Investment Grade Energy Audit Report

Dr.Babasaheb Ambedkar Marathwada University,Aurangabad.

Conducted by

Marathwada Institute of Technology
Energy Service Company
Empanelled with BEE, India.
Beed Bypass Road, Aurangabad-431028,
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Investment Grade Energy Audit

Final Audit Report

Of

Dr.Babasaheb Ambedkar Marathwada University, Aurangabad.

Audit done by:

EA K. K. Jadia.
Director,Centre for Energy Management.
And team members Prof R.D.Pedgaonkar
Asst Prof Kavitha Godihal

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1.0 ACKNOWLEDGEMENT

At the outset, we would first like to thank Vice Chancellor & Registrar of Dr.B.A.M.University, Aurangabad for believing in us being an ESCO and giving us a big opportunity to work on the project.

We wish to thank and acknowledge the co-ordination & co-operation extended by the following

Mr. Ravindra Kale, Executive Engineer

Mr. Sanjay Huse, Dy engineer (Elect)

Mr. Ulhas Mudholkar, Junior Elect Engineer and their colleagues

For their efforts and valuable support without which the study and audit would not have been possible.

We would also like to thank all the concerned engineers, electricians and the Officers and staff from administrative departments of the Dr.B.A.M. University Buildings for their support and co operation during data collection.

All the valuable guidance from the experts is also utmost important without which the report wouldn't have completed in such a small period.

At last but not the least all team members from Marathwada Institute of Technology, Aurangabad, Maharashtra State, India who have been associated with this project.

ON BEHALF OF TEAM MEMBERS OF MIT.

EA K.K.JADIA.

Director , Centre for Energy Management.

2.0 History

MARATHWADA

In the first quarter of 18th Century, Marathwada become part of Nizam's Domain. To reward of long and distinguished career in war and politics, Aurangzeb appointed his general, Asif Jah as subhedar of Deccan in 1713 with the title of Nizam-Ul-Mulk, which become the hereditary little of the family. It remained a part of the Nizam Domain until 1948 when police action merged the Hyderabad State into the Indian Union.Marathwada is a division of Maharashtra state in India. Aurangabad Division popularly known as Marathwada. It was basically founded as a military camp and a seat subhedar in Deccan. Later on it was developed as a big trading town and a lending cultural center of the Deccan, Aurangabad is an ancient city with great historical tradition. It was a part of Nizam's territory. After the police action in 1948, Aurangabad come under the jurisdiction the Government of Indian and on the reorganization of the state in 1956 the Marathwada became a part of bilingual state of Bombay and from 1st May 1960 Marathwada has been a part of the state of Maharashtra.

Marathwada can well be described as the home of Arts, Culture and Literature. The Caves of Ajanta and Ellora, which lie in this region, attract scholar's artist, Students and visitors from distant part of the world Marathwada region has a rich literary and culture heritage. The Well-known poets, writers, saints and philosophers of Maharashtra Belong to this region. Dnyaneshwar, Namdeo, Ekanath, Dasopant and Ramdas are notable names. They have been responsible for the epithet cradle of Marathi Literature, applied to this region. 'SIRAJ' a great poet of early Urdu Literature and "WALI" known as fathers of Modern Urdu Poetry were born here and lived here in the city of Aurangabad. A year before the establishment of the Marathwada University for the population of approximately 53 lakhs in 1957, there ware around 3686 primary schools, 231 middle schools and 95 high schools in Marathwada. There wear one polytechnic and one technical school at Aurangabad until 1950; there was one intermediate college run by the Osmania University at Aurangabad. Two non-government college were started one at Aurangabad and one at Nanded in 1950. Five more colleges came into existence between 1954 and 1956, three established by the government namely, a college of Education and a college of Medicine at Aurangabad, and a college of agriculture at Parbhani and a college of Science at Mominabad. The number of students passing the H.S.C. examination had increased form 1,065 in 1957-58.

The Demand For A University For Marathwada :

For a longer period Marathwada was educationally neglected. There ware only nine intermediate college and ninety-five high schools for a total population 5,300,000 in Marathwada region before 1st November 1958. Moreover all the college were affiliated to the Osmania University, Hyderabad. The Student of Aurangabad (Marathwada) had to go to the Osmania University of Hyderabad for further studies. There were no facilities for post graduate and research students. It was difficult for a student of average means form the distinct to avail of the educational facilities in Hyderabad.Hence there was a demand form the people of Marathwada region for having an independent University in Marathwada Region increased when the number of students had to go all the way to Hyderabad for their education.After merging of the Marathi speaking areas of Hyderabad in the old state of Bombay the people of Marathwada felt free to give expression to their aspiration, and began to voice their demand for the establishment of University for the region. Educational and other associations urged the need for a separate University for Marathwada for the educational cultural and general development of the region.

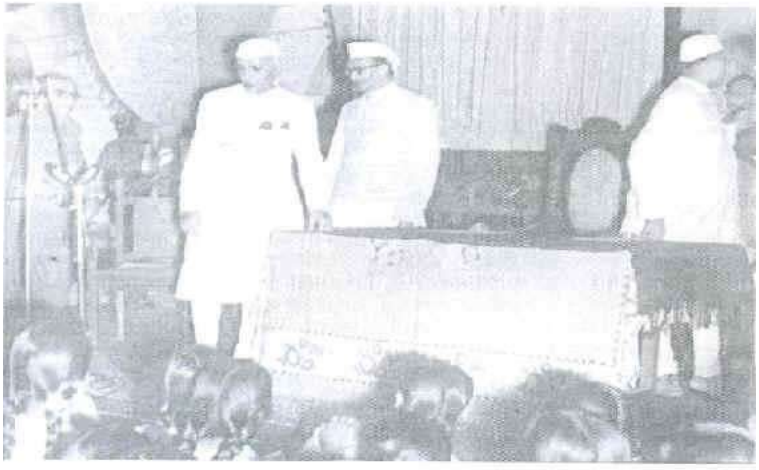
In the Osmania University, the medium of instruction was Urdu as it was established in the Nizam State After political change in 1947, the independence of India the regional language were adopted as medium of Secondary Level Education. Therefore, It was necessary to teach the higher education in regional language because of this problem people form Marathwada region demanded a new University for the educational as well as Socio Economical development.

