

# ENERGY AUDIT REPORT

## RAYAT SHIKSHAN SANSTHA'S



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# CERTIFICATE

ENERFUTURE TECHNOLOGY PRIVATE LIMITED

Verified and Certified that



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has carried out  
**Energy Audit**

as per guidelines laid down in the  
Energy Conservation Act, 2001,  
Ministry of Power, Government of India  
in 2021-22.



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## ACKNOWLEDGEMENT

Enerfuture Technology thanks the management of Dr Babasaheb Ambedkar Mahavidyalaya College, Pune for assigning this important work of Energy Audit of Dr Babasaheb Ambedkar Mahavidyalaya College, Pune

Energy Audit study is a joint venture exercise of consultant and college account and contain energy usage without sacrificing the purpose of energy use.

Contribution of college's team is equally important in this venture. Team of technical experts from Enerfuture Technology Private Limited is grateful to all the following personnel of Dr Babasaheb Ambedkar Mahavidyalaya College, Pune for their kind cooperation, furnishing required data, analysis report and support offered during our visit.

Name	Designation
Dr. Arun Andhale	Principal
Dr Ramesh Randive	Vice-Principal
Dr Rajendra Rasakar	Assistant Professor
Prof Sushilkumar Gujar	Assistant Professor
Dr Savita Patil	IQAC Coordinator

We are also thankful to the other staff members who were actively involved while taking measurements and conducting field study.

## STUDY TEAM

Sr No	Name	Qualification
1	Mr. Chetan Nemade	M.Tech (Energy Studies), Advance Diploma in Industrial Safety (ADIS), LLB(pursuing), BEE Certified Energy Manager
2	Mr Vinay Mulay	M.Tech (Energy Studies), ISO 50001 Lead Auditor, BEE Accredited Energy Auditor
3	Mr Swapnil Gaikwad	M.Tech (Energy Studies), ISO 50001 Lead Auditor , BEE Certified Energy Auditor
4	Mr YogeshKuwar	M.Tech (Energy Studies), IGBC, Post Graduate Diploma in Environmental law and Policy (PGDELP), BEE Certified Energy Manager
5	Mr Swapnil bedre	BE Mechanical

## LIST OF INSTRUMENTS USED

1. Distance Meter (Bosch)
2. Lux meter (Meco)
3. TDS meter
4. CO2 meter
5. Air quality measure meter
6. Sound meter

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## EXCECUTIVE SUMMARY

Sr no	Location	Area	Proposed Action	Expected Result	Saving Potential	Monetary Saving	Investment	Simple Payback Period
				monthly	kWh	INR	INR	months
1	College buildings	Lightning recommendations	Install motion sensors to parking, staircase, passage and street lights	Existing lighting consumption= 804.70kWh	18	200.88	1,530	7.62
				Expected energy consumption= 786.70kWh				
				Total energy saved per month=18kWh				
2	College buildings	Fan recommendations	Replace existing old conventional fans which consumes 70W with new energy efficient fans which consumes 28W(18W & 8W for exhaust fan)	Existing fan consumption= 466.22kWh	231.04	2,578.41	2,04,211	79.20
				Expected energy consumption= 235.18kWh				
				Total energy saved per month=231.04kWh				
3	College electricity bill	Electricity bill tariff change	Change MSEDCL electricity bill tariff from commercial to Public services-others	Average monthly saving=INR 5157.12	-	5,157.12	0	0

4	<b>College campus</b>	Solar rooftop Photovoltaic system	College can expand existing Solar PV system to 14 kWp in available rooftop to cater excess energy consumption	College can installed 14 kWp solar PV system	1575	17,577	6,30,000	2.99
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## COLLEGE INTRODUCTION

### INTRODUCTION



#### Rayat Shikshan Sanstha Satara

"Education through self-help is our motto."

