Economics Department	A	121			0			0			0
15	Marathi Department	A	121			0			0			0
16	English Department	A	222			0			0			0
	Laboratory					0			0			0
						0			0			0
17	Class Room	A	220			0			0			0
18	Class Room	A	219			0			0			0
19	Electronics Department	A	218			0			0			0
20	Physics Research Laboratory	A	216			0	1	1615	1615			0
	Porch	A				0			0			0
21	Staff Room	A	214			0			0			0
22	Physics Laboratory-1	A	213			0			0			0
23	Physics Laboratory-2					0			0			0
24	Semidark Room	A	212			0			0			0

25	Dark Room	A	211			0		0			0
26	Staff Room	A	210			0		0			0
27	Network Resource Centre	A	209			0		0			0
28	Advance Computational Physics Lab	A	208			0	1	1615	1615		0
29	Math Department	A	207			0		0			0
30	Class Room	A	206			0		0			0
31	Botany Department	A	205			0		0			0
32	Botany Laboratory-1	A	204			0		0			0
33	Botany Laboratory-2	A	203			0		0			0
34	Botany Laboratory-3	A	201			0		0			0
35	Zoology Laboratory	B	205			0		0	1	250	250
						0		0			0
36	HOD & Staff Room	B	204			0		0			0
37	Chemistry Laboratory- V	B	201 to 203			0	1	1615	1615		0
38	PG Class Room Chemistry	B	101			0		0			0
39	Computer Laboratory	B	102			0		0			0
40	Chemistry Laboratory- III	B	103			0		0			0
41	Chemistry Laboratory- II	B	104			0		0			0
42	Staff Room	B	105			0		0			0
43	HOD	B	106			0		0			0
44	Chemistry Laboratory- I	B	107			0		0			0
45	Junior Chemistry Department	A				0		0			0
46	Chemistry Laboratory VI	A	112			0		0			0
47	Examination Department			2	1500	3000		0			0
48	Class Room	A	310			0		0			0

49	Porch					0			0			0
50	Class Room	A	309			0			0			0
51	Class Room	A	308			0			0			0
52	Class Room	A	307			0			0			0
53	Department of Geography	A	306			0			0			0
54	Porch	A				0			0			0
55	Class Room	A	302			0			0			0
56	Class Room	A	303			0			0			0
57	Class Room	A	304			0			0			0
58	Department of Commerce Staff Room	B				0			0			0
59	Porch					0			0			0
60	Class Room	B	306			0			0			0
61	Class Room	B	305			0			0			0
62	Office	B	304			0			0			0
63	E-Commerce	B	303			0			0			0
64	Class Room	B	302			0			0			0
65	Class Room	B	301			0			0			0
66	Class Room	A	111			0			0			0
67	Class Room	C	101			0			0			0
68	Class Room	C	104			0			0			0
69	Class Room	C	108			0			0			0
70	Class Room	C	106			0			0			0
71	Staff Room	C	105			0			0			0
72	Class Room	E	101			0			0			0
73	Language	E	102			0			0			0
74	Class Room	E	103			0			0			0
75	Porch	E				0			0			0
76	Class Room	E	104			0			0			0
77	Department of Mathematics	E	105			0			0			0
78	Commerce faculty	E	106			0			0			0
79	Vice Principal Cabin	E				0			0			0
80	Junior E. Science Department	E	311			0			0			0
81	Class Room	E	308			0			0			0
82	Class Room	E	309			0			0			0
83	Class Room	E	111			0			0			0

84	Examination Department	E	110			0		0			0
85	JR Zoology Lab	E	201			0		0			0
86	Biology staff Room	E	202			0		0			0
87	Jr Botany Lab	E	203			0		0			0
88	Physics Laboratory	E	206			0		0			0
89	Staff Room Physics	E	207			0		0			0
90	Deptment of Vocational Electronics	E	208			0		0			0
91	Class Room	E	301			0		0			0
92	Class Room	E	303			0		0			0
93	Computer Laboratory					0		0			0
94	Class Room	E	304			0		0			0
95	Class Room	E	305			0		0			0
96	Class Room	E	309			0		0			0
97	Class Room	E	310			0		0			0
98	Class Room	E	312			0		0			0
99	Boys Hostel ( Total Room- 52 No)					0		0			0
100	MCVC Building					0		0			0
	Construction Technology	D	101 to 104			0		0			0
	Electrical Technology	D	201 to 204			0		0			0
	Electronics Technology	D	301			0		0			0
101	Central Library					0		0			0
	Stacking Section					0		0			0
						0		0			0
	Library					0		0			0
	Reading Room No-1					0		0			0
	Reading Room No-2					0		0			0
	Journal Magazine Section					0		0			0