The Movement :

On 12th December 1954 meeting was organized by Marathwada Shikshan Samiti in which emphasis was given on Separate University for the purpose of cultural and Educational activities two Convention of members of Parliament and of the State Legislature in 1955-1956 strongly represented the need for a University on 29th July 1956 a delegation of members of Parliament and of the state Legislature an educationists in Marathwada Submitted memorandum to the Chief Minister of Hyderabad State making of similar demand the Government of Hyderabad appointed a committee. The committee submitted its report an on 27th October 1956 the Council of Ministers recorded its view that it was strongly of the opinion that a separate University for Marathwada area should be established. Shri Y.B. Chavan who was Chief Minister of Bombay then toured Marathwada in January 1957 wherever he went and received representations form the local bodies, students and citizens, pressing the demand for a University for Marathwada.

In response to the educational demand of Marathwada region on 27th April 1957 the government of Marathwada published its resolution appointing a Committee to report on the question of establishment of a separate University for the Marathwada area under the chairmanship of the Late Justice S.M. Paluitkar Ex chief Justice of the Hyderabad High court and later judge of Bombay High court. The committee was composed nine members recommended the establishment of original University for Marathwada area with the teaching and affiliating functions, which should pay special attention to need of the region. The committee submitted its report on the 1st December 1957. Following the recommendations of the committee, government took immediate steps to draft the necessary legislation and the Marathwada University Act received the assent of the Governor on the 5th May 1958.Shri S.R. Dongerkery, Rector of the University of Bombay who was the member of the Marathwada University committee, was appointed the first vice-chancellor by the government of Bombay on the 2nd June 1958. He assumed charge of his office on the 19th June 1958. Shri. M.P. Chitins, the principal of Milind Mahavidyalaya, Aurangabad and a member of Marathwada University committee, was appointed by Government as the first Registrar, he took charge of his office on the 18th June 1958.

The 23rd August 1958 will be inscribed in golden letters in the annals of the history of the Dr. Babasaheb Ambedkar Marathwada University, as it was on this day that Shri. Late Jawaharlal Nehru, prime minister of India, inaugurated the University in the presence of the large & distinguished gathering at Aurangabad on the premises of the temporary building of the University office. On this historic occasion, the prime minister unveiled a marble plague on which has been inscribed the words :



२३ ऑगस्ट १९५८ रोजी तत्कालीन पंतप्रधान पंडित जवाहरलाल नेहरू यांच्या हस्ते विद्यापीठाचे उद्घाटन झाले तो ऐतिहासिक क्षण.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,

THIS UNIVERSITY WAS INAUGURATED,

BY

THE PRIME MINISTER

SHRI JAWAHARLAL NEHRU ON THE

23RD DAY OF AUGUST 1958.

3.0 PRELUDE

Dr. Babasaheb Ambedkar Marathwada University	
	
Motto	हे ज्ञानिची पवित्रता। ज्ञानीचि आथि ।। English: "Knowledge is sacred and is the source of enlightenment"
Established	1958
Type	Public/government
Chancellor	K. Sankaranarayanan
Vice-Chancellor	Dr. Vijay M. Pandharipande
Location	Aurangabad, Maharashtra, India 19°54′17.88″N 75°18′43.62″E19.9049667°N 75.3121167°E
Campus	Urban, total 650 acres (2.63 km²)
Affiliations	UGC, NAAC, AIU
Website	www.bamu.net

Campus:

The university campus covers more than 650 acres (2.6 km^2). The hills provide a picturesque background. The Aurangabad caves are embedded in the campus. The Soneri Mahal (Golden Palace), an ancient monument at the foot of the hills, is at the center of the campus, while Bibi Ka Maqbara is at the north side.

There are 71 buildings in the campus of Dr.B.A.M.University, Aurangabad as on date.

There are 42 departments:

- Marathi Language and Literature
- English
- Hindi
- Foreign Language
- Economics
- Political Science
- Public Administration
- History and Ancient Indian Culture
- Sociology
- Commerce
- Management Science
- Zoology
- Chemistry
- Botany
- Mathematics
- Statistics
- Physics
- Dramatics
- Cultural Studies
- Communication & Journalism
- Library and Information Science
- Pali and Buddhism
- Psychology
- Physical Education
- Environmental Science
- M.E.(Digital Communication)
- Computer Science and IT
- Education
- Geography
- Sanskrit
- Tourism Administration and Management
- Urdu
- Law
- Atomic Physics
- Biochemistry
- Biomechanics
- Genetics
- Chemical Technology
- Fine Arts
- Dance
- Marine Science
- Nanotechnology
- Printing Technol

4.0 EXECUTIVE SUMMARY

A comprehensive energy audit of **Dr.Babasaheb Ambedkar Marathwada University,Aurangabad** was entrusted to us. The objective of the audit was to carry energy audit, identify the avenues of savings potential and various energy conservation proposals with techno economic analysis.

Following are Few Important Energy Conservation Proposals along with details regarding annual savings and cost benefit analysis.

4.1 Energy Conservation Potential:

Sr. No.	Major Energy Conservation Proposal	Energy KWh Saved	Annual Saving inRs.per Annum	Investment needed in Rs.	Payback in Months	P.No.
	NO COST PROPOSALS					
1	Optimising Supply Voltage	24572	240805	NIL	NIL	24
15A	ConnectPrinter to Xerox m/c	1152	11290	NIL	NIL	54
15B	Improvement in Monitors	2918	28596	NIL	NIL	55
15C	Improvement in CPUs	5472	23626	NIL	NIL	55
	SUB TOTAL-1	**34114**	**304317**	**NIL**	**NIL**	
	LOW COST PROPOSALS.					
2	Convert H.T. supply into L.T.Suply for Auditorium building	----	255930	200000	10	25

Sr. No.	Major Energy Conservation Proposal	Energy KWh Saved	Annual Saving inRs.per Annum	Investment needed in Rs.	Payback in Months	P.No.
11	Retrofit 15W/60W GSL lamps with LED fixtures	1392	13642	12600	11	47
13	Replace 80 W Ceiling Fans with En. Effi. Fans	55238	541332	822000	18	49
14	Install Energy savers with A/Cs	202408	1984108	2118000	13	51
16	Replace Water Pumps with En Efficient Pumps	16681	163473	135000	10	57
17	Replace 40 W Tube Street Lights with LED fixtures.	15768	154526	234000	18	59
18	Creating Awareness	9828	96314	60000	*8*	*65*
	SUB TOTAL-2	**301315**	**3209325**	**3581600**	14	
	HIGH COST PROPOSALS.					
3	Install harmonic Distortion Suppressors	Power quality improve.	--	--	--	34
4	Retrofit T5 with LED fixtures	46867	459257	2892800	76	40