This college is a grant-in-aid institution affiliated to Savitribai Phule Pune University. It has been established in 1983 and included under sections 2(f) and 12(B) of the UGC Act and has been receiving grants regularly. College is re-accredited with B++ Grade with CGPA of 2.76 by NAAC in 2017. The college offers courses like B.A., B.Com, B.B.A.( Computer Application ) , B. Voc.( Retail Marketing and Management ) M.A. Economics, M.A. Marathi and M. Com. Along with academic programs college also offers two COC and twenty seven skill and job oriented courses. The college has received several grants for Major and Minor Research projects from UGC and Savitribai Phule Pune University. The College also pays equal attention to faculty improvement and research. College has well qualified and research oriented faculty out of 13 permanent faculty, eight are with Ph.D. and two with M.Phil. and three are doing Ph.D. Almost all faculty members have completed major or minor research projects. College has organized 27 seminars and conference and 47 workshops. Several support services are provided to the students like ladies hostel, NSS, sports, YCMOU, cultural unit etc. Several support services are provided to the students like ladies hostel, NSS, sports, YCMOU, cultural unit etc. The college also publishes its annual magazine 'Aksharkumaya', wall paper 'Aksharrang', hand written 'Vanijyavishwa' and 'Arthvishwa', book reviews and Newsletters. Majority of the students are from rural and slum area. They belong to economically and socially backward classes. To cop up with the new atmosphere, we organize orientation remedial, special guidance scheme, bridge courses, counselling and computer courses for students. College was

awarded with Karmveer Paritoshik by Rayat Shikshan Sanstha, Jagnath Rathi award for extension activities by Savitribai Phule Pune University, Savitribai Phule Best Sanstha by Rashtriya Bandhuta Parishad.

### **SILENT FEATURES OF THE COLLEGE**

- A Branch of Rayat Shikshan Sanstha which was founded by a great visionary Padmabhushan Dr. Karmveer Bhaurao Patil.
- Affiliated to Savitribai Phule Pune University, Pune.
- Accredited by NAAC with 'B++' Grade with CGPA of 2.76 by NAAC in 2017.
- Best college Award by Rayat Shikshan Sanstha.
- NSS Best College Unit Award by SPPU.
- Jagnath Rathi Award for social awareness by Savitribai Phule Pune University, Pune.
- Adequate infrastructure with spacious classroom.
- Language Laboratory.
- Commerce Laboratory.
- Computer Laboratory.
- Adequate IT infrastructure.
- Well qualified and dedicated teaching faculty.
- Twenty-seven skill and job-oriented courses.
- Excellent organization seminars and workshops.
- Competitive Examination Guidance Centre.
- Banking Examination guidance Centre.
- Police Pre-recruitment Training Centre.
- Ladies hostel facility.
- Automated Library with library website and Institutional Repository for e-collection.
- National players.
- Good Research culture.

### **MISSION**

We are committed to educate educationally, socially and economically backward people and bring about a positive change among them and thereby serve the nation.

### **VISSION**

To impart quality education too socially, economically and educationally downtrodden through self-help and bring them in the main stream of the nation.

## OBJECTIVES

- To generate physically, spiritually and academically sound, young, properly motivated graduates who know the importance of social and civil responsibilities.
- To develop the overall personality of students.
- Education through self-help and dignity of labour
- To educate socially and economically backward students.
- To promote women education.
- To promote the research activities.
- To have interaction with the society through co-curricular activities to acquaint the basic needs and problems.

## LOCATION



## ELECTRICITY BILL SUMMARY

Dr Babasaheb Ambedkar Mahavidyalaya College, Pune have two MSEDCL three phase LT electricity connection in the college campus for all buildings.

One electricity meter is used for college building while other meter is used for girl's hostel building.

The major electricity consumption in college campus is lighting, fans, AC as well as water pumping to various buildings during college hours.

Both MSEDCL energy meters are solar net meters with capacity of 15 kWp and 5 kWp of Solar PV system.

## ELECTRICITY BILL SUMMARY

<b>Consumer No.</b>		<b>170014135271</b>	
<b>Billing Unit</b>		<b>4599</b>	
<b>Category</b>		<b>LT-II-A (Commercial)</b>	
<b>Actual Category</b>		<b>LT-V-B (Public services- others)</b>	
<b>Connected load</b>		<b>14</b>	<b>kW</b>
<b>Month</b>	<b>Units</b>	<b>Total Bill</b>	<b>Average Unit Rate</b>
	<b>kWh</b>	<b>INR</b>	<b>INR/kWh</b>
Aug-21	1195	13107.01	10.97
Sep-21	1150	12632.35	10.98
Oct-21	1351	14752.50	10.92
Nov-21	1286	14066.87	10.94
Dec-21	1771	19182.66	10.83
Jan-22	1469	15997.16	10.89
Feb-22	1606	17442.24	10.86
Mar-22	2006	22146.89	11.04
Apr-22	2211	23998.81	10.85
May-22	1977	21513.60	10.88
Jun-22	1799	22235.28	12.36
Jul-22	1768	21861.03	12.36
<b>Average</b>	<b>1632</b>	<b>18245</b>	<b>11.16</b>

