ENERGY AUDIT REPORT

A.B.M.S PARISHAD'S

SHRI SHAU MANDIR MAHAVIDYALAYA

Laxmi Nagar, Parvati Ramana,

Pune, Maharashtra 411009

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Conducted and Submitted by

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ENERFUTURE

CERTIFICATE

Enerfuture Technology Private Limited

Verified and Certified that

A.B.M.S. PARISHAD'S

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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.

ENERFUTURE TECHNOLOGY PRIVATE LIMITED * PUNE *

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ACKNOWLEDGEMENT

Enerfuture thanks the management of Shri Shau Mandir Mahavidyalaya, Pune for assigning this important work of Energy Audit of Shri Shau Mandir Mahavidyalaya, 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 Enrfuture Pvt Ltd is grateful to all the following personnel of Shri Shau Mandir Mahavidyalaya, Pune for their kind cooperation, furnishing required data, analysis report and support offered during our visit.

Name	Designation
Prof. Zeenat Khan	Principal
Prof.Patil	Vice-Principal
Mr P.M. Phadatare	O.S.
Mr V.M. Jadhav	Campus Supervisor
Mr. Sudam kambale	

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, BEE Certified Energy Manager
2	Mr Vinay Mulay	M.Tech (Energy Studies), ISO 50001 Lead Auditor, BEE Accredited Energy Auditor
3	Mr YogeshKuwar	M.Tech (Energy Studies), IGBC IGBC Accredited Professional, Post Graduate Diploma in Environmental law and Policy (PGDELP), BEE Certified Energy Manager
4	Mr Prasad Kalal	B.E Electrical, BE (Electrical), Electrical Supervisor(51242), Electrical Contractor(37364)
5	Mr Prashant Shinde	B.E Mechanical, IGBC Accredited Professional, Certified Energy Auditor

LIST OF INSTRUMENTS USED

1. Single Phase Power Analyzer
2. Ultrasonic Water Flow meter
3. Distance Meter (Bosch)
4. Lux meter (Meco)
5. TD meter
6. CO2 meter
7. Air quality measure meter
8. Sound meter

CONTENTS

EXCECUTIVE SUMMARY

Sr no	Location	Area	Proposed Action	Expected Result	Saving Potential	Monetary Saving	Investment	Payback Period
				monthly	kWh	INR	INR	months
1	**Main college building**	Lightning recommendations	Replace existing old conventional 1x36W and 2x36W FTL with new energy efficient 1x18W LED tube light battens	Existing lighting consumption= 216.89kWh Expected energy consumption= 96.48kWh Total energy saved per month=216.89-96.48=120.41kWh	120.41	1204.1	12,000	9.97
	Boy's hostel	Lightning recommendations	Replace existing old conventional 1x36W with new energy efficient 1x18W LED tube light battens	Existing lighting consumption= 405.90kWh Expected energy consumption= 203.10kWh Total energy saved per month=405.90-203.10=202.80kWh	202.8	2133.46	22,500	10.55
	Girl's hostel	Lightning recommendations	Replace existing old conventional fans which consumes 65W with new energy efficient fans which consumes 28W at places where is maximum usage	Existing lighting consumption= 301.55kWh Expected energy consumption= 149.53kWh Total energy saved per month=301.55-149.53=152.02kWh	152.02	2298.54	18,600	8.09

2	**Main college building**	Fan recommendations	Replace existing old conventional fans which consumes 65W with new energy efficient fans which consumes 28W at places where maximum usage	Existing fan consumption= 387.01kWh Expected energy consumption= 166.71kWh Total energy saved per month=387.01-166.71=220.3kWh	220.3	2203	1,27,200	57.74
	Boy's hostel	Fan recommendations	Replace existing old conventional fans which consumes 65W with new energy efficient fans which consumes 28W at places where is maximum usage	Existing fan consumption= 590.10kWh Expected energy consumption= 289.8kWh Total energy saved per month=590.10-289.8=300.3kWh	300.3	3159.16	1,65,600	52.42
	Girl's hostel	Fan recommendations	Replace existing old conventional fans which consumes 65W with new energy efficient fans which consumes 28W at places where is maximum usage	Existing fan consumption= 341.25kWh Expected energy consumption= 147.0kWh Total energy saved per month=341.25-147.0=194.25kWh	194.25	2937.06	84,000	28.6
3	**Main college building**	Electricity duty recommendations	As per Maharashtra electricity duty act-1948 and revised-2016 electricity duty is exempted for colleges, its hostels etc	Average monthly electricity duty of main college =1000 Rs	-	12993.38	10,000	0.77
	Boy's hostel			Average monthly electricity duty of boy's hostel=5912 Rs				
	Girl's hostel			Average monthly electricity duty of girl's hostel=6081.38 Rs				

4	**Girl's hostel**	Tariff change	Existing tariff of girl's college is LT-3 phase residential. But applicable tariff to girl's hostel is LT-X-B-I (0-20kW) as per MSEDCL tariff order	Average monthly saving=13395.2 Rs	-	13395.2	50,000	3.73
Total					**931.95**	**40323.9**	**489900**	**21.48**

COLLEGE INTRODUCTION

INTRODUCTION

Akhil Bharatiya Maratha Shikshan Parishad is an offshoot of the reformist thoughts initiated and spread by great revolutionaries like Mahatma Jyotiba Phule who established the 'Satyashodhak Samaj' and created awareness about the significance of education. Shrimant Sayajirao Gaikwad of Baroda too contributed greatly to the educational upliftment of the ordinary masses. A well-known advocate from Pune Mr. Gangaram Bhau Mhaske duly felt the need for the spread of English education amongst people. However at the same time he felt the economic backwardness of people and the expensive nature of English education and in order to resolve this impasse, in 1885 he founded 'Deccan Association' and raised funds for mass education. Shrimant Sayajirao Gaikwad started an annual grant for the Association and supported it greatly. Great King of Kolhapur, Rajarshi Shahu Maharaj too sanctioned grants to the institute.

Rajarshi Shahu had undertaken the task of the upliftment of the socially and economically backword sections of society. In 1901 he set up a Students' Hostel where children from all walks of life and all castes were admitted. It was indeed a great revolutionary step ahead in the path of social progress. And such revolutionary acts gave way to a public discussion in the newspapers on the need for an Association/Federation of the backward classes. Shri Narayan Lokhande in his paper 'Deenbandhu' initiated such discussion which was positively responded to by Shrimant Sayajirao Gaikwad with an assurance of financial support. In one of his editorials in 1906 Shri Lokhande mentioned that there was a need for a social and educational institute which would not delimit its efforts to just one or the other community but would adopt an all inclusive, comprehensive approach which would

understand and incorporate all the backward sections of the nation equally. This revolutionary thought led to the organisation of the very first educational conference in 1907 at Dharvad.

Thus the A.B.M.S. Parishad is the oldest educational institute founded in the first decade of the 20th Century. It is undoubtedly the "mother institute" of many other educational institutes in Maharashtra. The Parishad with the able efforts by various social reformists, revolutionaries and intellectuals including journalists like Mr. Lokhande and Mr. Bhagvanrao Patekar of 'Jagriti' initiated a great social, educational movement in the 20th century. Remarkably enough it was a joint venture which included the ordinary, common masses as well as the rulers. Accordingly on account of such joint and honest efforts academic programmes began all over; boardings, schools and colleges were established and obviously society started adopting a progressive look.

Today all over Maharashtra there is a great network of educational institutions viz. Shri Shivaji Maratha Society, Pune; Maratha Shikshan Prasarak Mandali, Solapur; Maratha Vidya Prasarak Samaj, Jalgaon; Maratha Unnati Samaj, Nagpur; Shri Shivaji Maratha Society, Amaravati; Shri Shahu Maratha Boarding, Baramati; Many more institutes have been functional at Mumbai, Nashik, Dhule, Dharvad, Jabalpur, Zat, Akkalkot, Ichalkaranji, Bhusawal etc. All these institutions have their roots in the A.B.M.S. Parishad, Pune.

It was indeed remarkable that this mass movement of education and social progress was promoted and encouraged by the rulers who did not want their subject to remain ignorant and blind. Contrary to ordinary rulers who sought their own well-being at the cost of their people these rulers like Rajarshi Shahu Maharaj of Kolhapur, Shrimant Sayajirao Maharaj Gaikwad of Baroda and Shrimant Alijabahadur Madhavrao Maharaj Shinde of Gwalior, themselves had a great desire for social welfare and change. Besides their attitude towards education was devoid any vested political or commercial interests. This pure concern on the part of the kings along with the mass inclination towards betterment brought about a great social change and helped the Parishad attain its goals.