Sr. No.	Major Energy Conservation Proposal	Energy KWh Saved	Annual Saving inRs.per Annum	Investment needed in Rs.	Payback in Months	P.No.
5	Retrofit T8 with LED fixtures	31968	313286	1776000	68	41
6	RetrofitT12with LED fixtures	147859	1449018	4107200	34	42
7	Retrofit 20W Tubes with LED fixtures	824	8075	22000	33	43
8	Retrofit 5W CFL with LED fixtures	4850	47530	421000	106	44
9	Retrofit 10W CFL with LED fixtures	5705	55909	339600	73	45
10	Retrofit 14/18W CFL with LED fixtures	4224	41395	200000	58	46
12	Replace 60 W Ceiling Fans with En. Efficient Fans	52157	511139	1811000	43	48
	SUB TOTAL-3	**294454**	**2885609**	**11569600**	48	
	Total of LOW/HIGH Cost proposals	**595769**	**6094934**	**15151200**	**30**	
	GRAND TOTAL OF NO/LOW/HIG COST PROPOSALS	**629883**	**6399251**	**15151200**	**29**	

Sr. No.	Major Energy Conservation Proposal	Energy KWh Saved	Annual Saving inRs.per Annum	Investment needed in Rs.	Payback in Months	P.No.
	VERY HIGH COST PROPOSALS					
19	Renewable Energy –50 KW Solar Energy Generation.	81000	810000	5000000	*74*	*68*
	Total	**81000**	**810000**	**5000000**	***74***	

4.2 Conclusion

Refer Executive Summery.

- NO COST PROPOSALS must be implemented immediately
- LOW COST PROPOSALS must be implemented at priority.
- HIGH COST PROPOSALS have PBB more than 2 years. They must be implemented after financial consideration.
- VERY HIGH COST PROPOSALS for Renewable Energy set up to be placed are for the consideration on the Technical Basis. The Cost of Installations is very high.
- This should be noted that the Energy Savings have been identified on calculations based on the operating hours of the loads which have been approximately assumed as per the data available to us. The actual results shall certainly depend upon the correctness of the actual operating hours as against the assumed operating hours. Hence slight deference may be observed.

5.0 Energy Saving Measures.

Supply from MSDCL:

Supply voltage to be reduced to the optimum so that the lighting energy consumption is reduced without compromising the comfort level.

Lighting:

- Reduce excessive illumination levels to standard levels using switching, delamping, etc.

- Aggressively control lighting with clock timers, delay timers, photocells, and/or occupancy sensors.
- Install efficient alternatives to incandescent lighting, mercury vapor lighting, etc.
- Efficacy (lumens/watt) of various technologies range from best to worst approximately as follows: low pressure sodium, high pressure sodium, metal halide, fluorescent, mercury vapor, incandescent.
- Consider painting the walls a lighter color and using less lighting fixtures or lower wattages.
- Use task lighting and reduce background illumination.

Air Conditioning:

- Eliminate or reduce reheat whenever possible.
- Don't oversize cooling units. (Oversized units will "short cycle" which results in poor humidity control.)
- Purchase only high-efficiency models for HVAC window units.
- Improve control and utilization of outside air.
- Do not use air conditioners below 24C, as it spends up to 5% more electricity for every degree below that.

Water Pumps:

- Measure Load on the Water Pump Motors.
- If motor is running at less than 50% load change the motor / pump. Replace all pumps with latest Energy Efficient Pumps having overall

efficiency of 75%. All old pumps having more than 15 years service are running at less than 50% efficiencies only.

Lifts:

- Lifts if any should have VFDs installed.
- Regular maintenance of the Lifts for mechanical as well as electrical systems is most important for the Lifts.

Computers:

- Turn off the office computers as well as any photocopiers and printers at night and at weekends.

- Turn on the computer, monitor, and printer only when you need.
- Turning a computer on and off doesn't use any extra electricity and won't damage your computer.
- Shutting it down when not required for some time (recommended 30 min or more) reduces the wear on your computer increasing its life and cuts down on your power use.
- Save power by turning off the computer monitor when you'll be away from it for more than15minutes.
- Screen savers are NOT energy savers. Automatic switching to sleep mode or manually turning monitors off is always a better energy-saving strategy.
- While purchasing, select a printer with power management capabilities. Printers with automatic "power down" features can reduce electricity use by over 65% whilst idle.
- Preference for Laptop Computer because it consume 90% Less Energy than Desktop Computers.
- Preference for flat panel LCD Monitor verses conventional CRT Monitor because it saves energy up to 70%.
- Select the right size of the monitor as larger the size of monitor more the Electricity Consumption.
- We further recommended Power Management Feature for a Window based PC which can save Energy up to 70%

6.0 CONTENTS

7.0 ABBREVIATIONS

CFL	Compact Fluorescent Lamp
FTL	Fluorescent Tube light
SEC	Specific Energy Consumption
THD	Total Harmonics Distortion
LED	Light Emitting Diode
DG	Diesel Generator
MSEDCL	Maharashtra State Electricity Distribution Company Limited
APFCR	Automatic Power Factor Controller Relay
CMD	Contract Maximum Demand
TOD	Time of the Day
T12	40 W / 20 W Normal Fluorescent Tube Light
T8	36 W Slim Fluorescent Tube Light
T5	28 W Slim Fluorescent Tube Light
KW	Kilo Watt
KWh	Kilo Watt Hour (Units-electrical)
TR	Tones of Refrigeration
ILER	Installed Load Efficacy Ration
SPB	Sample Pay Back Period
DB	Distribution Board
LDB	Lighting Distribution Board
TR	Transformer

8.0 Energy Audit Methodology

5.1 The detailed Energy Audit and Technical Study will broadly review and analyze the:-

- Electricity Consumption- Energy Bills.
- Lighting System – Internal & external.
- Electricity Supply and Distribution
- Study of existing Layout system.
- Study of existing LT distribution system.
- Study of existing Centralized Air Conditioning, Refrigeration and Air Handling Unit System.
- Detailed study of all the Major Energy Equipment installed in the office complex to identify the Energy saving potential opportunities.
- Review of present electricity bill, estimation of electrical energy consumption in various load centers like lighting, Air-conditioning, **System:-** Water Pumping etc.