<b>Consumer No.</b>		<b>170011133820</b>	
<b>Billing Unit</b>		<b>4599</b>	
<b>Category</b>		<b>LT-II-A (Commercial)</b>	
<b>Actual Category</b>		<b>LT-V-B (Public services- others)</b>	
<b>Connected load</b>		<b>14</b>	<b>kW</b>
<b>Month</b>	<b>Units</b>	<b>Total Bill</b>	<b>Average Unit Rate</b>
	<b>kWh</b>	<b>INR</b>	<b>INR/kWh</b>
Aug-21	0	-18810	#DIV/0!
Sep-21	0	-18400	#DIV/0!
Oct-21	0	-17990	#DIV/0!
Nov-21	0	-17580	#DIV/0!
Dec-21	0	-17170	#DIV/0!
Jan-22	0	-16760	#DIV/0!
Feb-22	0	-16350	#DIV/0!
Mar-22	0	-15930	#DIV/0!
Apr-22	0	-60980	#DIV/0!
May-22	0	-61560	#DIV/0!
Jun-22	0	-60140	#DIV/0!
Jul-22	0	-59720	#DIV/0!
<b>Average</b>		<b>0.00</b>	

## OBSERVATION

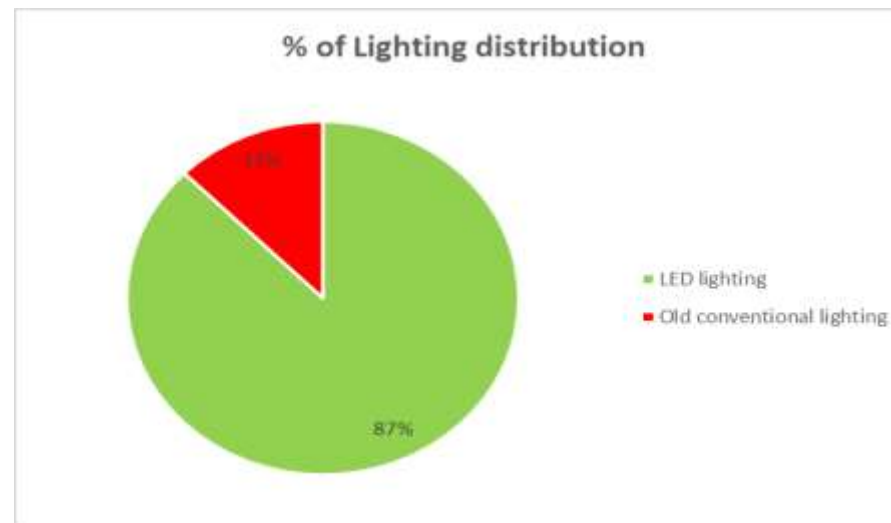
1. Total monthly energy consumption of the college is approximately 3,000 units.
2. Total monthly billing is approximately INR 20, 000 /-
3. 15 kWp and 5 kWp Solar PV system is installed in girls's hostel building and college building respectively as a renewable energy source.
4. Approximate 2,350 kWh units are generated from existing solar PV systems.

## ENERGY PERFORMANCE ASSESSMENT OF LIGHTING

### OBSERVATION

College has installed new energy efficient LED lighting in the college campus. Also some old lightings in the college which are replaced by college in course of time.

Type	Quantity	kW load	% of load
LED lighting	56	1.01	87.50
Old conventional lighting	8	0.29	12.50
<b>Total</b>	<b>64</b>	<b>1.30</b>	<b>100</b>





**PERFORMANCE ASSESSMENT OF LIGHTING SYSTEM**
**ENERGY SAVING MEASURES**

Building	Floor	Name	Light Type	Type	Qty	Wattage	Hours of usage	No of Days in a month	Monthly consumption	
					Nos	watt	hrs	days	kWh/day	
<b>College building</b>	All	Passage	LED	1x16W	4	16	5	25	8.00	
			LED	1x20W	19	20	5	25	47.50	
			FTL	1x40W	1	40	1	25	1.00	
			Bathroom	LED	1x20W	40	20	10	25	200.00
	Basement	B-1 Boy's room	LED	1x20W	4	20	5	25	10.00	
			LED	1x16W	3	16	5	25	6.00	
			B-2 Geography department	LED	1x20W	1	20	5	25	2.50
				LED	1x16W	2	16	5	25	4.00
			B-3 History department and competitive exam centre	LED	1x20W	3	20	5	25	7.50
				FTL	1x36W	1	36	5	25	4.50
				FTL	1x40W	1	40	5	25	5.00
			B-5	LED	1x16W	1	16	5	25	2.00
				LED	1x20W	1	20	5	25	2.50
				B-6	LED	1x16W	3	16	5	25
			LED		1x20W	1	20	5	25	2.50