There was, however, a phase when the Parishad fell short of financial support which is the backbone of any social institution. It is then that Karmaveer Bhausaheb Hirey came forward and in 1948, in the capacity of the General Secretary of the Paishad he rejuvenated the slack spirit of work and once again the Parishad was on its glorious path. It is Karmaveer Hirey's efforts which won 67 acres of land from the Government of Maharashtra for an educational complex in Pune – the city known for its education and culture. During the 7 years from 1960 to 1967 Shri Shahu Mandir Mahavidyalaya, Karmaveer Bhausaheb Hirey High-school and Jedhe-More Boys' Hostel were established in Pune. Since then the Parishad has never ceased to progress.

The once dry and desert-like area of 67 acres at the foot of the Parvati hill has been meticulously developed and preserved over a period of a hundred years. More than 2 lakh trees have been planted. Strenuous efforts have been made to retain the natural beauty of this area and to beautify it even more. As a result of this great contribution to environment the Govt. of Maharashtra awarded the Parishad with the 'Vanashree Puraskar' in 1996 and the Pune Municipal Corporation honoured it with the 'Harit Pune Puraskar' in the year 2000.

COLLEGE PROFILE

A.B.M.S. Parishad, founded by a team of renowned educationists and leading social reformers of Maharashtra aims at educating the masses and spreading education among those who have been deprived of it for generations. We follow the footprints of these leaders. Shri Shahu Mandir

Mahavidyalaya, established in 1960, is one of the attempts of the A.B.M.S. Parishad to take education to the masses. It is one of the several educational units of the A.B.M.S. Parishad spread all over Maharashtra. The Parishad aims at reaching out to people, creating awareness about the importance of education and the college is an offspring of such efforts. Students from lower stratum of society and rural background are our main target group. We try to provide quality education to the students who are socially, economically and academically backward, as a result of which even a student of average intellect gather sufficient confidence to meet the demands of the world by the end of his/her graduation.

Inspired by the great legacy of our institution, keeping in view the objectives of the national policy on education and seeking the fulfillment of the needs of society, our college is determined to achieve the following goals:

1. To promote education among the masses particularly among the rural and urban downtrodden, socially and economically backward sections of society.
2. To develop overall personality of the students'
3. To make students physically strong and spiritually and academically sound.
4. To promote values of democracy, secularism, national integration, gender equality, protection of environment etc. among the students.
5. To ensure that students develop knowledge, skills and attitudes for gainful employment and self-employment.
6. To promote women education.
7. To improve the quality of academic and administrative staff.
8. To promote healthy academic atmosphere and welfare of students.
9. To interact with staff, farmers, workers, industries, business organizations, social and charitable organizations so as to understand their basic needs, problems, views etc.

The college offers degree courses in B.A., B.Com., BBA, BBA (CA)., Post-graduation in Commerce, English, Marathi, & Economics. The College also offers employment oriented Short Term Courses like Tally, Basic Beauty Culture, Spoken English etc. The College is affiliated to Savitribai Phule Pune University. The college has NCC, NSS, a competitive examination center, central library, two computer laboratories, Commerce computer laboratory, language laboratory, Vidyarthini Manch, Adult, Continuing Education and Extension department, Extra Mural Board, Literary Association, Gymkhana, hostels, canteen, vehicle parking, grievance redressal cells, welfare schemes, earn & learn scheme, employees' Cooperative Credit society etc.

The College campus is spread over a vast area of 67 acres and has a very beautiful and picturesque campus covered with a large number of trees which provide shade, beauty and a very invigorating environment for serious studies. The college has very large sports ground with the background of Parvati hill. There is a long, closed loop walking track. It is a wonderful sight at every dawn and dusk to see a large number of people jogging on this track surrounded by beautiful landscape and also spending their leisure time in the beautiful garden around the majestic statue of Rajarshi Shahu Maharaj.

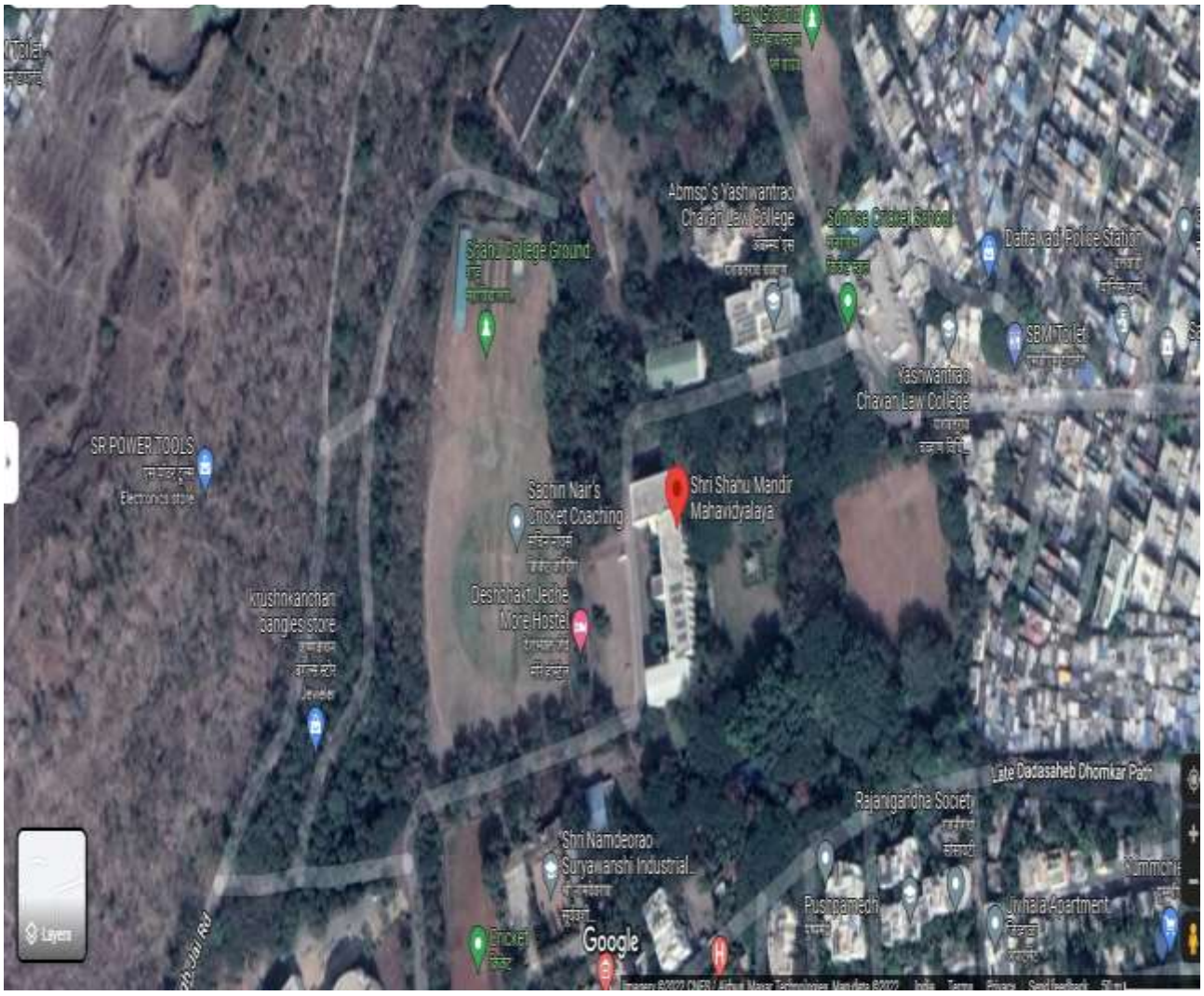
VISSION

Our Motto to spread and create awareness about education among common masses, particularly those who have been deprived of education for generations.
To provide quality education particularly to rural, backward classes and economically weaker

MISSION

"To serve the needs of society in general and the downtrodden classes in particular by imparting knowledge and developing skills and attitudes; to inculcate in them values of life to emerge as useful citizens and fully – developed individuals."
"To nourish, nurture and develop the all-round personality of students, to enable them to obtain gainful employment or self-employment".