5.2 Electricity Distribution

- The detailed study has been carried out to understand the existing LT distribution system to analyze and understand the areas of improvement and prevention of the possibility of power leakage.
- Review of present electricity distribution network like Single Line Diagram (SLD), cable loading, normal & emergency loads, electricity distribution in various areas/floors etc.

- Study of Reactive Power Management and options for power factor improvement.

5.3 Lighting System:-

- Review of present lighting system, lighting inventories etc.
- Estimation of lighting load at various locations like different floors, outside (campus) light, pump house and other important locations.
- Detailed lux level survey at various locations and comparison with acceptable standards.
- Study of present lighting control system and recommendation for improvement.
- Analysis of lighting performance indices and comparison with norms of high rise buildings.
- Exploring the Energy Conservation Options (ENCON) in lighting system.

5.4 Heating, Ventilation & Air-Conditioning System (HVAC System):-

- Review of present HVAC system like window AC, split AC & package AC etc.
- Performance Assessment of window AC, Split AC and Package AC system.
- Performance Assessment of Condensers Pumps etc.
- Exploring the Energy Conservation Options (ENCON) in HVAC system.

5.5 D.G. Sets.

- Review the DG Set operation.
- Performance Assessment of DG Set. Specific Fuel consumption.
- Exploring Energy Conservation options in DG set.
- Recommendations.

5.6 Water Pumping system:-

- Review of Water Pumping, storage and distribution System.
- Performance assessment of all major Water Pumps.
- Exploring Energy Conservation Options.
- Recommendations with ROI for waste water recovery and treatment.

5.7 Motor Load Survey:-

- Conduct Motor Load survey on all drives to estimate percentage loading.
- Explore Energy Conservation options.

5.8 Energy Monitoring & Accounting System:-

- Detail review of present energy monitoring & accounting system in terms of metering, record keeping, data logging, periodic performance analysis etc.
- Recommendation for effective energy monitoring & accounting system.

5.9 Others:-

- Review of present maintenance practices and recommend for improvements.

9.0 Important Information

1	Name & Address of Client	Dr.Babasaheb Ambedkar Marathwada University,Aurangabad.
2	Name & Phone No. of the client's Contact Person	Mr.Sanjay Huse , Deputy Engineer, Telephone – 09175657859.
3	Name of M.I.T.Aurangabad Team Leaders	EA K.K.JADIA. Telephone – 09422201327.
4	Period of Audit	Site Inspection, Study & Data Collection, , Data Analysis, estimation and Calculation, detail project report preparation.---- 01/10/2013 to 30/12/2013
5	Contract Demand Load	One H.T.Connection for Auditorium and More than 71 different L.T.Connections.
6	Total Power Consumed	One H.T.Connection for Auditorium and More than 71 different L.T.Connections.
7	Annual Total Energy	1785700 KWh
8	Total Amount of Annual Bills.	Rs. 17499860/-
9	Energy Saving identified	629883 KWh per annum
10	Monitory Saving identified	Rs.6399251/- per annum
11	One time Investment Needed	Rs.15151200/-
156 2	Saving identified in % Monitory Saving/Total Bill x100	36.567 %
13	Simple Payback Period	29 Months

10.0. PRESENT ENERGY SCENARIO

10.1 Overview of the building energy uses

Electricity supply and billing details.

There are more than 71 separate Electricity connections from MSEDCL/GTL Ltd supply.
The details of the Consumer Numbers and their billings for last Twelve months are recorded in Annexure 1.

10.2. Review of present electricity bills.

10.2.1 Monthly Electricity Bills Analysis

The 12 months electricity bill data is tabulated and analyzed. Average cost of unit calculated for the period of last 12, moths is Rs. /KWh.

Month wise following data tabulated in given tables.

- kWh consumed – MSEB Feeder
- Total Billing Amount
- Maximum Demand
- Power Factor Rebate or Penalty

10.2.2 FROM DETAILS RECORDED IN ANNEXURE -1.

Annual Summery of Consumption In Terms Of Units, Net Amount, Maximum Demand and Power factor penalty/incentive.

Sr. No.	Consumer Number	Units In Kwh	Net Amount in Rs.	MD (KVA)	PF Penalty/ Incentive
A-1	490010633751	55314	476074	25	00
A-2	490010633645	6999	55197	15	00
A-3	490010083092	16523	129540	20	00
A-4	490011509735	2339	19788	8	00
A-5	490010952350	13748	127210	8	00
A-6	490010153601	29	226	3	00
A-7	490010487592	10695	89992	11	00
A-8	490010091702	3859	25809	10	00
A-9	490010174870	38304	311645	5	00
A-10	490010067453	29209	274005	3	00
A-11	490010246013	5579	34612	5	00
A-12	490010170394	4232	33725	11	00
A-13	490010182643	16968	146403	6	00
A-14	490010143460	9119	66754	19	00
A-15	490010633611	47985	504625	12	00
A-16	490010170424	5790	45784	12	00
A-17	490010097964	15089	128318	12	00
A-18	490010097972	15779	133854	11	00
A-19	490010150067	8400	65599	16	00
A-20	490010246056	11395	96160	10	00
A-21	490010246064	24249	250097	10	00
A-22	490010106459	13073	111894	10	00
A-23	490010106467	14789	126853	11	00
A-24	490010365535	16412	137135	12	00
A-25	490010211546	576	3586	5	00
A-26	490010633661	17214	148218	10	00
A-27	490010365543	17308	153506	17	00
A-28	490010101791	1892	5940	8	00
A-29	490010095333	9603	77680	10	00
A-30	490010179812	3314	24132	11	00
A-31	490010179821	7204	58879	3	00

A-32	490010145322	34769	308919	10	00
A-33	490010380488	9040	70834	21	00
A-34	490010213981	17204	160783	10	00
A-35	490010168471	3099	24462	11	00
A-36	490010979444	1572	55124	32	00
A-37	490010699531	12835	128168	12	00
A-38	490010168772	3205	28498	5	00
A-39	490010144717	17159	162629	21	00
A-40	490010269773	14131	179073	21	00
A-41	490010365527	21349	231306	31	00
A-42	490010578075	19729	236047	21	00
A-43	490010178565	47628	548517	31	00
A-44	490010205589	62489	722940	14	00
A-45	490011018669	35259	394468	14	00
B-05	490010082916	28865	275660	10	00
B-07	490011373922	18707	226850	19	00
B-16	**490010093853**	**14477**	**154185**	**8**	**-9903**
B-17	**490010152451**	**3562**	**54350**	**12**	**+18134**
B-18	**490010150423**	**38800**	**329844**	**8**	**-21243**
B-19	490011549362	66077	739178	8	00
B-24	490010183836	57884	617122	12	00
B-25	490010269765	12045	124643	8	00
TOTAL		**982874**	**9636840**		**-13012**

NOTE: Out of 71 connections as declared only 53 consumer details are given above.
Balance 18 consumer bills were not issued to us and hence details are not available.
Total consumption = 982874 units. Bill amount = Rs.9636840.