			FTL	1x40W	1	40	5	25	5.00
		B-7	LED	1x16W	3	16	5	25	6.00
		B-4 Marathi department	LED	1x16W	1	16	5	25	2.00
			LED	1x20W	2	20	5	25	5.00
	Ground floor	G-4 Staff room	LED	1x16W	12	16	5	25	24.00
			LED	1x20W	20	20	5	25	50.00
		G-5 Admin office	LED	1x20W	8	20	8	25	32.00
		G-3 Principal office	LED	1x20W	3	20	8	25	12.00
			LED	1x16W	5	16	8	25	16.00
		G-6 English department	LED	1x16W	2	16	5	25	4.00
		G-7 Examination office	LED	1x20W	2	20	5	25	5.00
			LED	1x16W	2	16	5	25	4.00
		Vice principal room	LED	1x20W	1	20	8	25	4.00
		G-2 Library	LED	1x20W	10	20	8	25	40.00
			LED	1x16W	2	16	8	25	6.40
		G-1 Store room	LED	1x20W	1	20	5	25	2.50
	First floor	101 Class room	LED	1x20W	4	20	5	25	10.00
			102 Class room	LED	1x20W	2	20	5	25
			FTL	1x36W	2	36	5	25	9.00
		103 Economics department	LED	1x20W	1	20	5	25	2.50
		104 Commerce department	LED	1x20W	2	20	5	25	5.00
			LED	1x16W	2	16	5	25	4.00
		105 Politics department	LED	1x20W	1	20	5	25	2.50
		106 Class room	LED	1x20W	4	20	5	25	10.00
		107 Class room	LED	1x20W	6	20	5	25	15.00
		Seminar hall	LED	1x20W	6	20	2	25	6.00

			LED	1x16W	2	16	5	25	4.00
	Second floor	201 Class room	LED	1x20W	2	20	5	25	5.00
			FTL	1x36W	1	36	5	25	4.50
			FTL	1x40W	1	40	5	25	5.00
		202 Class room	LED	1x20W	4	20	5	25	10.00
		203 Class room	LED	1x20W	2	20	5	25	5.00
		204 BBA department	LED	1x20W	3	20	5	25	7.50
		205 Junior staff room	LED	1x20W	1	20	5	25	2.50
			FTL	1x36W	1	36	5	25	4.50
		206 Computer lab	LED	1x20W	7	20	5	25	17.50
		207 Chemistry lab	LED	1x20W	3	20	5	25	7.50
		208 B-Voc lab	LED	1x16W	21	16	2	25	16.80
		301 Physics lab	LED	1x20W	5	20	5	25	12.50
		302 Class room	LED	1x12W	10	12	0.5	25	1.50
<b>Girl's hostel</b>	All	Passage	LED	1x20W	7	20	5	25	17.50
		Visitor room	LED	1x20W	1	20	5	25	2.50
		Servant room	LED	1x20W	1	20	5	25	2.50
		Warden room	LED	1x20W	1	20	5	25	2.50
		Sick room	LED	1x20W	1	20	5	25	2.50
		Reading room	LED	1x20W	6	20	5	25	15.00
		All rooms	LED	1x20W	14	20	5	25	35.00
<b>Gymkhana</b>	All	Passage	LED	1x20W	3	20	5	25	7.50
		Gym room	LED	1x16W	10	16	5	25	20.00