LOCATION



ELECTRICITY BILL SUMMARY

The Shri Shau Mandir Mahavidyalaya, Pune have three number of MSEDCL three phase LT electricity connections in the Main college building and hostels

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

ELECTRICITY BILL SUMMARY

1. MAIN COLLEGE BUILDING ELECTRICITY BILL SUMMARY

Meter No	**160240191081**				
BU	**4605**				
Connected load	**15**				**kW**
Meter	**LT-X-B-I, 0-20kW Pub Sector others 3-phase**				
	Total units	**Adjusted units**	**Electricity duty**	**Total Bill**	**Average Unit Rate**
	kWh	**kWh**	**Rs**	**Rs/month**	**Rs/kWh**
Aug	847	0	1365.35	7943.57	9.38
Sep	1044	0	1724.89	10033.01	9.61
Oct	1289	0	2258	13126.92	10.18
Nov	1223	0	2243.46	13037.18	10.66
Dec	0	0	0	350	0.00
Jan	0	0	0	350	0.00
Feb	3785	1957	3446.36	20230.19	5.34
Mar	668	291	478.45	2812.23	4.21
Apr	640	1	74.96	432.12	0.68
May	541	0	0	350	0.65
Jun	770	257	429.13		0.00
Jul	493	197	312	1835.23	3.72
Aug	836	207	1028.44	6045.52	7.23
Average	**934**		**13361**	**6379**	

2. BOY'S HOSTEL ELECTRICITY BILL SUMMARY

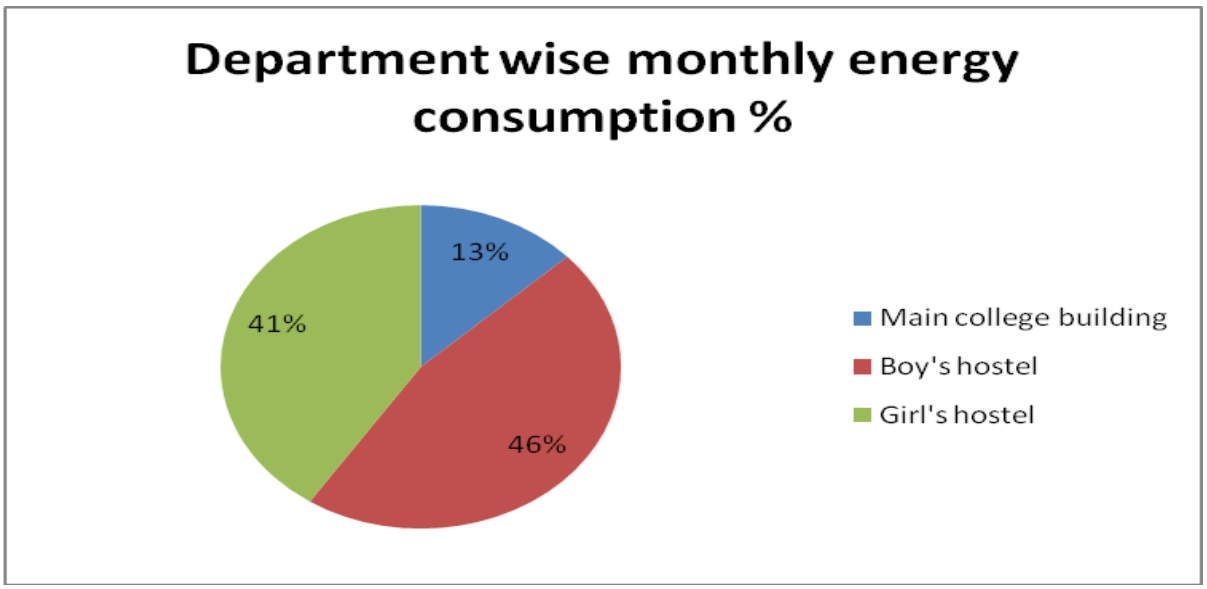
Meter No	170012480744			
BU	4605			
Connected load	1			kW
Meter	LT-X-B-I, 0-20kW Pub Sector others 3-phase			
	Total units	Electricity duty	Total Bill	Average Unit Rate
	kWh	Rs	Rs/month	Rs/kWh
Sep	3066	5172.8	30082.35	9.81
Oct	3748	6662.81	38729.29	10.33
Nov	1983	3667.1	21308.72	10.75
Dec	2150	3741.33	21751.57	10.12
Jan	2627	4700.26	27319.94	10.40
Feb	2627	4775.82	28017.98	10.67
Mar	2627	4625.13	27149.73	10.33
Apr	100	197.76	1158.5	11.59
May	10485	18728.87	109910.31	10.48
Jun	2097	3838.91	22518.72	10.74
Jul	5070	9184.9	53887.83	10.63
Aug	3192	5648.29	33152.69	10.39
Average	**3314**	**70944**	**34582**	**10.52**

3. GIRL'S HOSTEL ELECTRICITY BILL SUMMARY

Meter No	160240583884			
BU	4605			
Connected load	25			kW
Meter	LT-I, Residential 3-phase			
	Total units	Electricity duty	Total Bill	Average Unit Rate
	kWh	Rs	Rs/month	Rs/kWh
Sep	3948	8350.96	60544.48	15.34
Oct	4424	9138.9	66261.45	14.98
Nov	2500	5290.51	38356.18	15.34
Dec	2868	5736.95	41593.12	14.50
Jan	3173	6486.48	47032.43	14.82
Feb	3429	7169.6	51979.75	15.16
Mar	3269	6630.62	48072.2	14.71
Apr	2780	5968.69	43280.19	15.57
May	2568	5622.14	40769.21	15.88
Jun	1114	2192.08	15893.77	14.27
Jul	2111	4516.97	32748.21	15.51
Aug	2763	5872.61	42576.88	15.41
Average	**2912**	**72977**	**44092**	**15.12**

TOTAL DEPARTMENT WISE % ENERGY CONSUMPTION

Facility	Total units	Solar units generation	Amount	Average unit rate	% of energy consumption
	kWh/month	kWh/month	Rs/month	Rs/kWh	%
Main college building	934	416	6379	6.83	13.04
Boy's hostel	3314	0	34582	10.44	46.28
Girl's hostel	2912	0	44092	15.14	40.67
Total	**7160**	**416**	**85053**	**32.40637**	**100**



OBSERVATION

1. Total monthly energy consumption of the college is 7160 units.
2. Total monthly billing is Rs 85,053/-
3. Girl's hostel energy consumption is more and it's approximately 46% of total energy use.
4. Boy's hostel energy consumption is second after girl's hostel and it's 41% of total energy use.
5. College's energy consumption is less due to implementation of solar photovoltaic system and its 13% of total energy use.
6. 10kWp Solar PV system is installed in main college building as a renewable energy source.

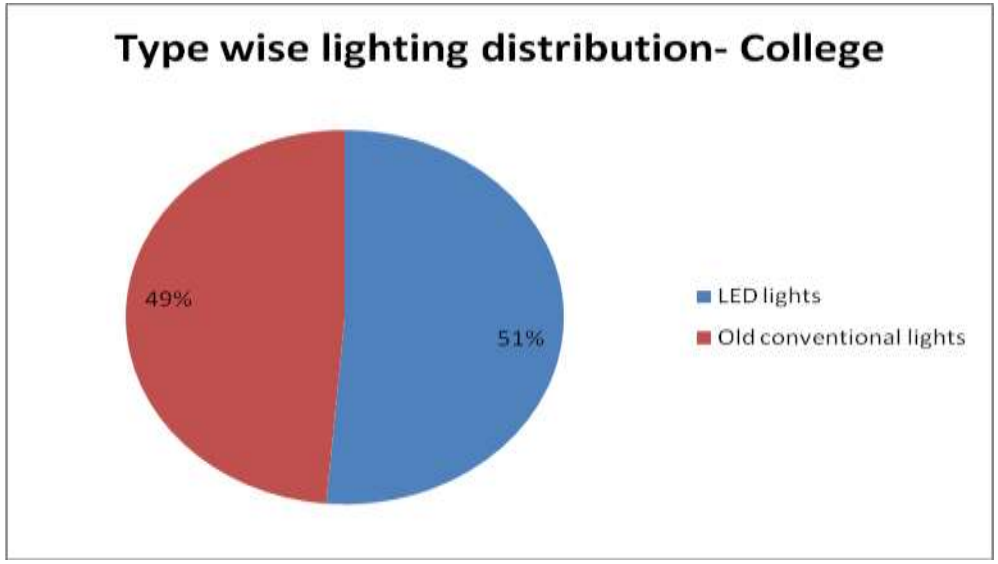
ENERGY PERFORMANCE ASSESSMENT OF LIGHTING

1. MAIN COLLEGE BUILDING

OBSERVATION

College has installed new energy efficient LED lighting in the main college building. There are old conventional lightings are also in the college in use.