Average Rate = Rs. 9636840 / 982874 = Rs. 9.80 per unit.

10.3 OBSERVATIONS :

The details recorded in Annexure-1 indicate that all Consumers are L.T. and the billing is done accordingly.

The Power Factors recorded for Consumer Nos. 490010093853,490010152451 & 490010150423 show that there are Power Factor Penalty/incentive applicable to these consumers.

The Consumer Nos. 490010093853 & 490010150423 indicate that the Power Factors are good enough to get incentives.

The consumer No. 490010152451 is penalized by Rs.18134 during one year. This is because the Power Factor is recorded as low as 0.504 to 0.615 only. This should be developed to 0.99 to get Incentive on the bill amount.

Also if there are another Consumers paying Power Penalty,they should be taken care in the same manner.

10.4 H.T.supply Electricity Bills.

Name of Building: Auditorium **Supply : H.T. (11 KV)** **Consumer No. 490019042620.**
Connected Load = 174 KW **Contract Demand = 120 KVA.** **Tariff: 79 HT-II N**

Month	UNITS KWH	DEMAND KVA	POWER FACTOR	DEMAND HARGES	ENERGY CHARGES	ELECT. DUTY	PF-PEN/ INCENT	TOTAL BILL
DEC 12	834	51	0.993	15200	8198	4099	-1205	27167
JAN 13	1322	87	0.948	16530	12905	5173	00	36002
FEB 13	2406	73	0.832	15200	23650	7062	+3323	52213
MAR 13	2162	72	0.973	13000	21254	6418	-755	43682
APR 13	1610	67	0.974	12730	15020	5006	-588	33993
MAY 13	1076	60	0,980	11400	10577	3699	-652	24892
JUN 13	572	1	0.970	11400	5622	2821	-331	19133
JUL 13	660	11	0.968	11400	6487	2943	-346	19963
AUG 13	2502	53	0.978	11400	24594	6083	-1073	40996
SEPT 13	2406	66	0.948	12510	28440	7027	00	48560
OCT 13	1836	66	0.951	12540	21702	5864	00	47178
NOV 13	1828	56	0.960	11400	21608	5678	-334	50518
TOTAL	**19214**	--	--	**154710**	**200057**	**61873**	**-1961**	**444297**

OBSERVATIONS.

1) DEMAND IS LESS THAN 60 KVA IN 5 MONTHS AND HIGHER CHARGES ARE PAID.
2) ELECTRICITY DUTY IS CHARGED.
3) POWER FACTOR PENALTY IMPOSED ONLY IN ONE MONTH (FEB2013).
4) TOTAL BILL AMOUNT FOR ONE YEAR = Rs.444297/-.TOTAL CONSUMPTION=19214.
5) AVERAGE UNIT CHARGES = 444297/19214 = Rs.23.12 PER UNIT.(VERY HIGH).

PROPOSALS :

1) CONSIDER L.T.SUPPLY SO THAT FIXED CHARGES (DEMAND CHARGES MAY BE AVOIDED.
2) FIND OUT WHY ELECT. DUTY IS NOT EXEMPTED.
3) POWER FACTOR SHOULD BE MAINTAINED AT 0.999 SO THAT MAXIMUM INCENTIVE IS OBTAINED.

Proposal 1 :

Energy Conservation Option

Optimizing Supply Voltage.

SUPPLY VOLTAGE RECORDED AS PER ANNEXURE – 2.

OBSERVATIONS :

The supply voltages recorded from 8 am to 6 pm indicate that the phase voltages vary from 210 volts up to 250 volts. The lower voltage was recorded hardly for an hour or so. However the average voltage was more than 240 volts.

Supply voltage to be reduced to the optimum so that the lighting energy consumption is reduced without compromising the comfort level.

Therefore it is proposed to approach GTL Ltd and get the supply voltage reduced by 5 % by changing the Transformer Taps at their ends.

Since the voltage fluctuations are not noticeable, the above change shall not affect the performance of any of the equipments. The Power consumption however shall reduce by 10 % for the lighting Loads.

Assuming Lighting consumption is 25% of total consumption.

Annual Energy saving = 0.10 x 0.25 x 982874 units

= 24572 units.

Annual Saving = 24572 x Rs.9.80

= Rs 240805/-

Investment **= NIL**

Payback Period = NIL

Proposal 2 :

Energy Conservation Option; H.T.supply consumer (Auditorium).

PROPOSAL: CONSIDER L.T.SUPPLY SO THAT FIXED CHARGES (DEMAND CHARGES) SHALL BE AVOIDED.

H.T.Suply Energy price is @ Rs.23.12 per Unit where as the L.T.Supply Energy price is @ Rs.9.80 per Unit only.
Hence if these loads can be supplied at L.T. the following savings are expected to be achieved.

Annual saving = Units x price difference
= 19214 x Rs. (23.12 – 9.80)
= Rs.255930/-

Investment = for change into L.T.supply
= Rs.200000/- approximately.

Payback Period= (200000/255930) x 12 months.
= 9.37 Months
= say 10 Months.

11.0 ELECTRICAL DISTRIBUTION SYSTEM

8.1. Present electrical distribution

The Service Connections from GTL Ltd is at 440 Volts TPN i.e.LT supply and the same are all governed by LT Tariff Rate for more than 71 connections.Only Auditorium is H.T. supply and is governed by H.T.Tarrif Rate. There are more than 71 consumer connections at different locations.

8.2 Harmonics Details.

8.2.1 What are harmonics?

Harmonics are currents or voltages with frequencies that are integer multiples of the fundamental power frequency being 50 or 60Hz. In modern test equipment today harmonics can be measured up to the 63rd harmonic. When harmonic frequencies are prevalent, electrical power panels and transformers become mechanically resonant to the magnetic fields generated by higher frequency harmonics. When this happens, the power panel or transformer vibrates and emits a buzzing sound for the different harmonic frequencies. Harmonic frequencies from the 3rd to the 25th are the most common range of frequencies measured in electrical distribution systems.