Building	Floor	Name	Change	New used Qty	New monthly consumption	Monthly saving	Monthly saving	Total investment	Payback period	
				nos	kWh/month	kWh/month	INR/month	INR	months	
<b>College building</b>	All	Passage	No change	4	8.00	0.00	0.00	0	#DIV/0!	
			No change	19	47.50	0.00	0.00	0	#DIV/0!	
			LED-1x20W	1	0.50	0.50	5.58	170	30.47	
			Bathroom	No change	40	200.00	0.00	0.00	0	#DIV/0!
		Basement	B-1 Boy's room	No change	4	10.00	0.00	0.00	0	#DIV/0!
				No change	3	6.00	0.00	0.00	0	#DIV/0!
			B-2 Geography department	No change	1	2.50	0.00	0.00	0	#DIV/0!
				No change	2	4.00	0.00	0.00	0	#DIV/0!
			B-3 History department and competitive exam centre	No change	3	7.50	0.00	0.00	0	#DIV/0!
				LED-1x20W	1	2.50	2.00	22.32	170	7.62
				LED-1x20W	1	2.50	2.50	27.90	170	6.09
			B-5	No change	1	2.00	0.00	0.00	0	#DIV/0!
				No change	1	2.50	0.00	0.00	0	#DIV/0!
			B-6	No change	3	6.00	0.00	0.00	0	#DIV/0!
				No change	1	2.50	0.00	0.00	0	#DIV/0!
				LED-1x20W	1	2.50	2.50	27.90	170	6.09
			B-7	No change	3	6.00	0.00	0.00	0	#DIV/0!
			B-4 Marathi department	No change	1	2.00	0.00	0.00	0	#DIV/0!
				No change	2	5.00	0.00	0.00	0	#DIV/0!

	Ground floor	G-4 Staff room	No change	12	24.00	0.00	0.00	0	#DIV/0!
			No change	20	50.00	0.00	0.00	0	#DIV/0!
		G-5 Admin office	No change	8	32.00	0.00	0.00	0	#DIV/0!
		G-3 Principal office	No change	3	12.00	0.00	0.00	0	#DIV/0!
			No change	5	16.00	0.00	0.00	0	#DIV/0!
		G-6 English department	No change	2	4.00	0.00	0.00	0	#DIV/0!
		G-7 Examination office	No change	2	5.00	0.00	0.00	0	#DIV/0!
			No change	2	4.00	0.00	0.00	0	#DIV/0!
		Vice principal room	No change	1	4.00	0.00	0.00	0	#DIV/0!
		G-2 Library	No change	10	40.00	0.00	0.00	0	#DIV/0!
			No change	2	6.40	0.00	0.00	0	#DIV/0!
		G-1 Store room	No change	1	2.50	0.00	0.00	0	#DIV/0!
	First floor	101 Class room	No change	4	10.00	0.00	0.00	0	#DIV/0!
		102 Class room	No change	2	5.00	0.00	0.00	0	#DIV/0!
			LED-1x20W	2	5.00	4.00	44.64	340	7.62
		103 Economics department	No change	1	2.50	0.00	0.00	0	#DIV/0!
		104 Commerce department	No change	2	5.00	0.00	0.00	0	#DIV/0!
			No change	2	4.00	0.00	0.00	0	#DIV/0!
		105 Politics department	No change	1	2.50	0.00	0.00	0	#DIV/0!
		106 Class room	No change	4	10.00	0.00	0.00	0	#DIV/0!
		107 Class room	No change	6	15.00	0.00	0.00	0	#DIV/0!
		Seminar hall	No change	6	6.00	0.00	0.00	0	#DIV/0!
			No change	2	4.00	0.00	0.00	0	#DIV/0!
	Second floor	201 Class room	No change	2	5.00	0.00	0.00	0	#DIV/0!
			LED-1x20W	1	2.50	2.00	22.32	170	7.62

			LED-1x20W	1	2.50	2.50	27.90	170	6.09
		202 Class room	No change	4	10.00	0.00	0.00	0	#DIV/0!
		203 Class room	No change	2	5.00	0.00	0.00	0	#DIV/0!
		204 BBA department	No change	3	7.50	0.00	0.00	0	#DIV/0!
		205 Junior staff room	No change	1	2.50	0.00	0.00	0	#DIV/0!
			LED-1x20W	1	2.50	2.00	22.32	170	7.62
		206 Computer lab	No change	7	17.50	0.00	0.00	0	#DIV/0!
		207 Chemistry lab	No change	3	7.50	0.00	0.00	0	#DIV/0!
		208 B-Voc lab	No change	21	16.80	0.00	0.00	0	#DIV/0!
		301 Physics lab	No change	5	12.50	0.00	0.00	0	#DIV/0!
		302 Class room	No change	10	1.50	0.00	0.00	0	#DIV/0!
<b>Girl's hostel</b>	All	Passage	No change	7	17.50	0.00	0.00	0	#DIV/0!
		Visitor room	No change	1	2.50	0.00	0.00	0	#DIV/0!
		Servant room	No change	1	2.50	0.00	0.00	0	#DIV/0!
		Warden room	No change	1	2.50	0.00	0.00	0	#DIV/0!
		Sick room	No change	1	2.50	0.00	0.00	0	#DIV/0!
		Reading room	No change	6	15.00	0.00	0.00	0	#DIV/0!
		All rooms	No change	14	35.00	0.00	0.00	0	#DIV/0!
<b>Gymkhana</b>	All	Passage	No change	3	7.50	0.00	0.00	0	#DIV/0!
		Gym room	No change	10	20.00	0.00	0.00	0	#DIV/0!