Type	Quantity	kW load	% load
LED lights	38	0.73	51.35
Old conventional lights	36	1.37	48.65
Total	**74**	**2.10**	**100**



PERFORMANCE ASSESSMENT OF LIGHTING SYSTEM

Floor	Room	Name	Light Type	Type	Ballast	Qty	Wattage	Hours of usage	No of Days in a month	Monthly consumption
						No	watt	hrs	days	kWh/day
Ground floor		Staircase	LED	1x20W	EC	1	20	1	25	0.50
		Parking	LED	1x12W	EC	11	12	5	25	16.50
		Street light	LED	1x30W	EC	4	40	11	25	44.00
	1	Counselling cell	LED	1x20W	EC	2	20	0.25	25	0.25
	2	Room 1	LED	1x20W	EC	2	25	0.25	25	0.31

	3	Ladies staff room	LED	1x20W	EC	1	20	0.25	25	0.13
	4	Gymkhana	LED	1x20W	EC	4	20	0.25	25	0.50
Ground floor			FTL	1x36W	MC	1	40	0.25	25	0.25
	5	Store room	LED	1x20W	EC	1	20	0.1	25	0.05
1st Floor	109	College office	LED	2x20W	EC	2	20	8	25	8.00
			LED	1x20W	EC	1	20	8	25	4.00
			FTL	2x36W	EC	2	36	8	25	14.40
		Cash room	FTL	2x36W	EC	2	36	8	25	14.40
1st Floor	108	Faculty room	FTL	1x36W	EC	1	36	7	25	6.30
			FTL	1x40W	EC	1	40	7	25	7.00
	107	Examination office	LED	2*20W	EC	2	20	7	25	7.00
		Principal office	FTL	2x36W	EC	2	36	5	25	9.00
			FTL	1x36W	EC	1	36	0.25	25	0.23
			LED	1x12W	EC	2	12	0.25	25	0.15
		1st floor passage	FTL	1x36W	EC	4	36	8	25	28.80
	101	BA LLB-I-A	FTL	1x36W	EC	2	36	5	25	9.00
			LED	1x20W	EC	1	20	5	25	2.50
	102	BA LLB-I-B	FTL	1x36W	MC	1	40	5	25	5.00
			LED	1x20W	EC	3	20	5	25	7.50
	103	BA LLB-II	FTL	1x36W	MC	1	40	5	25	5.00
			LED	1x20W	EC	3	20	5	25	7.50
	104	Women cell	FTL	1x36W	EC	1	36	0.1	25	0.09
	105	Ladies common cell	FTL	1x36W	EC	1	36	0.1	25	0.09
		Gent's toilet	LED	1x20W	EC	2	20	7	25	7.00
		Ladies’ toilet	LED	1x20W	EC	2	20	7	25	7.00
2nd Floor		Library	FTL	1x36W	EC	4	36	8	25	28.80

			LED	1x20W	EC	4	20	8	25	16.00
			LED	1x12W	EC	2	12	5	25	3.00
		Reference library	FTL	1x36W	EC	2	36	1	25	1.80
			FTL	1x40W	EC	1	40	1	25	1.00
			LED	1*20W	EC	3	20	1	25	1.50
		Computer room	LED	1x12W	EC	2	12	1	25	0.60
		2nd floor passage	LED	1x12W	EC	3	12	8	25	7.20
	201	LLB-1-A	FTL	1x36W	EC	2	36	5	25	9.00
			LED	1x20W	EC	3	20	5	25	7.50
	202	LLB-1-B	FTL	1x36W	EC	1	36	5	25	4.50
			FTL	1x40W	EC	1	40	5	25	5.00
			LED	1*20W	EC	3	20	5	25	7.50
	203	LLB-1-C	FTL	1x36W	EC	1	36	5	25	4.50
			FTL	1x40W	EC	2	40	5	25	10.00
			LED	1*20W	EC	2	20	5	25	5.00
	206	Research cell	LED	1x12W	EC	2	12	5	25	3.00
		Gent's toilet	FTL	1x36W	EC	1	36	7	25	6.30
			LED	1x20W	EC	1	20	7	25	3.50
		Ladies’ toilet	LED	1x20W	EC	2	20	7	25	7.00
3rd Floor	301	Moot court hall	FTL	1x40W	MC	1	45	0.25	25	0.28
			FTL	1x40W	EC	1	40	0.25	25	0.25
			LED	1x20W	EC	1	20	0.25	25	0.13
	302	BA LLB-III	FTL	1x40W	EC	2	40	5	25	10.00
			LED	1x20W	EC	3	20	5	25	7.50
	303	BA LLB-IV	FTL	1x36W	EC	2	36	5	25	9.00
			LED	1x20W	EC	3	20	5	25	7.50

	304	Record room II	FTL	1x36W	EC	1	36	5	25	4.50
	305	Seminar hall	LED	1x20W	EC	12	20	0.5	25	3.00
			Halogen	250W	MC	2	250	0.05	25	0.63
	306	LLB I-D	LED	1x20W	EC	4	20	5	25	10.00
		LLM staff room	LED	1x20W	EC	1	20	5	25	2.50
		LLM staff toilet	FTL	1x36W	EC	1	36	0.25	25	0.23
		Gent's toilet	FTL	1x36W	MC	1	40	0.25	25	0.25
			FTL	1x40W	MC	1	45	0.25	25	0.28
		Ladies' toilet	FTL	1x36W	MC	1	40	0.25	25	0.25
			FTL	1x40W	MC	1	45	0.25	25	0.28
4th Floor	401	LLB II-A	FTL	1x36W	EC	1	36	2	25	1.80
	402	LLB II-B	FTL	1x36W	EC	1	36	2	25	1.80
	403	LLB II-C	FTL	1x36W	EC	1	36	2	25	1.80
	404	Record room III	FTL	1x36W	EC	1	36	0.1	25	0.09
		Gent's toilet	LED	1x20W	EC	2	20	0.1	25	0.10
		Ladies' toilet	LED	1x20W	EC	2	20	0.1	25	0.10
		4th floor passage	LED	1x12W	EC	2	12	0.1	25	0.06
		Staircase	LED	1x20W	EC	3	20	0.1	25	0.15
							2346.00			**407.61**

ENERGY SAVING MEASURES

Floor	Room	Name	Light Type	Qty	Watt	Mthly kWh	Change	New Qty	New mthly kWh	Mthly saving kWh	Mthly saving	Total inv	Payback period

					no	W	kWh		No	kWh	kWh	Rs	Rs	months
Ground floor			FTL	1x36W	1	40	0.25	LED-1x18W	1	0.11	0.14	1.38	250	181.82
			FTL	2x36W	2	36	14.4	LED-1x18W	1	3.60	10.80	108.00	250	2.31
		Cash room	FTL	2x36W	2	36	14.4	LED-1x18W	1	3.60	10.80	108.00	250	2.31
1st Floor	108	Faculty room	FTL	1x36W	1	36	6.3	LED-1x18W	1	3.15	3.15	31.50	250	7.94
			FTL	1x40W	1	40	7	LED-1x18W	1	3.15	3.85	38.50	250	6.49
		Principal office	FTL	2x36W	2	36	9	LED-1x18W	1	2.25	6.75	67.50	250	3.70
			FTL	1x36W	1	36	0.225	LED-1x18W	1	0.11	0.11	1.13	250	222.22
		1st floor passage	FTL	1x36W	4	36	28.8	LED-1x18W	4	14.40	14.40	144.00	1000	6.94
	101	BA LLB-I-A	FTL	1x36W	2	36	9	LED-1x18W	2	4.50	4.50	45.00	500	11.11
	102	BA LLB-I-B	FTL	1x36W	1	40	5	LED-1x18W	1	2.25	2.75	27.50	250	9.09
	103	BA LLB-II	FTL	1x36W	1	40	5	LED-1x18W	1	2.25	2.75	27.50	250	9.09
	104	Women cell	FTL	1x36W	1	36	0.09	LED-1x18W	1	0.05	0.05	0.45	250	555.56
	105	Ladies common cell	FTL	1x36W	1	36	0.09	LED-1x18W	1	0.05	0.05	0.45	250	555.56
2nd Floor		Library	FTL	1x36W	4	36	28.8	LED-1x18W	4	14.40	14.40	144.00	1000	6.94
		Reference library	FTL	1x36W	2	36	1.8	LED-1x18W	2	0.90	0.90	9.00	500	55.56
			FTL	1x40W	1	40	1	LED-1x18W	1	0.45	0.55	5.50	250	45.45