8.2.2 What causes harmonics?

Harmonics are caused by and are the by-product of modern electronic equipment such as personal or notebook computers, laser printers, fax machines, telephone systems, stereos, radios, TVs, adjustable speed drives

and variable frequency drives, battery chargers, UPS, and any other equipment powered by switched-mode power supply (SMPS) equipment. The above-mentioned electronic SMPS equipment is also referred to as non-linear loads. This type of non-linear loads or SMPS equipment generates the very harmonics they're sensitive to and that originate right within your building or facility. SMPS equipment typically forms a large portion of the electrical non-linear load in most electrical distribution systems.

In today's environment, all computer systems use SMPS that convert utility AC voltage to regulated low voltage DC for internal electronics. These non-linear power supplies draw current in high amplitude short pulses. These current pulses create significant distortion in the electrical current and voltage wave shape. This is referred to as a harmonic distortion and is measured in Total Harmonic Distortion (THD). The distortion travels back into the power source and can effect other equipment connected to the same source.

8.2.3 What problems do harmonics create?

In an electrical distribution system harmonics create: Large load currents in the neutral wires of a 3 phase system.

- Overheating of standard electrical supply transformers which shortens the life of a transformer and will eventually destroy it.
- High voltage and current distortions exceeding IEEE Std. 519-1992 "Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems."

- Poor power factor conditions that result in monthly utility penalty fees for major users (factories, manufacturing, and industrial) with a power factor less than 0.9.
- Resonance that produces over-current surges. In comparison, this is equivalent to continuous audio feedback through a PA system. This results in destroyed capacitors and their fuses and damaged surge suppressors which will cause an electrical system shutdown.
- False tripping of branch circuit breakers.

8.2.4 Reducing Harmonics

There are many ways to reduce harmonics, ranging from variable frequency drive designs to the addition of auxiliary equipment. The primary methods used today to reduce harmonics are

- Power System Design: Harmonics can be reduced by limiting the non-linear load to 30% of the maximum transformer's capacity. However, with power factor correction capacitors installed, resonating conditions can occur that could potentially limit the percentage of non-linear loads to 15% of the transformer's capacity. Use the following equation to determine if a resonant condition on the distribution could occur:

  Hr = (kVAsc/kVARc) ^1/2 Where

  Hr = resonant frequency as a multiple of the fundamental frequency

  kVAsc = short circuit current at the point of study

kVARc = capacitor rating at the system voltage

- 12-pulse converter front end: In this configuration, the front end of the bridge rectifier circuit uses twelve diodes instead of six. The advantages are the elimination of the 5th and 7th harmonics to a higher order where the 11th and 13th become the predominate harmonics. This will minimize the magnitude of harmonics, but will not eliminate them. The disadvantages are cost and construction, which also requires either a Delta-Delta and Delta-Wye transformer, "Zigzag" transformer or an autotransformer to accomplish the 30◎◎phase shifting necessary for proper operation. This configuration also affects the overall drive system efficiency rating because of the voltage drop associated with the transformer configuration requirement.
- Delta-Delta and Delta-Wye Transformers: This configuration uses two separate utility feed transformers with equal non-linear loads. This shifts the phase relationship to various six-pulse converters through cancellation techniques, similar to the twelve-pulse configuration
- Isolation Transformers: An isolation transformer provides a good solution in many cases. The advantage is the potential to "voltage match" by stepping up or stepping down the system voltage, and by providing a neutral ground reference for nuisance ground faults.

This is the best solution when utilizing AC or DC drives that use SCRs as bridge rectifiers.

- Line Reactors: More commonly used for size and cost, the line reactor is the best solution for harmonic reduction when compared to an isolation transformer.

Harmonic Trap Filters: Used in applications with a high non-linear ratio to system to eliminate harmonic currents. Filters are tuned to a specific harmonic such as the 5th, 7th, 11th, etc. In addition, harmonic trap filters provide true distortion power factor correction

8.2.5 Harmonic Analysis of Service Connection.

The testing of harmonics present in power distribution system most of the buildings was aimed at assessment of harmonic contents in load. The current harmonics in one load adversely affect the operation of other components. Some established facts about adverse effects of harmonics are-

1. Excessive heating of capacitors
2. Heating of contacts below rated current.
3. De-rating of transformers
4. Lower power factors.
5. Flickering of fluorescent lamps.
6. Failure of costly electronic gadgets.
7. Malfunctioning of protective relays.

To avoid such effects it is necessary to mitigate the harmonics.

8.3 MEASUREMENTS OF HARMONICS:

The current sample to power analyzer is taken from clamp-on CT to the incoming cable, voltage sample is connected to bus. The observations noted on power analyzer are as follows:-

As measured on 03.01.2014.

1] Service Connection Details	
Connection no:	Location:
Meter No:	Description:
CT Ratio: Amp	

	L 1	**L 2**	**L 3**	**N**
V rms	237.89	240.50	237.60	0.72
V pk	326.90	335.00	328.80	2.0
CF	1.37	1.38	1.38	OL
V rms - w	237.80	240.80	237.70	0.7
	L 1	**L 2**	**L 3**	**N**
I rms	5	14	7	12
I pk	15	27	17	23
CF	OL	OL	OL	Ol
I rms - w	5	14	7	12
	L 1	**L 2**	**L 3**	**N**
kV	0.9	3.2	1.5	2.5
kVR	0.8	3.4	1.5	5.8
kVAR	0.3	1.1	0.0	1.6
PF	0.70	0.93	-0.88	0.43
	L 1	**L 2**	**L 3**	**N**
DPF	0.95	0.95	-1.00	0.44
Hz	49.861			
DC % f	0.0	0.0	0.0	75.2
H1 % f	100.0	100.0	100.0	100.0
VOLT	**L 1**	**L 2**	**L 3**	**N**
H 3	0.3	0.3	0.3	104.2
H 5	1.4	1.4	1.2	21.2
H 7	1.3	1.0	1.1	19.3
H 9	0.2	0.2	0.2	31.7
H 11	0.3	0.2	0.1	11.2
H 13	0.2	0.2	0.1	16.7
H 15	0.1	0.1	0.1	11.6
H 17	0.2	0.2	0.1	10.3
H 19	0.1	0.1	0.1	8.2
H 21	0.1	0.1	0.0	7.8
H 23	0.0	0.1	0.1	7.6
H 25	0.1	0.1	0.1	11.8
		32		