Total lighting savings		
Monthly consumption	804.70	kWh/month
New monthly consumption	786.7	kWh/month
New monthly saving	18	kWh/month
New monthly saving	200.88	INR/month
Total Investment	1530	INR
Payback period	7.62	months

## ENERGY PERFORMANCE ASSESSMENT OF FAN

### OBSERVATION

College has installed old conventional induction motor fan which consumes 70W at full speed. It is recommended that replace old fan which are operated maximum usage per day with new energy efficient fan which consumes 28W at full speed. Also exhaust fan of 45W and 35W with 18W and 8W energy efficient fans.

### ENERGY SAVING MEASURES

Building	Floor	Name	Qty	No of Days in a month	Monthly consumption	Monthly saving	Monthly saving	Investment	Total investment	Payback period
				nos	kWh	kWh	INR	INR	INR	
College building	Basement	B-1 Boy's room	3	25	10.50	6.30	70.31	1800	5400	76.80
		B-2 Geography department	1	25	3.50	2.10	23.44	1800	1800	76.80
		B-3 History department and competitive exam centre	2	25	7.00	4.20	46.87	1800	3600	76.80
		B-5	1	25	3.50	2.10	23.44	1800	1800	76.80
		B-6	2	25	7.00	4.20	46.87	1800	3600	76.80
		B-7	1	25	3.50	2.10	23.44	1800	1800	76.80



		B-4 Marathi department	1	25	3.50	2.10	23.44	1800	1800	76.80
	Ground floor	G-4 Staff room	6	25	21.00	12.60	140.62	1800	10800	76.80
		G-5 Admin office	4	30.5	17.08	10.25	114.37	1800	7200	62.95
		G-3 Principal office	2	30.5	8.54	5.12	57.18	1800	3600	62.95
		G-6 English department	3	30.5	12.81	7.69	85.78	1800	5400	62.95
		G-7 Examination office	2	30.5	8.54	5.12	57.18	1800	3600	62.95
		Vice principal room	1	30.5	4.27	2.56	28.59	1800	1800	62.95
		G-2 Library	4	30.5	17.08	10.25	114.37	1800	7200	62.95
	First floor	101 Class room	5	30.5	21.35	12.81	142.96	1800	9000	62.95
		102 Class room	5	30.5	21.35	12.81	142.96	1800	9000	62.95
		103 Economics department	1	30.5	4.27	2.56	28.59	1800	1800	62.95
		104 Commerce department	2	30.5	8.54	5.00	55.82	1801	3602	64.53
		105 Politics department	1	30.5	4.27	2.38	26.55	1803	1803	67.91
		106 Class room	5	30.5	21.35	11.59	129.34	1804	9020	69.74
		107 Class room	5	30.5	21.35	11.29	125.94	1805	9025	71.66
		Seminar hall	7	30.5	29.89	15.37	171.55	1806	12642	73.69
	Second floor	201 Class room	5	30.5	21.35	10.68	119.13	1807	9035	75.84
		202 Class room	5	30.5	21.35	10.37	115.73	1808	9040	78.11
		203 Class room	2	30.5	8.54	4.03	44.93	1809	3618	80.52
		204 BBA department	2	30.5	8.54	3.90	43.57	1810	3620	83.09
		205 Junior staff room	2	30.5	8.54	3.78	42.21	1811	3622	85.81