102	Senior & PG Ladies Hostel					0			0			0
	Porch					0			0			0
	Ground Floor Room No		101 to 113			0			0			0
	First Floor Room No		201 to 219			0			0			0
	Porch					0			0			0
	Second Floor Room No		301 to 319			0			0			0
	Porch					0			0			0
103	Junior Ladies Hostel					0			0			0
	Ground Floor Room No		1 to 6			0			0			0
	First Floor Room No		1 to 6			0			0			0
	Second Floor Room No		1 to 5			0			0			0
	Porch					0			0			0
	Indrani Boys Hostel Room No		1 to 36			0			0			0
104	Principal cabin					0	1	1615	1615			0
105	Karmvir Dalan					0			0			0
106	Solar Street Light					0			0			0
	Total			3		4500	7		11305	1		250

sr No	premises	Block	Room No	Hot Air Annealing Oven			Muffle Furnace		
				No	Watt/no	total watts	No	Watt/no	total watts
1	Meeting hall	A				0			0
	Porch	A				0			0
2	Administrative office	A				0			0
3	Auditorium	A	105			0			0

						0			0
4	Staff Room	A	104			0			0
	porch	A				0			0
5	Class Room	A	103			0			0
6	Class Room	A	102			0			0
7	Class Room	A	101			0			0
	First Floor					0			0
8	Porch	A				0			0
9	History Department	A	121			0			0
10	Psychology Department	A	121			0			0
11	Hindi Department	A	121			0			0
12	Hindi Department	A	121			0			0
13	Politics Department	A	121			0			0
14	Economics Department	A	121			0			0
15	Marathi Department	A	121			0			0
16	English Department	A	222			0			0
	Laboratory					0			0
						0			0
17	Class Room	A	220			0			0
18	Class Room	A	219			0			0
19	Electronics Department	A	218			0			0
20	Physics Research Laboratory	A	216	1	2000	2000	1	3500	3500
	Porch	A		1	1500	1500			0
21	Staff Room	A	214			0			0
22	Physics Laboratory-1	A	213			0			0
23	Physics Laboratory-2					0			0
24	Semi dark Room	A	212			0			0
25	Dark Room	A	211			0			0
26	Staff Room	A	210			0			0
27	Network Resource Centre	A	209			0			0

28	Advance Computational Physics Lab	A	208			0			0
29	Math Department	A	207			0			0
30	Class Room	A	206			0			0
31	Botany Department	A	205			0			0
32	Botany Laboratory-1	A	204			0			0
33	Botany Laboratory-2	A	203			0			0
34	Botany Laboratory-3	A	201			0			0
35	Zoology Laboratory	B	205	2	1250	2500			0
						0			0
36	HOD & Staff Room	B	204			0			0
37	Chemistry Laboratory- V	B	201 to 203			0			0
38	PG Class Room Chemistry	B	101			0			0
39	Computer Laboratory	B	102			0			0
40	Chemistry Laboratory- III	B	103	1	1250	1250			0
41	Chemistry Laboratory- II	B	104			0			0
42	Staff Room	B	105			0			0
43	HOD	B	106			0			0
44	Chemistry Laboratory- I	B	107			0			0
45	Junior Chemistry Department	A				0			0
46	Chemistry Laboratory VI	A	112			0			0
47	Examination Department					0			0
48	Class Room	A	310			0			0
49	Porch					0			0
50	Class Room	A	309			0			0
51	Class Room	A	308			0			0
52	Class Room	A	307			0			0