	201	LLB-1-A	FTL	1x36W	2	36	9	LED-1x18W	2	4.50	4.50	45.00	500	11.11
	202	LLB-1-B	FTL	1x36W	1	36	4.5	LED-1x18W	1	2.25	2.25	22.50	250	11.11
			FTL	1x40W	1	40	5	LED-1x18W	1	2.25	2.75	27.50	250	9.09
	203	LLB-1-C	FTL	1x36W	1	36	4.5	LED-1x18W	1	2.25	2.25	22.50	250	11.11
			FTL	1x40W	2	40	10	LED-1x18W	2	4.50	5.50	55.00	500	9.09
		Gent's toilet	FTL	1x36W	1	36	6.3	LED-1x18W	1	3.15	3.15	31.50	250	7.94
3rd Floor	301	Moot court hall	FTL	1x40W	1	45	0.28125	LED-1x18W	1	0.11	0.17	1.69	250	148.15
			FTL	1x40W	1	40	0.25	LED-1x18W	1	0.11	0.14	1.38	250	181.82
	302	BA LLB-III	FTL	1x40W	2	40	10	LED-1x18W	2	4.50	5.50	55.00	500	9.09
	303	BA LLB-IV	FTL	1x36W	2	36	9	LED-1x18W	2	4.50	4.50	45.00	500	11.11
	304	Record room II	FTL	1x36W	1	36	4.5	LED-1x18W	1	2.25	2.25	22.50	250	11.11
		LLM staff toilet	FTL	1x36W	1	36	0.225	LED-1x18W	1	0.11	0.11	1.13	250	222.22
		Gent's toilet	FTL	1x36W	1	40	0.25	LED-1x18W	1	0.11	0.14	1.38	250	181.82
			FTL	1x40W	1	45	0.28125	LED-1x18W	1	0.11	0.17	1.69	250	148.15
		Ladies' toilet	FTL	1x36W	1	40	0.25	LED-1x18W	1	0.11	0.14	1.38	250	181.82
			FTL	1x40W	1	45	0.28125	LED-1x18W	1	0.11	0.17	1.69	250	148.15
4th Floor	401	LLB II-A	FTL	1x36W	1	36	1.8	LED-1x18W	1	0.90	0.90	9.00	250	27.78
	402	LLB II-B	FTL	1x36W	1	36	1.8	LED-1x18W	1	0.90	0.90	9.00	250	27.78
	403	LLB II-C	FTL	1x36W	1	36	1.8	LED-1x18W	1	0.90	0.90	9.00	250	27.78
	404	Record	FTL	1x36W	1	36	0.09	LED-1x18W	1	0.05	0.05	0.45	250	555.56

room III						
	216.89	**96.48**	**120.41**	**1204.10**	**12000**	**9.97**

Particulars		
Monthly consumption	216.89	kWh/month
New monthly consumption	96.48	kWh/month
New monthly saving	120.41	kWh/month
New monthly saving	1204.1	Rs/month
Total Investment	12000	Rs
Payback period	9.97	months

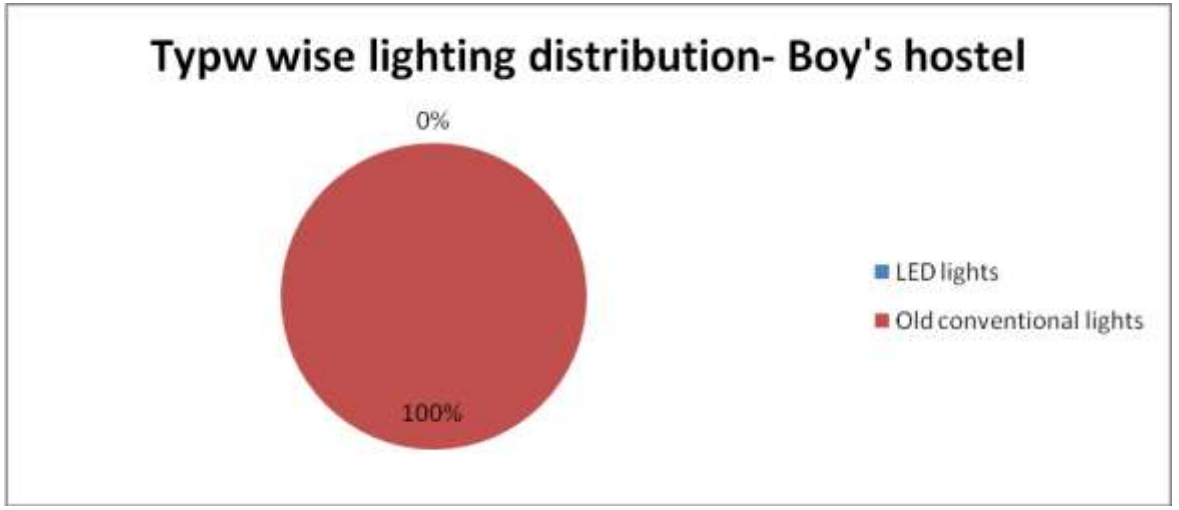
2. BOY'S HOSTEL

OBSERVATION

Boy's hostel has installed almost all old conventional lightings. Most of the lightings are FTL 1x36W

Type	**Quantity**	**kW load**
LED lights	0	0.00
Old conventional lights	76	2.02

Total	76	2.02



PERFORMANCE ASSESSMENT OF LIGHTING SYSTEM

Floor	Room	Name	Light Type	Type	Ballast	Qty	Wattage	Hours of usage	No of Days in a month	Monthly consumption
						No	watt	hrs	days	kWh/day
Ground floor	1	Room 1	FTL	1x36W	EC	1	36	6	25	5.40
	2	Room 2	FTL	1x36W	EC	1	36	6	25	5.40
	3	Room 3	FTL	1x36W	EC	1	36	6	25	5.40

	4	Room 4	FTL	1x36W	EC	1	36	6	25	5.40
	5	Room 5	FTL	1x36W	EC	1	36	6	25	5.40
	6	Room 6	FTL	1x36W	EC	1	36	6	25	5.40
	7	Room 7	FTL	1x36W	EC	1	36	6	25	5.40
	8	Room 8	FTL	1x36W	EC	1	36	6	25	5.40
	9	Room 9	FTL	1x36W	EC	1	36	6	25	5.40
	10	Room 10	FTL	1x36W	EC	1	36	6	25	5.40
	11	Room 11	FTL	1x36W	EC	1	36	6	25	5.40
	12	Room 12	FTL	1x36W	EC	1	36	6	25	5.40
	13	Room 13	FTL	1x36W	EC	1	36	6	25	5.40
	14	Room 14	FTL	1x36W	EC	1	36	6	25	5.40
	15	Room 15	FTL	1x36W	EC	1	36	6	25	5.40
	16	Room 16	FTL	1x36W	EC	1	36	6	25	5.40
	17	Room 17	FTL	1x36W	EC	1	36	6	25	5.40
	18	Room 18	FTL	1x36W	EC	1	36	6	25	5.40
	19	Room 19	FTL	1x36W	EC	1	36	6	25	5.40
	20	Room 20	FTL	1x36W	EC	1	36	6	25	5.40
	21	Room 21	FTL	1x36W	EC	1	36	6	25	5.40
	22	Room 22	FTL	1x36W	EC	1	36	6	25	5.40
	23	Room 23	FTL	1x36W	EC	1	36	6	25	5.40
		Bathroom 1	FTL	1x36W	EC	1	36	6	25	5.40
1st Floor	24	Room 24	FTL	1x36W	EC	2	36	11	25	19.80
	25	Room 25	FTL	1x36W	EC	1	36	6	25	5.40
	26	Room 26	FTL	1x36W	EC	1	36	6	25	5.40
	27	Room 27	FTL	1x36W	EC	1	36	6	25	5.40
	28	Room 28	FTL	1x36W	EC	1	36	6	25	5.40

	29	Room 29	FTL	1x36W	EC	1	36	6	25	5.40
	30	Room 30	FTL	1x36W	EC	1	36	6	25	5.40
	31	Room 31	FTL	1x36W	EC	1	36	6	25	5.40
	32	Room 32	FTL	1x36W	EC	1	36	6	25	5.40
	33	Room 33	FTL	1x36W	EC	1	36	6	25	5.40
	34	Room 34	FTL	1x36W	EC	1	36	6	25	5.40
	35	Room 35	FTL	1x36W	EC	1	36	6	25	5.40
	36	Room 36	FTL	1x36W	EC	1	36	6	25	5.40
	37	Room 37	FTL	1x36W	EC	1	36	6	25	5.40
	38	Room 38	FTL	1x36W	EC	1	36	6	25	5.40
	39	Room 39	FTL	1x36W	EC	1	36	6	25	5.40
	40	Room 40	FTL	1x36W	EC	1	36	6	25	5.40
	41	Room 41	FTL	1x36W	EC	1	36	6	25	5.40
	42	Room 42	FTL	1x36W	EC	1	36	6	25	5.40
	43	Room 43	FTL	1x36W	EC	1	36	6	25	5.40
	44	Room 44	FTL	1x36W	EC	1	36	6	25	5.40
	45	Room 45	FTL	1x36W	EC	1	36	6	25	5.40
	46/47	ITI class room 1	FTL	1x36W	EC	2	36	4	25	7.20
	48/49	ITI class room 2	FTL	1x36W	EC	2	36	4	25	7.20
	50/51	ITI class room 3	FTL	1x36W	EC	3	36	4	25	10.80
	52	Room 46	FTL	1x36W	EC	1	36	6	25	5.40
	53	Room 47	FTL	1x36W	EC	1	36	6	25	5.40
	54	Room 48	FTL	1x36W	EC	1	36	6	25	5.40
		Hall	FTL	1x36W	EC	14	36	6	25	75.60
		Bathroom 1	FTL	1x36W	EC	1	36	11	25	9.90
1st Floor		ITI office	FTL	1x36W	EC	3	36	6	25	16.20