AMP	L 1	L 2	L 3	N
DC % F	28.8	6.5	11.3	8.3
H 1	100.0	100.0	100.0	100.0
H 3	54.3	9.8	30.8	49.3
H 5	42.0	10.1	9.6	5.2
H 7	30.0	2.3	9.6	10.5
H 9	18.0	4.0	9.0	12.0
H 11	10.0	2.6	5.7	4.0
H 13	4.6	2.4	3.8	6.4
H 15	4.1	1.7	2.7	3.6
H 17	4.9	2.3	1.2	1.0
H 19	4.4	1.1	1.2	2.0
H 21	4.5	0.5	1.1	1.2
H 23	2.5	0.5	1.4	1.3
H 25	2.8	0.6	1.2	1.8

Observation: High contents harmonics of third, fifth, seventh, ninth & eleventh harmonics are not safe. It may affect fluorescent lamps and may also affect electronic loads. Harmonic Suppressor recommended.

Observation: 5^{th} and 7^{th} Harmonics in voltage are seen.

Observation: High 3^{rd} harmonic current may heat neutral connection and associated problems may arise. Recommended to suppress the Harmonics.

Observation: Highest 3^{rd} harmonic needs urgent attention as this has detrimental effect all around it. The value of 54.3 % is very high as compared to bench mark of 3% only.

Proposal 3 :

Energy Conservation Options

Install Harmonic Distortion Suppressors.

The service connection has recorded higher 3rd and 5th Harmonics.
If suitable Harmonic Suppressors (Tuned capacitors) are installed; the Power quality shall be improved and loss due to damages by High Frequency Harmonics shall be avoided.
Suitable capacity of Tuned capacitors may be obtained from the capacitors suppliers who shall suggest and supply Capacitors for P.F. improvement.

9. LIGHTING SYSTEM

Lighting is a very significant aspect from utility as well as from aesthetic point of view for any project is it commercial or industrial. The efficiency, comfort factors and the quality of lighting should not be compromised at any cost.

An efficient lighting system is one, which provides illumination of sufficient quantity and quality for the task being performed at the lowest cost. This depends upon the elements constituting the lighting system i.e. lamps, lamps, ballasts fixtures – lamp holders, starters.

All discharge lamps like fluorescent Tubular Lamp, Compact Fluorescent Lamp require control gear (Starters ballasts and capacitors) because of their negative impedance characteristics. Ballast is therefore, used for limiting the current and providing the proper voltage for the lamp stating and operation. Thus ballast stabilizes the power supply of the lamp. Building also has been installed voltage controller and timer based operation for street lighting distribution. This is good step towards the energy conservation.

There are various lighting fixtures are installed in the various sections of the building. Building's lighting system includes conventional tube lights (FTL), Lamps of various ratings details are given in Annexure-3.

9.1 Methodology

Following methodology has been adopted

The energy audit study of illumination of a typical carried out. Energy performance assessment of lighting system has been done on the guidelines given by Bureau of Energy Efficiency (BEE). The room index has been calculated to the following formula.

Room Index (RI) = (L X W) / (Hm (L+W)

Where L=length of interior; W=width of interior; Hm= the mounting height, which is the height of the lighting fittings above the horizontal working plane. The working plane is taken as the office table whose height is 0.80 m. The numbers of measurements of lux level have been taken according to the following table.

Determination of measurement points

Room Index	Minimum number of measurement points
Below 1	9
1 and below 2	16
2 and below 3	25
3and above	36

The Calculation of the load efficiency and installed load efficiency ratio of lighting installation for each room has been done as per the following steps.

Steps for calculation load efficacy ratios

STEP 1	Measure the floor area of the interior
STEP 2	Calculate the Room Index
STEP 3	Determine the total circuit watts of the installation by counting different Luminaries and their wattages.
STEP 4	Calculate Watts per square meter, (Value of Step 3/Vulue of step 1)
STEP 5	Ascertain the average maintained luminance by using lux meter.
STEP 6	Divide 5 by 4 to calculate lux per watt square meter
STEP 7	Obtain target Lux/W/m2 lux for type of the interior / application and RI from the table No. below
STEP 8	Calculate Installed Load Efficacy Ratio (6 / 7)

The target level for different room indices has been taken from the following table given by Bureau of Efficiency.

Target lux /W/m2 (W/m2/100lux) values for maintained luminance on horizontal plane for all room indices and application:

Room Index	Commercial lighting, (Offices , Retail stores etc) & very clean industrial applications, Standard of good colour rendering Rs. : 40-84	Industrial lighting (Manufacturing areas, Workshop, Warehousing etc) Standard of good colour rendering Rs: 40-85	Industrial lighting installations where standard of good colour rendering is not essential but some colour discrimination if required Rs : 20-40
5	53	49	67
4	52	48	66
3	50	46	65
2.5	48	44	64
2	46	42	61
1.5	43	39	58
1.25	40	36	55
1.00	36	33	52

Source: BEE

We have adopted the room index for commercial lighting.

As per recommendations of BEE, ILER (Installed load efficiency ratio) should be 0.75 or above. The guideline for adequacy of ILER is below in Table

Indicators of performance

ILER	Assessment
0.75 or over	Satisfactory to Good
0.51-0.74	Review suggested
0.5 or less	Urgent action required

9.2 Present lighting system

Indoor Lighting System

- The facility is provided with 7786 nos. of tube lights, 890 nos. of CFLs of various watts and 10 GLS bulb of 60W. Break up is as under given in table.