53	Department of Geography	A	306			0			0
54	Porch	A				0			0
55	Class Room	A	302			0			0
56	Class Room	A	303			0			0
57	Class Room	A	304			0			0
58	Department of Commerce Staff Room	B				0			0
59	Porch					0			0
60	Class Room	B	306			0			0
61	Class Room	B	305			0			0
62	Office	B	304			0			0
63	E-Commerce	B	303			0			0
64	Class Room	B	302			0			0
65	Class Room	B	301			0			0
66	Class Room	A	111			0			0
67	Class Room	C	101			0			0
68	Class Room	C	104			0			0
69	Class Room	C	108			0			0
70	Class Room	C	106			0			0
71	Staff Room	C	105			0			0
72	Class Room	E	101			0			0
73	Language	E	102			0			0
74	Class Room	E	103			0			0
75	Porch	E				0			0
76	Class Room	E	104			0			0
77	Department of Mathematics	E	105			0			0
78	Commerce faculty	E	106			0			0
79	Vice Principal Cabin	E				0			0
80	Junior E. Science Department	E	311			0			0
81	Class Room	E	308			0			0
82	Class Room	E	309			0			0
83	Class Room	E	111			0			0
84	Examination Department	E	110			0			0
85	JR Zoology Lab	E	201			0			0
86	Biology staff Room	E	202			0			0

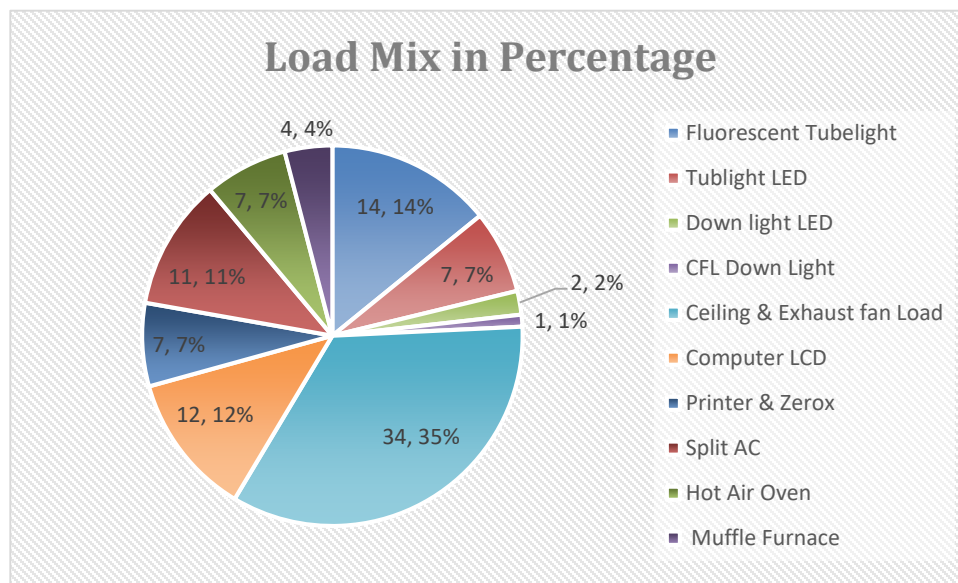
87	Jr Botany Lab	E	203			0			0
88	Physics Laboratory	E	206			0			0
89	Staff Room Physics	E	207			0			0
90	Department of Vocational Electronics	E	208			0			0
91	Class Room	E	301			0			0
92	Class Room	E	303			0			0
93	Computer Laboratory					0			0
94	Class Room	E	304			0			0
95	Class Room	E	305			0			0
96	Class Room	E	309			0			0
97	Class Room	E	310			0			0
98	Class Room	E	312			0			0
99	Boys Hostel ( Total Room- 52 No)					0			0
100	MVC Building					0			0
	Construction Technology	D	101 to 104			0			0
	Electrical Technology	D	201 to 204			0			0
	Electronics Technology	D	301			0			0
101	Central Library					0			0
	Stacking Section					0			0
						0			0
	Library					0			0
	Reading Room No-1					0			0
	Reading Room No-2					0			0
	Journal Magazine Section					0			0
102	Senior & PG Ladies Hostel					0			0
	Porch					0			0

	Ground Floor Room No		101 to 113			0			0
	First Floor Room No		201 to 219			0			0
	Porch					0			0
	Second Floor Room No		301 to 319			0			0
	Porch					0			0
103	Junior Ladies Hostel					0			0
	Ground Floor Room No		1 to 6			0			0
	First Floor Room No		1 to 6			0			0
	Second Floor Room No		1 to 5			0			0
	Porch					0			0
	Indrani Boys Hostel Room No		1 to 36			0			0
104	Principal cabin					0			0
105	Karmvir Dalan					0			0
106	Solar Street Light					0			0
	Total			5		7250	1		3500

Type of Load	No	Total Watts	% on Total
Fluorescent Tube light	297	13450	14
Tube light LED	368	7352	7
Down light LED	136	2403	2
CFL Down Light	38	1068	1
Ceiling & Exhaust fan Load	456	33450	34