								75	**1980**				**405.90**	

ENERGY SAVING MEASURES

Room	Name	Light Type		Qty	Watt	Mthly kWh	Change	New watt	New Qty	New mthly kWh	Mthly saving	Mthly saving	Total inv	Payback period
				No	W	kWh		W	No	kWh	kWh	Rs	Rs	months
1	Room 1	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
2	Room 2	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
3	Room 3	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
4	Room 4	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
5	Room 5	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
6	Room 6	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
7	Room 7	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
8	Room 8	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
9	Room 9	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
10	Room 10	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
11	Room 11	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
12	Room 12	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
13	Room 13	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
14	Room 14	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
15	Room 15	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
16	Room 16	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56

17	Room 17	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
18	Room 18	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
19	Room 19	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
20	Room 20	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
21	Room 21	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
22	Room 22	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
23	Room 23	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
	Bathroom 1	FTL	1x36W	1	36	5.4	LED-1x18W	19	1	2.85	2.55	26.83	300	11.18
24	Room 24	FTL	1x36W	2	36	19.8	LED-1x18W	18	2	9.9	9.9	104.15	600	5.76
25	Room 25	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
26	Room 26	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
27	Room 27	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
28	Room 28	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
29	Room 29	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
30	Room 30	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
31	Room 31	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
32	Room 32	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
33	Room 33	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
34	Room 34	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
35	Room 35	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
36	Room 36	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
37	Room 37	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
38	Room 38	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56

39	Room 39	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
40	Room 40	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
41	Room 41	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
42	Room 42	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
43	Room 43	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
44	Room 44	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
45	Room 45	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
46/47	ITI class room 1	FTL	1x36W	2	36	7.2	LED-1x18W	18	2	3.6	3.6	37.87	600	15.84
48/49	ITI class room 2	FTL	1x36W	2	36	7.2	LED-1x18W	18	2	3.6	3.6	37.87	600	15.84
50/51	ITI class room 3	FTL	1x36W	3	36	10.8	LED-1x18W	18	3	5.4	5.4	56.81	900	15.84
52	Room 46	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
53	Room 47	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
54	Room 48	FTL	1x36W	1	36	5.4	LED-1x18W	18	1	2.7	2.7	28.40	300	10.56
	Hall	FTL	1x36W	14	36	75.6	LED-1x18W	18	14	37.8	37.8	397.66	4200	10.56
	Bathroom 1	FTL	1x36W	1	36	9.9	LED-1x18W	18	1	4.95	4.95	52.07	300	5.76
	ITI office	FTL	1x36W	3	36	16.2	LED-1x18W	18	3	8.1	8.1	85.21	900	10.56
				75	**1980**	**405.9**			**75**	**203.1**	**202.8**	**2133.46**	**22500**	**10.69**

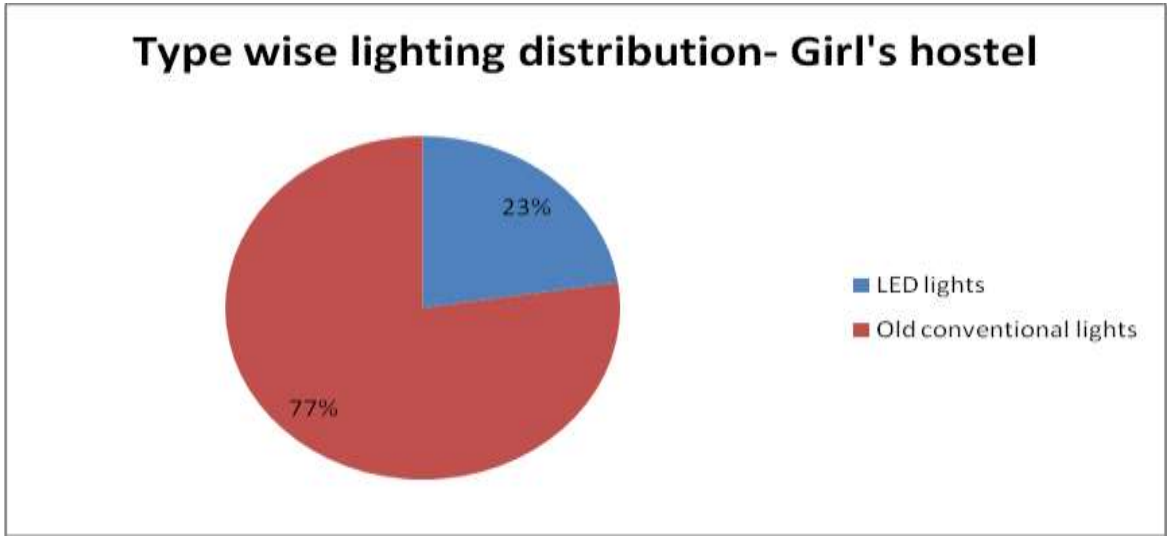
Particulars		
Monthly consumption	405.90	kWh/month
New monthly consumption	203.10	kWh/month
New monthly saving	202.80	kWh/month
New monthly saving	2133.46	Rs/month
Total Investment	22500	Rs
Payback period	**10.55**	**months**

3. GIRL'S HOSTEL

OBSERVATION

In girl's hostel still most of the room lightings are old conventional FTL 1x36W and CFL . At few places new energy efficient LED 1x20W lightings and street lights are used.

Type	Quantity	kW load	% load
LED lights	12	0.73	22.64
Old conventional lights	41	1.37	77.36
Total	**53**	**2.10**	**100**



PERFORMANCE ASSESSMENT OF LIGHTING SYSTEM

Room	Name	Light Type	Type	Ballast	Qty	Wattage	Hours of usage	No of Days in a month	Monthly consumption
					No	watt	hrs	days	kWh/day
1	Room 1	FTL	1x36W	EC	1	36	5	25	4.50
2	Room 2	FTL	1x36W	EC	1	36	5	25	4.50
3	Room 3	FTL	1x36W	EC	1	36	5	25	4.50
4	Room 4	FTL	1x36W	EC	1	36	5	25	4.50
5	Room 5	FTL	1x36W	EC	1	36	5	25	4.50
6	Room 6	FTL	1x36W	EC	1	36	5	25	4.50
7	Room 7	FTL	1x36W	EC	1	36	5	25	4.50
8	Room 8	FTL	1x36W	EC	1	36	5	25	4.50
9	Room 9	FTL	1x36W	EC	1	36	5	25	4.50
10	Room 10	FTL	1x36W	EC	1	36	5	25	4.50
11	Room 11	FTL	1x36W	EC	1	36	5	25	4.50
12	Room 12	FTL	1x36W	EC	1	36	5	25	4.50
13	Room 13	FTL	1x36W	EC	1	36	5	25	4.50
14	Room 14	FTL	1x36W	EC	1	36	5	25	4.50
15	Room 15	FTL	1x36W	EC	1	36	5	25	4.50
16	Room 16	FTL	1x36W	EC	1	36	5	25	4.50
17	Room 17	FTL	1x36W	EC	1	36	5	25	4.50
18	Room 18	FTL	1x36W	EC	1	36	5	25	4.50
19	Room 19	FTL	1x36W	EC	1	36	5	25	4.50
20	Room 20	FTL	1x36W	EC	1	36	5	25	4.50

21	Room 21	FTL	1x36W	EC	1	36	5	25	4.50
22	Room 22	FTL	1x36W	EC	1	36	5	25	4.50
23	Room 23	FTL	1x36W	EC	1	36	5	25	4.50
24	Room 24	FTL	1x36W	EC	1	36	5	25	4.50
25	Room 25	FTL	1x36W	EC	1	36	5	25	4.50
26	Room 26	FTL	1x36W	EC	1	36	5	25	4.50
27	Room 27	FTL	1x36W	EC	1	36	5	25	4.50
28	Room 28	FTL	1x36W	EC	1	36	5	25	4.50
29	Room 29	FTL	1x36W	EC	2	36	5	25	9.00
30	Room 30	FTL	1x36W	EC	2	36	5	25	9.00
31	Room 31	FTL	1x36W	EC	2	36	5	25	9.00
32	Room 32	FTL	1x36W	EC	2	36	5	25	9.00
	Passage ground	FTL	1x36W	EC	2	36	7	25	12.60
		LED	1x20W	EC	1	20	7	26	3.64
	Passage 1st floor	FTL	1x36W	EC	3	36	7	25	18.90
	Passage 2nd floor	FTL	1x36W	EC	3	36	7	25	18.90
	Passage 3rd floor	FTL	1x36W	EC	3	36	7	25	18.90
	Passage 4th floor	FTL	1x36W	EC	3	36	7	25	18.90
	Mess	FTL	1x36W	EC	2	36	5	25	9.00
		LED	1x20W	EC	5	20	5	25	12.50
		LED	1x12W	EC	3	12	5	25	4.50
		CFL	1x18W	EC	1	18	1	25	0.45
	Back outdoor room	FTL	1x36W	EC	2	36	3	25	5.40
		LED	1x20W	EC	1	20	7	25	3.50
		LED	1x50W	EC	2	50	2	25	5.00
	Street light	FTL	1x36W	EC	5	36	7	25	31.50
						1580			**325.69**