		206 Computer lab	6	30.5	25.62	10.61	118.45	1813	10878	91.83
		207 Chemistry lab	1	30.5	4.27	1.71	19.06	1814	1814	95.17
		208 B-Voc lab	8	30.5	34.16	13.18	147.04	1815	14520	98.75
		301 Physics lab	6	30.5	25.62	9.52	106.20	1816	10896	102.60
		302 Class room	1	30.5	1.07	0.38	4.25	1817	1817	427.05
<b>Girl's hostel</b>	All	Visitor room	1	30.5	4.27	1.40	15.66	1819	1819	116.17
		Servant room	1	30.5	4.27	1.34	14.98	1820	1820	121.52
		Warden room	1	30.5	4.27	1.28	14.30	1821	1821	127.38
		Sick room	1	30.5	4.27	1.22	13.62	1822	1822	133.82
		Reading room	1	30.5	4.27	1.16	12.93	1823	1823	140.94
		All rooms	1	30.5	4.27	1.10	12.25	1824	1824	148.85
<b>Gymkhana</b>		Gym room	5	30.5	21.35	4.88	54.46	1826	9130	167.64

<b>Total fan savings</b>		
<b>Monthly consumption</b>	466.22	kWh/month
<b>New monthly consumption</b>	235.18	kWh/month
<b>New monthly saving</b>	231.04	kWh/month
<b>New monthly saving</b>	2578.41	INR/month
<b>Total Investment</b>	204211	INR
<b>Payback period</b>	<b>79.20</b>	<b>months</b>

## SAVING BY CHANGINF THE MSEDCL TARIFF

### OBSERVATION

1. It is observed that college paying electricity bills by commercial tariff rate which average 7.07 INR/kWh
2. But for institutions actual MSEDCL tariff is “Public Services- Others” with average unit rate is 4.57 INR/kWh

### RECOMMENDATION

1. It is recommended that to change the tariff of electricity bill from commercial to public services-others.

### SAVINGS MEASURES

### SAVINGS DUE TO MAINTAINING POWER FACTOR

Particulars- tariff change		
Monthly consumption	1632	kWh/month
Average unit rate by commercial tariff	11.16	kWh/month
Average unit rate by public services-others	8	kWh/month
Monthly saving	5157.12	INR/month
Yearly saving	61885.44	INR/month
Total Investment	0	INR
Payback period	0	months

## SOLAR PV SYSTEM WITH NET METER

### INTRODUCTION

Solar photovoltaic system- with Net meter



Maharashtra Government has new solar energy policy name as “Rooftop Solar with Net Meter system”. Maharashtra government encourages to install rooftop solar PV system with net meters at available roof top of consumers. This helps to reduce the burden on existing conventional fuel fired power plants in the country.

Solar Rooftop Net meter system helps consumers to reduce the electricity consumption in the electricity bill due to net meter.



## OBSERVATION

1. It is observed that in the college has installed Solar PV system for solar energy generation.
2. Existing total capacity of Solar PV system is 20 kWp i.e 15 kWp on girl's hostel building and 5 kWp on college building
3. Energy consumption of the college is average 1,632 kwh/months
4. College still has huge rooftop space available for Solar PV system to expand.

## RECOMMENDATION

1. College can increased the capacity of Solar PV system on rooftops as per existing energy consumption and rooftop space available on various available rooftop space of the buildings on CAPEX model.
2. Or College can increased the capacity of Solar PV system on OPEX model i.e Built Operate Transfer (BoT) model where no need of investment by college.

## SAVINGS MEASURES

### SAVINGS DUE TO SOLAR PV SYSTEM INSTALLATION AND AVAILABLE ROOFTOP SPACE



Auditorium building





Rooftop available



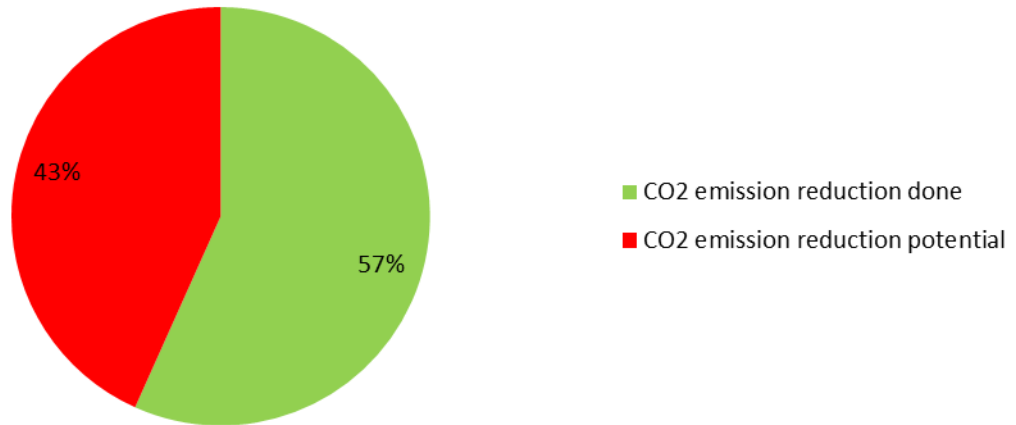
<b>Particulars- Solar PV system- Building rooftop</b>		
<b>Capacity of Solar PV system to be increased</b>	14	kWp
<b>Units generation per month</b>	1575	kWh/month
<b>Units generation per year</b>	18900	kWh/year
<b>CO2 emission reduction/year</b>	16.07	tonnes of CO2e
<b>Cost saving</b>	17577	INR/month
<b>Investment</b>	630000	INR
<b>Payback period</b>	2.99	year