Computer LCD	176	12200	12
Printer & Xerox	49	6800	7
Split AC	7	11305	11
Hot Air Oven	5	7250	7
Muffle Furnace	1	3500	4
<b>Total</b>	<b>1533</b>	<b>98778</b>	<b>100</b>

### Existing PIE Chart



## 4. IDENTIFIED ENERGY & COST SAVING OPPORTUNITY

### A) Replacement of existing FTL & CFL fitting with energy efficient LED Lamp

There is major load of lighting & fan in college campus. Hence it is focused for identification of energy saving opportunity. Energy saving & conservation opportunities are identified which are mentioned below with cost benefit analysis based on revised average cost of power. Lowest pay back option shall be implemented on priority.

Existing Lamp details				Proposed replacement with				Saving in
Equipment	No	Watt/No	Total Watts	Equipment	No	Watt/No	Total Watts	watt
CFL Down - light	38	28	1064	LED Round panel Light	38	15	570	494
FTL T8	262	44	11528	T5 LED Tube light	262	18	4716	6812
T12	35	55	1925	T5 LED Tube light	35	18	630	1295
<b>Total</b>			<b>14517</b>				<b>5916</b>	<b>8601</b>

Saving per year			Rate per Unit in	Capital investment in Rs	Pay- back period in
KWH	Average Cost of power Rs/KWH	Saving in Energy cost Rs	Rs	Rs	Months
1185.6	8.34	9887.9	350	13300	16
16348.8	8.34	136349	250	65500	6
3108	8.34	25920.7	250	8750	4
20642.4	8.34	185782		87550	6

**Note- Average cost of power Rs/KWH- 8.34, Operation hours per day- 8 No, Operation day per year-300**

### **B) Permanent Disconnection of service connection from MSEDCL-**

College is holding many service connection of MSEDCL to procure power for various activity in college. However following connections are identified which are making pay fixed charges & average bill without use. This is making financial loss to college. So it is advised herewith to divert the load of these connection on nearest MSEDCL meter & get these connection permanently disconnected from MSEDCL to save cost.



Location	C,E, MCVC	Indrani Hostel	Indrani Hostel	Indrani Hostel	Indrani Hostel	Indrani Hostel	Boys Hostel Sanjivani
Connection No-	164810020248	164810019975	164810019991	164810020001	164810020019	164810020027	164810019801
Meter No-	7805478044	5376043470	5376043471	5376043469	5376042727	5376042723	15383851
Tariff Category	LT VII B I	LT VII B I (March 21-Feb22)	LT VII B I (March 21-Feb22)	LT VII B I (March 21-Feb22)	LT VII B I (March 21-Feb22)	LT VII B I (March 21-Feb22)	LT VII B I
Month	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs
Jan-21	373	373	373	373	373	373	373
Feb-21	373	373	373	373	373	373	373
Mar-21	373	373	373	373	373	373	373
Apr-21	373	373	373	373	373	373	373
May-21	373	373	373	373	373	373	373
Jun-21	373	373	373	373	373	373	373
Jul-21	373	373	373	373	373	373	373
Aug-21	373	373	373	373	373	373	373
Sep-21	373	373	373	373	373	373	373
Oct-21	373	373	373	373	373	373	373
Nov-21	373	373	373	373	373	373	373
Dec-21	373	373	373	373	373	373	373
Total	4476	4476	4476	4476	4476	4476	4476

Location	Indrani Hostel	Indrani Hostel	Indrani Hostel	Indrani Hostel	College campus
Connection No-	164810020035	164810020043	164810020051	164810020086	164813133256
Meter No	5376042726	5376042721	5376042722	5376042724	7641046252

Tariff Category	LT VII B I (March 21- Feb22)	LT VII B I (March 21-Feb22)	LT VII B I (March 21- Feb22)	LT VII B I (March 21- Feb22)	LT -I B (Res) 1- phase (March 21- Feb22)
Month	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs	Amount in Rs
Jan-21	373	373	373	373	373
Feb-21	373	373	373	373	373
Mar-21	373	373	373	373	373
Apr-21	373	373	373	373	373
May-21	373	373	373	373	373
Jun-21	373	373	373	373	373
Jul-21	373	373	373	373	373
Aug-21	373	373	373	373	373
Sep-21	373	373	373	373	373
Oct-21	373	373	373	373	373
Nov-21	373	373	373	373	373
Dec-21	373	373	373	373	373
<b>Total</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>	<b>4476</b>