ENERGY SAVING MEASURES

Room	Name	Light Type		Qty	Watts	Monthly kWh	Change	New watts	New used Qty	New mthly kWh	Mthly saving	Mthly saving	Total inv	Payback period
				No	W	kWh		W	No	kWh	kWh	Rs	Rs	months
1	Room 1	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
2	Room 2	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
3	Room 3	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
4	Room 4	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
5	Room 5	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
6	Room 6	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
7	Room 7	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
8	Room 8	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
9	Room 9	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
10	Room 10	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
11	Room 11	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
12	Room 12	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
13	Room 13	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
14	Room 14	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
15	Room 15	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
16	Room 16	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
17	Room 17	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
18	Room 18	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
19	Room 19	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81

20	Room 20	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
21	Room 21	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
22	Room 22	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
23	Room 23	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
24	Room 24	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
25	Room 25	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
26	Room 26	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
27	Room 27	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
28	Room 28	FTL	1x36W	1	36	4.5	LED-1x18W	18	1	2.25	2.25	34.02	300	8.81
29	Room 29	FTL	1x36W	2	36	9	LED-1x18W	18	2	4.5	4.5	68.04	600	8.81
30	Room 30	FTL	1x36W	2	36	9	LED-1x18W	18	2	4.5	4.5	68.04	600	8.81
31	Room 31	FTL	1x36W	2	36	9	LED-1x18W	18	2	4.5	4.5	68.04	600	8.81
32	Room 32	FTL	1x36W	2	36	9	LED-1x18W	18	2	4.5	4.5	68.04	600	8.81
	Passage ground	FTL	1x36W	2	36	12.6	LED-1x18W	18	2	6.3	6.3	95.256	600	6.29
	Passage 1st floor	FTL	1x36W	3	36	18.9	LED-1x18W	18	3	9.45	9.45	142.884	900	6.29
	Passage 2nd floor	FTL	1x36W	3	36	18.9	LED-1x18W	18	3	9.45	9.45	142.884	900	6.29
	Passage 3rd floor	FTL	1x36W	3	36	18.9	LED-1x18W	18	3	9.45	9.45	142.884	900	6.29
	Passage 4th floor	FTL	1x36W	3	36	18.9	LED-1x18W	18	3	9.45	9.45	142.884	900	6.29
	Mess	FTL	1x36W	2	36	9	LED-1x18W	18	2	4.5	4.5	68.04	600	8.81
		CFL	1x18W	1	18	0.45	LED-1x5W	5	1	0.125	0.325	4.914	300	61.05
	Back outdoor room	FTL	1x36W	2	36	5.4	LED-1x18W	2	2	0.3	5.1	77.112	600	7.78
		LED	1x50W	2	50	5	LED-1x20W	20	2	2	3	45.36	600	13.22

	Street light	FTL	1x36W	5	36	31.5	LED-1x20W	20	5	17.5	14	211.68	1500	7.08
						301.55				**149.53**	**152.03**	**2298.62**	**18600**	**8.09**

Particulars		
Monthly consumption	301.55	kWh/month
New monthly consumption	149.53	kWh/month
New monthly saving	152.02	kWh/month
New monthly saving	2298.54	Rs/month
Total Investment	18600	Rs
Payback period	**8.09**	**months**

ENERGY PERFORMANCE ASSESSMENT OF FAN

1. MAIN COLLEGE BUILDING

OBSERVATION

College has installed old conventional induction motor fan which consumes 65W 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.

ENERGY SAVING MEASURES

Floor	Room	Name	Qty	Watt	Hours of usage	No of Days in a month	Mthly kWh	New change watt	New mthly kWh	Mthly saving	Mthly saving	Total inv	Payback period
			No	W	Hrs	Days	kWh	W	kWh	kWh	Rs	Rs	months
1st Floor	109	College office	4	65	8	25	52	28	22.4	29.6	296	9600	32.43
		Cash room	1	65	5	25	8.125	28	3.5	4.625	46.25	2400	51.89
	108	Faculty room	2	65	3	25	9.75	28	4.2	5.55	55.5	4800	86.49
	107	Examination office	2	65	3	25	9.75	28	4.2	5.55	55.5	4800	86.49
	101	BA LLB-I-A	4	65	3	25	19.5	28	8.4	11.1	111	9600	86.49
	102	BA LLB-I-B	3	65	3	25	14.625	28	6.3	8.325	83.25	7200	86.49
	103	BA LLB-II	4	65	3	25	19.5	28	8.4	11.1	111	9600	86.49
2nd Floor		Library	8	65	8	25	104	28	44.8	59.2	592	19200	32.43
	201	LLB-1-A	4	65	3	25	19.5	28	8.4	11.1	111	9600	86.49

202	LLB-1-B	3	65	3	25	14.625	28	6.3	8.325	83.25	7200	86.49
203	LLB-1-C	4	65	3	25	19.5	28	8.4	11.1	111	9600	86.49
206	Research cell	2	65	3	26	10.14	28	4.368	5.772	57.72	4800	83.16
302	BA LLB-III	3	65	3	33	19.305	28	8.316	10.989	109.89	7200	65.52
303	BA LLB-IV	4	65	3	35	27.3	28	11.76	15.54	155.4	9600	61.78
306	LLB I-D	3	65	3	40	23.4	28	10.08	13.32	133.2	7200	54.05
	LLM staff room	2	65	3	41	15.99	28	6.888	9.102	91.02	4800	52.74
		60				**387.01**		**166.71**	**220.3**	**1667.2**	**127200**	**76.30**

Particulars		
Monthly consumption of all fans	441.83	kWh/month
Total fans	92.00	nos
Fans to be replaced with new energy efficient fans	60.00	nos
Monthly consumption of 60 fans	387.01	kWh/month
New monthly consumption	166.71	kWh/month
New monthly saving	220.30	kWh/month
New monthly saving	2203	Rs/month
Total Investment	127200	Rs
Payback period	**57.74**	**months**

2. BOY'S HOSTEL

ENERGY SAVING MEASURES

Floor	Room	Name	Qty	watt	Hours of usage	No of Days in a month	Mthly kWh	change watt	New mthly kWh	Mthly saving	Mthly saving	Total inv	Payback period
			No	watt	hrs	days	kWh	watt	kWh	kWh	Rs	Rs	months
Ground floor	1	Room 1	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	2	Room 2	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	3	Room 3	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	4	Room 4	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	5	Room 5	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	6	Room 6	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	7	Room 7	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	8	Room 8	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	9	Room 9	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	10	Room 10	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	11	Room 11	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	12	Room 12	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	13	Room 13	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	14	Room 14	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	15	Room 15	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	16	Room 16	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	17	Room 17	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	18	Room 18	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11

	19	Room 19	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	20	Room 20	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	21	Room 21	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	22	Room 22	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	23	Room 23	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
1st Floor	24	Room 24	2	65	6	25	19.5	28	8.4	11.1	116.77	4800	41.11
	25	Room 25	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	26	Room 26	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	27	Room 27	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	28	Room 28	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	29	Room 29	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	30	Room 30	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	31	Room 31	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	32	Room 32	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	33	Room 33	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	34	Room 34	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	35	Room 35	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	36	Room 36	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	37	Room 37	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	38	Room 38	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	39	Room 39	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	40	Room 40	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	41	Room 41	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	42	Room 42	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	43	Room 43	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	44	Room 44	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
	45	Room 45	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11

	52	Room 46	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
		Room 50	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
		Room 51	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
		Room 52	1	65	6	25	9.75	28	4.2	5.55	58.39	2400	41.11
		Hall	17	36	6	25	91.8	28	71.4	20.4	214.61	40800	190.11
1st Floor		ITI office	2	36	6	25	10.8	28	8.4	2.4	25.25	4800	190.11
			69	**3452**			**590.1**		**289.8**	**300.3**	**3159.16**	**165600**	**52.42**

Particulars		
Monthly consumption of all fans	619.35	kWh/month
Total fans	75	nos
Fans to be replaced with new energy efficient fans	69	nos
Monthly consumption of 69 fans	590.10	kWh/month
New monthly consumption	289.8	kWh/month
New monthly saving	300.30	kWh/month
New monthly saving	3159.16	Rs/month
Total Investment	165600	Rs
Payback period	**52.42**	**months**