## CO<sub>2</sub> EMISSION REDUCTION

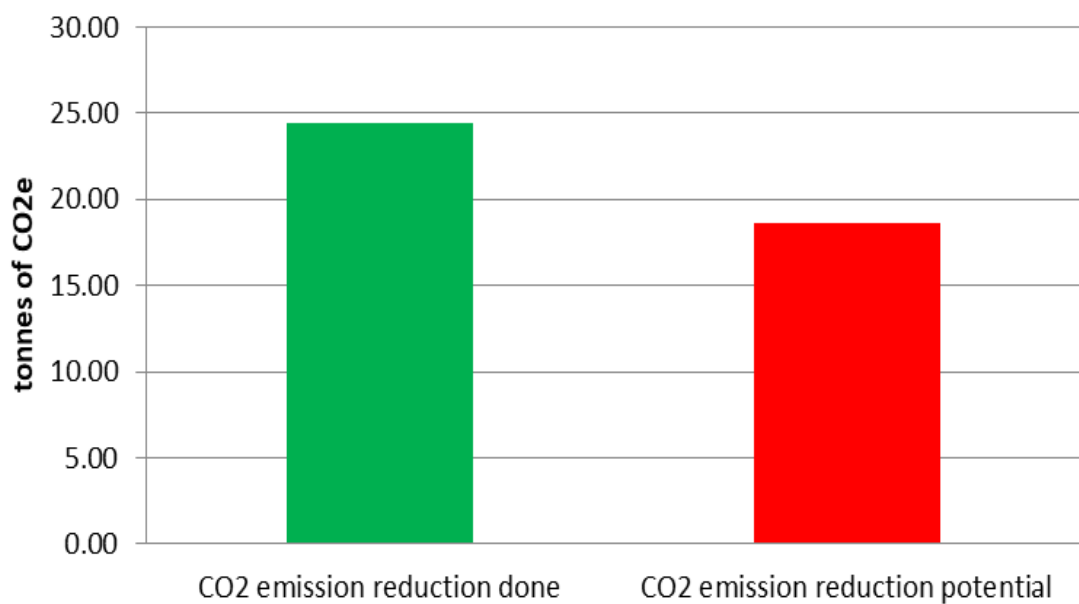
CO <sub>2</sub> emission reduction done due to new energy efficient and renewable energy		
Energy saved by new energy efficient technology	1680	kWh/year
Energy saved by renewable energy	27000	kWh/year
<b>Total CO<sub>2</sub> emission reduction/year achieved</b>	<b>24.38</b>	<b>tonnes of CO<sub>2</sub>e</b>

CO <sub>2</sub> emission reduction potential		
Energy saving potential by new energy efficient technology	2988	kWh/year
Energy saving potential by renewable energy	18900	kWh/year
<b>Total potential of CO<sub>2</sub> emission reduction/year</b>	<b>18.61</b>	<b>tonnes of CO<sub>2</sub>e</b>

### % CO2 emission reduction done and having potential in tonnes of CO2e





### CO2 emission reduction



## ENERGY CONSERVATION BY SAVING OF WATER

### 1. TAP WATER REDUCER

Conventional Tap water system	Tap water system with Reducer
	
<p>Existing tap water system uses more water while during purpose of washing of utensils, hands etc in college.</p>	<p>Used reducer to tap water for purpose of washing of utensils, hands etc which reduces flow of water and ultimately saves the water.</p>
<p>❌</p>	<p>✓</p>

### RECOMMENDATION

It is recommended that to use water reducer for water taping for save the water.

## ANNEXTURE

### ENERGY EFFICIENT FANS

	
	28 watts
	18watts or 8 watts as per size and load