Location	College campus	Zerex Centre	<b>Total</b>
Connection No-	164813133230	164815120941	
Meter No	7641043208	7514023020	
Tariff Category	LT -II Com 1-phase (March 21-Feb22)	LT VII B I (March 21-Feb22)	
Month	Amount in Rs	Amount in Rs	Amount in Rs
Jan-21	373	373	5222
Feb-21	373	373	5222
Mar-21	373	373	5222
Apr-21	373	373	5222
May-21	373	373	5222
Jun-21	373	373	5222
Jul-21	373	373	5222
Aug-21	373	373	5222
Sep-21	373	373	5222

Oct-21	373	373	5222
Nov-21	373	373	5222
Dec-21	373	373	5222
Total	4476	4476	62664

**Cost saving potential identified in Rs 62664**

## 5. PROPOSAL OF NEW SOLAR ELECTRICAL POWER SYSTEM

As moved around in campus for energy audit, there is identified immense potential in campus to introduce new solar power system in total power mix. There is lot of useful roof top available in campus for installation of solar panel. Same potential can be utilized by college to generate & utilize solar electric power in campus for own use in progressive manner. It is recommended & proposed solar electrical power generation system on Rooftop of A-Block Building. Because Administrative office area is generally operational during sun time. So maximum solar power generation is possible to use for captive purpose. This will help save amount presently spent on costly power procurement from MSEDCL.

In view of ascertaining estimation of required solar electrical power generation system capacity, real time power is measured of different load points presently being fed from MSEDCL as below.

Sr No	Location of meter	Meter Details	Power Measurement							
			Phase	KW	KVAR	KVA	P.F.	Volt	Amps	Hz
1	A-Block	Make -KF, Sr No-5059120,3-phase	L1	0.51	-0.26	0.58	0.879	255.3	2.3	50.1
			L2	3.95	-0.25	3.96	0.997	226	17.5	
			L3	4.08	-0.87	4.18	0.976	223.3	18.7	
			<b>Total</b>	<b>8.54</b>	<b>-1.38</b>	<b>8.72</b>	<b>0.979</b>			
2	A-Block	Make -KF, Sr No-5059121,3-phase	L1	1.55	1.27	2.01	0.771	248.3	8.1	50
			L2	2.05	-0.41	2.09	0.981	222.6	9.4	
			L3	0	0	0	#DIV/0!	224	0	
			<b>Total</b>	<b>3.6</b>	<b>0.86</b>	<b>4.1</b>	<b>0.878</b>			
3	B-Block	Make -KF, Sr No-60125601,3-phase	L1	0.31	-0.14	0.34	0.912	236.4	1.4	50.1
			L2	0	0	0	#DIV/0!	240.2	0	
			L3	1.4	0.5	1.49	0.940	235.3	6.3	
			<b>Total</b>	<b>1.71</b>	<b>0.36</b>	<b>1.83</b>	<b>0.934</b>			

4	Block- C,E, MCVC	Make -KF, Sr No-60125601 ,3-phase	L1	1.55	-0.34	1.58	0.981	232.3	6.8	50
			L2	0.86	-0.41	0.96	0.896	238.6	4	
			L3	0.59	-0.23	0.63	0.937	229.2	2.7	
			Total	3	-0.98	3.17	0.946			
5	Boys Hostel	Make -LT , Sr No-15383851 ,3-phase			No Load					
		Make -LT , Sr No-15383852 ,3-phase			No Load					
6	Boys Hostel Indrani	Make -secure , Sr No-199391 ,3-phase	L1	0	0	0	0	230.4	0	50
			L2	0	0	0	0	237.3	0	
			L3	0.25	-0.1	0.28	0.92	234.3	1.2	
			Total	0.25	-0.1	0.28	0.92			
7	Boys Hostel Indrani	Make -secure , Sr No-199392 ,3-phase	L1	0.94	0.93	1.33	0.707	225.5	5.9	50
			L2	1.08	0.96	1.45	0.745	231.2	6.3	
			L3	1.01	1.04	1.46	0.692	233.4	6.2	
			Total	3.03	2.93	4.24	0.715			
8	Bore well near gymkhana	Make -LT , Sr No-15383853 ,3-phase	L1	0.77	0.72	1.06	0.726	254.7	4.2	50
			L2	0.82	0.8	1.15	0.713	254.8	4.5	
			L3	0.71	0.78	1.06	0.670	248	4.3	
			Total	2.32	2.3	3.28	0.707			