3. GIRL'S HOSTEL

ENERGY SAVING MEASURES

Room	Name	Qty	Watt	Hours of usage	No of Days in a month	Mthly kWh	Change watt	New mthly kWh	Mthly saving	Mthly saving	Total inv	Payback period
	Girl's hostel	No	watt	hrs	days	kWh	watt	kWh	kWh	Rs	Rs	months
1	Room 1	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
2	Room 2	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
3	Room 3	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
4	Room 4	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
5	Room 5	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
6	Room 6	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
7	Room 7	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
8	Room 8	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
9	Room 9	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
10	Room 10	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
11	Room 11	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
12	Room 12	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
13	Room 13	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
14	Room 14	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
15	Room 15	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
16	Room 16	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
17	Room 17	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60

18	Room 18	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
19	Room 19	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
20	Room 20	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
21	Room 21	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
22	Room 22	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
23	Room 23	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
24	Room 24	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
25	Room 25	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
26	Room 26	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
27	Room 27	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
28	Room 28	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
29	Room 29	1	65	6	25	9.75	28	4.2	5.55	83.92	2400	28.60
30	Room 30	2	65	6	25	19.5	28	8.4	11.1	167.83	4800	28.60
31	Room 31	2	65	6	25	19.5	28	8.4	11.1	167.83	4800	28.60
32	Room 32	2	65	6	25	19.5	28	8.4	11.1	167.83	4800	28.60
		41	**2275**			**341.25**		**147.00**	**194.25**	**2937.06**	**84000**	**28.60**

Particulars		
Monthly consumption of all fans	365.64	kWh/month
Total fans	41	nos
Fans to be replaced with new energy efficient fans	35	nos
Monthly consumption of 35 fans	341.25	kWh/month
New monthly consumption	147	kWh/month
New monthly saving	194.25	kWh/month
New monthly saving	2937.06	Rs/month
Total Investment	84000	Rs

Payback period	**28.60**	**months**

SAVING BY TARIFF CHANGE AND ELECTRICITY DUTY

OBSERVATION

1. Existing tariff of girl's college is LT-3 phase residential. But applicable tariff to girl's hostel is LT-X-B-I (0-20kW) as per MSEDCL tariff order
2. In electricity bill of main college, boy's hostel and girl's hostel pays electricity duty. As per Maharashtra electricity duty act-1948 and revised-2016 it is exempted.

SAVINGS MEASURES

SAVINGS DUE TO ELECTRICITY DUTY

Particulars		
Average monthly electricity duty of main college	1000	Rs/month
Average monthly electricity duty of boy's hostel	5912	Rs/month
Average monthly electricity duty of girl's hostel	6081.38	Rs/month
Total average electricity duty	12993.38	Rs/month
Investment	10000	Rs/month
Payback period	**0.77**	**months**

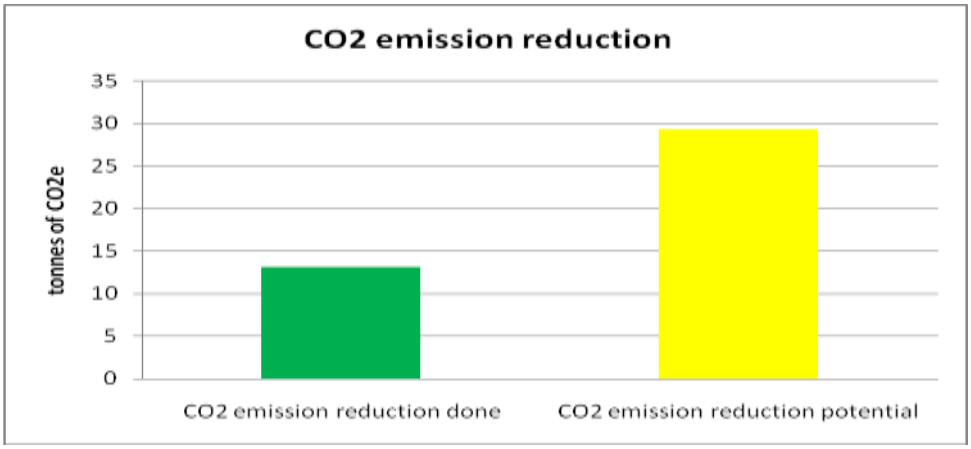
SAVINGS DUE TO TARIFF CHANGE OF GIRL'S HOSTEL

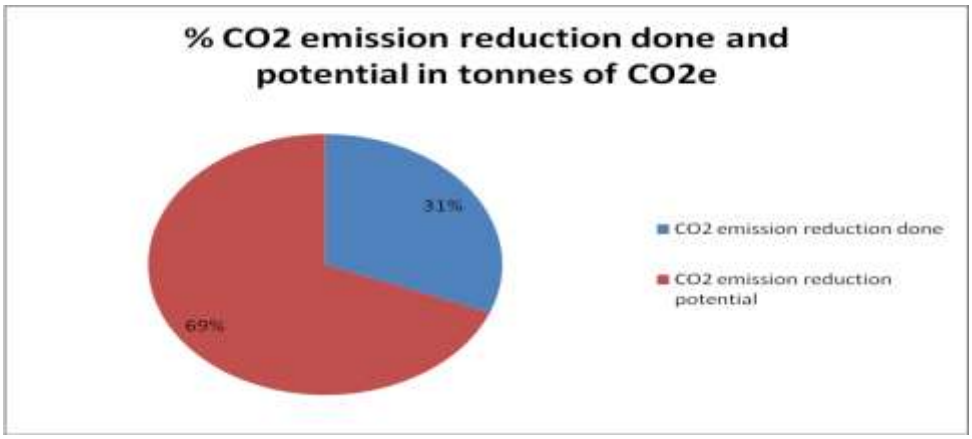
Particulars		
Existing average unit rate as per residential tariff	15.12	Rs/kWh
Average unit rate as per new tariff	10.52	Rs/kWh
Average unit rate saving	4.6	Rs/kWh
Average monthly energy consumption of girl's hostel	2912	kWh/month
Savings per month	13395.2	Rs/month
Investment	50000	Rs
Payback period	3.73	months

CO_2 EMISSION REDUCTION

Particulars		
Energy saved by new energy efficient technology	165	kWh/month
Energy saved by energy efficient technology	1980	kWh/year
Energy saved by renewable energy	1125	kWh/month
Energy saved by renewable energy	13500	kWh/year
CO2 emission reduction done	**13.16**	**tonnes of CO2e**

Particulars		
Energy saving potential by new energy efficient technology	1190.08	kWh/month
Energy saving potential by new energy efficient technology	14280.96	kWh/year
Energy saved by renewable energy	1687.5	kWh/month
Energy saved by renewable energy	20250	kWh/year
CO2 emission reduction potential	**29.35**	**tonnes of CO2e**





SAVING BY BO GAS PLANT

OBSERVATION

1. In the college canteen approximately 10kg kitchen waste is generated daily.
2. Currently there is no any bio gas plant for generation of bio gas in the college.

RECOMMENDATION

1. It is recommended that installed the small capacity of bio gas plant at college canteen for production of bio gas from kitchen waste generated daily.
2. Produced bio gas can be used for small purposes in the canteen instead of LPG which saves monthly approximate one cylinder of INR1,000/-

SAVINGS MEASURES

SAVINGS DUE TO BIO GAS PLANT

Saving due to Bio gas plant		
Capacity of bio gas plant	10	kg/day
Waste generated	10	kg/day
Approximate bio gas generation	1	m3/day
Approximate bio gas generation	30	m3/month
Equivalent LPG gas saved	12	kg/month
Approximate LPG cylinder saved	1.0	nos
Cost saved	**1000.00**	**INR/month**

ENERGY CONSERVATION BY SAVING OF WATER

1. TAP WATER REDUCER

Conventional Tap water system	Tap water system with Reducer
	
College has conventional tap water system in college.	**Used reducer to tap water for purpose of washing of utensils, hands etc which reduces flow of water and ultimately saves the water.**

RECOMMENDATION

It is recommended that increased the number of water reducers for water taping for save the water in other places like bathrooms, kitchen etc.

ANNEXTURE

ENERGY EFFICIENT FANS

ATOMBERG TECHNOLOGIES	
	**28 watts**
	**18watts or 8 watts as per size and load**

ENERGY EFFICIENT LIGHTING

<table>
<tr><th colspan="2">LED Lightings</th></tr>
<tr><td>  </td><td rowspan="2">18 watts, 9 watts, 5 watts

Companies:

1. Wipro
2. Osram
3. Syska
4. Philips
etc</td></tr>
<tr><td> 
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<tr><td> 
</td><td>Motion sensor bulbs</td></tr>
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