### ESTIMATION OF REQUIRED SOLAR ELECTRICAL POWER GENERATION SYSTEM CAPACITY-

Location	MSEDCL Meter Sr no	Phases	Measured Power in KW	Total KW	Proposed Solar inverter Capacity in KW	Capacity factor in %	Proposed Photovoltaic solar panel installed capacity in KW
A-Block	5059120	3-phase	8.54	12.14	15	25	60
A-Block	5059121	3-phase	3.6				

### The Cost Analysis of proposal & Pay-Back Period

Total Annual Energy requirement in A-Block of Building	Average Cost of power	Assessed Annual energy purchase cost saving from MSEDCL	Proposed Photovoltaic solar panel installed capacity in KW	Assumed Solar power system cost per KW in	Total capital cost of Solar power system in	Pay-Back Period in years
KWH	Rs/KWH	Ra	KW	Rs	Rs	
40000	8.34	333600	60	7000	420000	1.3

### The installation of solar power generation system has following benefits to college-

- 1) This is generating green power mitigating greenhouse gas emission for protection of environment as well as it is ~~conving~~ conventional energy resources.
- 2) This mode of power generation saves energy cost for costly purchasing power from MSEDCL & overcome dependency on utility power supply.
- 3) This also helps to student as demonstrative model for studying to imbibe technical knowledge.

## 6. INSTALLATION OF TURBO VENTILATOR ON CLASS ROOM-

College management has scope to install turbo ventilator for ventilation of various class room in college campus. These tub ventilators absorb pressure energy from blowing natural air & convert into velocity of buckets of turbo ventilator to rotate it about axis. Internal hot air is exhausted in climate. In this way green energy is used .If college management had installed electrical exhaust fan in halls, operational cost of these fans would have been spent by management. So this requiring energy & operational cost is saved as well as CO2 emission resulting from this energy use is also reduced to protect environment. This is illustrated as below.

No of turbo ventilator proposed	Turbo ventilator Working hours	If expulsion of air from hall would have done with electrical exhaust fan						
	No of Hrs	No of fan	Wattage of each fan	Total watt	Total working hrs per year	Total KWH required per year	Cost of power Rs/KWH	Amount per year in Rs

25	24	25	90	2250	8760	19710	8.34	164381.4
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**Assessed Annual energy saving potential in KWH 19710**

**Total Assessed Annual Energy cost saving potential in Rs 164381**

## **7. EXISTING RENEWABLE ENERGY APPLICATION IN CAMPUS**

### **1) SOLAR WATER HEATER-**

College has installed solar water heater in boys & Girls hostel to harness cost free solar green energy for heating water requiring for bath to student. This reduces demand of conventional commercial energy. This will also help to reduce greenhouse gas emission mitigating environmental damage. Application of this hot water in various laboratory can be explored which is generated without input energy cost.

System No	Location	Solar System Details					Hot water supply
		Make	Sr No	Capacity in LPD	Collector	No of collectors	
1	Senior & PG Girl Hostel	Jain Irrigation	No name plate	2000	Flat plate collector	15	Ladies Hostel
2	Junior Girl Hostel	Jain Irrigation	No name plate	2000	Flat plate collector	15	Ladies Hostel
3	Boyes Hostel	Jain Irrigation	No name plate	2001	Flat plate collector	15	Boyes Hostel
4	Indrani Boyes Hostel	Jain Irrigation	No name plate	2002	Flat plate collector	15	Boyes Hostel

### **Quantification of heat gained & equivalent electrical KWH harnessed**

System No	Solar System Details	Hot water supply	Average Water Temperature	Specific heat of water	Density of water

	Make	Sr No	Capacity in LPD		Hot(Out)	Cold (In)	Kcal/Kg/oC	Kg/Ltr
1	Jain Irrigation	No name plate	2000	Senior Ladies Hostel	43.2	29.2	1	1
2	Jain Irrigation	No name plate	2000	Junior Ladies Hostel	30.7	30.5	1	1
3	Jain Irrigation	No name plate	2000	Boyes Hostel	60	30	1	1
4	Jain Irrigation	No name plate	2001	Indrani Boyes Hostel	60	30.3	1	1
Total								

System No	Hot water supply	Total Solar Heat gained by water per Day in Kcal	Equivalent Electricity saving in KWH per year	Average Electricity Cost in	Electricity Cost saving in Rs per year	Estimated CO2 Green House Gas Emission reduction per year in Kg
		Kcal		Rs/KWH	Rs	
1	Senior Ladies Hostel	28000	11884	8.34	99110	10101
2	Junior Ladies Hostel	400	170	8.34	1416	144
3	Boyes Hostel	60000	25465	8.34	212379	21645
4	Indrani Boyes Hostel	59429.7	25223	8.34	210360	21440
<b>Total</b>		<b>147829</b>	<b>62742</b>	<b>8.34</b>	<b>523266</b>	<b>53330</b>

### Observation-

- 1) In Sr No-2 solar water heater  $\Delta T$  is very low. It is because of obstruction developed to flow of water in circulation. It is necessary for rectification. Draining of water from collectors is necessary to drain deposited settled mud at lower header. This mud slows down Syphoning water & subsequently heat accumulation in hot water storage tank all solar water.
- 2) Solar water heaters are supposed to raise temperature of cold water upto 70 °C. But these are failing to do so. Maintenance is necessary.

## 2) Solar Street Light Bracket installed

Solar Street Light Brackets are installed to harness free solar energy for application & mitigate greenhouse gas emission.

No of Solar Street Light installed	No of Hrs per day	Wattage of each Solar street light fixture	Total watt	Total working hrs per year	Total KWH required per year	Cost of power Rs/KWH	Amount per year in Rs
5	12	9	45	4380	197.1	8.34	1644

## 3) Proposed Addition of Solar Street Light Bracket-

Solar Street Light Brackets additional installation is proposed to harness free solar energy for application & mitigate greenhouse gas emission.

Technical Specification	Solar Lamp Bracket	Solar Photovoltaic Panel	Battery-
	6 Watt	40 Watt	7.2 Ah

of Solar Street Light installed	No of Hrs per day	Wattage of each Solar street light fixture	Total watt	Total working hrs per year	Total KWH required per year	Cost of power Rs/KWH	Amount per year in Rs	Cost per bracket set in Rs	Total Capital cost in Rs	Pay Back period in year
15	12	6	90	4380	394.2	8.34	3288	3750	56250	17

## 8.TOTAL ASSESSED UPDATED ANNUAL ENERGY REQUIREMENT OF COLLEGE CAMPUS & ESTIMATED GREEN HOUSE GAS REDUCTION

Total annual energy requirement of college campus is assessed based on various energy generating & supplying sources. As solar water heater & solar street light installations have been already commissioned, green energy is harnessed to mitigate emission of greenhouse gases & saving in power purchase cost. Present input power mix scenario is given below.

### A) Annual energy requirement& Estimated Green House Gas Reduction

Sr No	Input Energy Mix	Unit	Quantity	% share on Total	Type of energy	Estimated CO2 Green House Gas Emission reduction per year in Ton
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1	Total annual Electrical Energy requirement from MSEDCL in KWH	KWH	100966	61.88	Conventional	0
2	Metered added Annual solar power generation	KWH	0	0		0
3	Assessed Annual Electrical Equivalent Solar energy used for heating water through solar heater	KWH	62742	38	Non-Conventional	53
4	Solar Street Light	KWH	197	0.12	Non-Conventional	0.167
Total annual Energy requirement		KWH	163905	100.00		53.167

### Green Energy application per year & CO2 emission reduction

Total annual Energy requirement KWH	163905
Total application of green Energy in KWH	62939
% share of green energy on total requirement	38.12%
Estimated CO2 Green House Gas Emission reduction per year in Ton	53.167

## 9. SINGLE PHASE UPS STUDY

UPS load measurement is carried out at input supply terminal. Loading on UPS is indicated as percentage loading calculated based on its capacity. UPS found very under loaded i.e. below 50%. It is recommended to load it up to 80% so that power pollution by it will reduce & operating cost will reduce. Lighting load of respective premise can be diverted on UPS to supply stable rated voltage to lamps. This will prolong life of lamps & save the cost.

Sr No	Location	UPS details		Battery Details				Remark
		Phase	KVA Rating	No	Volt	AH Capacity	KWH Capacity	
1	Administrative office	1	5	16	12	42	8.064	Very dirty room. Material is placed around it. It is unsafe condition
2	Electronics Department (A/218)	1	4	6	12	200	14.4	

3	Physics Laboratory (A/215)	1	6	24	12	42	12.096	Batteries are damaged
4	Physics Laboratory (A/213)	1	5	8	12	200	19.2	This is used for Load PC- 22No
5	Network Resource Centre ( A/209)	1	3	6	12	165	11.88	Load PC-12 No, Ceiling fan-2 No
6	Botany Laboratory-1 (A/204)	1	3	6	12	200	14.4	Load PC-3 No, Ceiling fan-1 No, Printer-2No, Projector-2 No
7	Computer Lab (B/102)	1	3	6	12	42	3.024	Defective
8	Examination Department	1	5	6	12	165	11.88	
9	Central Library	1	3	6	12	165	11.88	
10	Principal cabin	1	2	6	12	220	15.84	
	Total		39	90			122.664	

There are no of UPS are provided in college campus presuming essentiality at various places. In fact it is not so. Application of UPS is very rare. As college is located in urban area, MSEDCL supply interruption is very less. So most of time UPS batteries are on float charging consuming unnecessary charging power from MSEDCL grid. This poses financial Burdon on college.

Battery Capacity in KWH	123	123	123	123
Operating load in KW	2	4	5	6
Estimated Back up in Hours	62	31	25	21

### Observation of existing UPS system-

- 1) Most of time UPS batteries are on float charging consuming unnecessary charging power from MSEDCL grid without cause. This poses financial Burdon of electricity bill on college every month.
- 2) Back time is very higher side for various amount of loads which are rare on system.

**So it is necessary to optimized UPS capacity to moderate level to save battery charging power & Operating cost without cause.**

**Hence it is recommended to provide UPS supply facility from common place having capacity as below to save operational cost. The UPS supply requirement is proposed to extend from common central place to user end instead of decentralized dedicated system.**

Battery Capacity in KWH	30	30	30	30
Operating load in KW	2	4	5	6

Estimated Back up in Hours	15	7.5	6	5
Recommended UPS capacity in KW	6	6	6	6

**Note-** This is technical advice to save cost. College is free to apply its discretion to ascertain priority & necessity.

**Don't store any material around batteries & UPS for safety reason & maintain cleanliness in UPS room**

**Maintain batteries periodically to obtain reliable best service & prolong life of battery.**

## **10.ELECTRICAL LOADING STUDY OF MOTORS**

Loading of motor is measured with power analyzer to assess % loading of motor & to identify Overloading & under-loading of motors if any. In this measurement power quality parameters are also studied to detect improvement potential for best utilization of power. Measurement

Details are given below.

Sr No	Pump Location	Motor Type	HP/KW	Power Measurement								% Motor loading	Remark
				KW	KVAR	KVA	P.F.	Phase	Volt	Amps	Hz		
1	Indrani hostel	Bore well	5/3.75	3.05	2.94	4.25	0.72.5	L1	225.5	5.9	50	71	Normally Loaded. No capacitor. Capacitor of 3 KVAR shall be installed for power factor improvement.
								L2	231.2	6.3			
								L3	233.4	6.2			
2	Near Boyes hostel	Bore well	3/2.25	2.32	2.3	3.28	0.71	L1	254.7	4.2	50	92	Full Loaded. No capacitor. Capacitor of 2 KVAR shall be installed for power factor improvement.
								L2	254.8	4.5			
								L3	248	4.3			

## **11.AWARENESS PROGRAM & SIGN BOARD DISPLAY NEARSWITCH BOARD.**

It is reviewed about Awareness program if any undertaken at college level for optimum use of electricity as well as its saving. Instruction cum Request Sign board found displayed near each switch-board to influence & guide to user to arrest misuse & wastage of power. There is still scope to create awareness among user about efficient & optimum use of energy & water to save.

## **12.RECOMMENDATION FOR ELECTRICAL SAFETY AUDIT**

Considering huge human occupancy in building Electrical Safety Audit is recommended to identify unsafe location & condition to comply to ensure electrical safety with human being, property & equipment. This is very serious thing & is priority issue.

## **13. LIST OF INSTRUMENT USED FOR MEASUREMENT IN ENERGY AUDIT**

<b>Sr No</b>	<b>Instrument Name</b>
<b>1</b>	<b>3- Phase Electric Power Analyzer</b>
<b>2</b>	<b>Lux Meter</b>
<b>3</b>	<b>Thermometer &amp; Hygrometer</b>
<b>4</b>	<b>Measuring steel tape</b>
<b>5</b>	<b>IR Thermometer</b>