Particulars	T 5/28 W	T 8/36 W	T 12/40 W	TUBE 20 W
No. of Fixtures	1808	1110	2567	22

Particulars	CFL					TOTAL
	5 W	10 W	14/18 W	80 W	BULB 5/15/60 W	
No. of CFLs	842	566	200	28	21	900

9.3 Energy Conservation Option

Interior lighting:

Proposal 4. By retrofitting present T5 lighting fixtures with energy efficient LED lighting fixtures:

The present lighting fixtures consumes 52 W/46 W/38 W powers per fitting. It is proposed to retrofit T5 lighting fixtures with LED tube lights which consume 12 W powers per fitting. The savings shall be as under:

Particulars	Uom	Value
Total No. of T5/28 Watts Tube lights	Nos.	1808
Power consumed by each T5/28 W Tube light with Electronic Chokes	W	28+2
Total power consumed by T5 Tube lights	KW	54.240
Power consumed by each Retrofit LED Tube light	W	12
Total power consumed by Retrofit Tube lights	KW	32.544
Potential for energy saving	KWh	32.544
Yearly operating hours (6 x 240 days)	hours	1440
Annual Energy Saving	KWh	46863
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annuam	459257/-
Cost of retrofitting T5 with LED lamps fitting	Rs./ No.	1600/-
Total cost of Replacement	Rs.	2892800/-
Expected simple pay back period	Months	76

Proposal 5. By retrofitting present T8 lighting fixtures with energy efficient LED lighting fixtures:

The present lighting fixtures consumes 52 W/48 W/38 W powers per fitting. It is proposed to retrofit the T8 lighting fixtures with LED tube lights which consume 12 W powers per fitting. The savings shall be as under:

Particulars	Uom	Value
Total No. of T8/36 Watts Tube lights	Nos.	1110
Power consumed by each T8/36 W Tube light with Electronic Choke.	W	36+2
Total power consumed by T8 Tube lights	KW	35.520
Power consumed by each Retrofit LED Tube light	W	12
Total power consumed by Retrofit Tube lights	KW	13.320
Potential for energy saving	KWh	22.200
Yearly operating hours (6 x 240 Days)	hours	1440
Annual Energy Saving	KWh	31968
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annuam	313286/-
Cost of retrofitting T8 with LED lamps fitting	Rs./No.	1600/-
Total cost of Replacement	Rs.	1776000/-
Expected simple pay back period	Months	68

Proposal 6. By retrofitting present T12 lighting fixtures with energy efficient LED lighting fixtures:

The present lighting fixtures consumes 52 W/48 W/38 W powers per fitting. It is proposed to retrofit the T12 lighting fixtures with LED tube lights which consume 12 W powers per fitting. The savings shall be as under:

Particulars	Uom	Value
Total No. of T12/40 Watts Tube lights	Nos.	2567
Power consumed by each T12/40 W Tube light	W	40+12
Total power consumed by T12 Tube lights	KW	133.484
Power consumed by each Retrofit LED Tube light	W	12
Total power consumed by Retrofit Tube lights	KW	30.804
Potential for energy saving	KWh	102.680
Daily operating hours	hours	6
Annual Energy Saving (240 days/year)	KWh	147859
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annuam	1449018/-
Cost of retrofitting T12 with LED lamps fitting	Rs./No.	1600/-
Total cost of Replacement	Rs.	4107200/-
Expected simple pay back period	Months	34

Proposal 7. By retrofitting present 20 W Tube lighting fixtures with energy efficient LED lighting fixtures:

The present Tube lighting fixtures consumes 20+12=32W powers per fitting. It is proposed to retrofit the 20 W Tube lighting fixtures with LED lights which consume 6 W powers per fitting. The savings shall be as under:

Particulars	Uom	Value
Total No. of 20 Watts Tube lights	Nos.	22
Power consumed by each 20W Tube light	W	20+12
Total power consumed by 20 W Tube lights	KW	0.704
Power consumed by each Retrofit LED Tube light	W	6
Total power consumed by Retrofit Tube lights	KW	0.132
Potential for energy saving	KWh	0.572
Daily operating hours	hours	6
Annual Energy Saving (240 days/year)	KWh	824
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annuam	8075/-
Cost of retrofitting 5W CFL with LED lamps fitting	Rs./ No.	1000/-
Total cost of Replacement	Rs.	22000/-
Expected simple pay back period	Months	33

Proposal 8 . By retrofitting present 5 W CFL lighting fixtures with energy efficient LED lighting fixtures:

The present CFL lighting fixtures consumes 5W powers per fitting. It is proposed to retrofit the 5 W CFL lighting fixtures with LED lights which consume 1 W powers per fitting. The savings shall be as under:

Particulars	Uom	Value
Total No. of 5 Watts CFL lights	Nos.	842
Power consumed by each 5W CFL light	W	5
Total power consumed by 5W CFL lights	KW	4.210
Power consumed by each Retrofit LED Tube light	W	2
Total power consumed by Retrofit Tube lights	KW	1.684
Potential for energy saving	KWh	2.526
Daily operating hours	hours	8
Annual Energy Saving (240 days/year)	KWh	4850
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annuam	47530/-
Cost of retrofitting 5W CFL with LED lamps fitting	Rs./ No.	500/-
Total cost of Replacement	Rs.	421000/-
Expected simple pay back period	Months	106

Proposal 9 . By retrofitting present 10W CFL lighting fixtures with energy efficient LED lighting fixtures:

The present CFL lighting fixtures consumes 10W powers per fitting. It is proposed to retrofit the 10 W CFL lighting fixtures with LED lights which consume 3W powers per fitting. The savings shall be as under:

Particulars	Uom	Value
Total No. of 10 Watts CFL lights	Nos.	566
Power consumed by each 10 W CFL light	W	10
Total power consumed by !0W CFL lights	KW	5.660
Power consumed by each Retrofit LED Tube light	W	3
Total power consumed by Retrofit Tube lights	KW	1.698
Potential for energy saving	KWh	3.962
Daily operating hours	Hours	6
Annual Energy Saving (240 days/year)	KWh	5705
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annuam	55909/-
Cost of retrofitting !0 W CFL LED lamps fitting	Rs./No.	600/-
Total cost of Replacement	Rs.	339600/-
Expected simple pay back period	Months	73

Proposal 10. By retrofitting present 14/18 W CFL lighting fixtures with energy efficient LED lighting fixtures:

The present CFL lighting fixtures consumes 14W/18W powers per fitting. It is proposed to retrofit the 14/18 W CFL lighting fixtures with LED lights which consume 5W powers per fitting. The savings shall be as under:

Particulars	Uom	Value
Total No. of 14/18 Watts CFL lights	Nos.	200
Power consumed by each 14/18 W CFL light (AVE)	W	16
Total power consumed by 14/18 W CFL lights	KW	3.200
Power consumed by each Retrofit LED Tube light	W	5
Total power consumed by Retrofit LED lights	KW	1.000
Potential for energy saving	KWh	2.200
Daily operating hours	hours	8
Annual Energy Saving (240 days/year)	KWh	4224
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annuam	41395/-
Cost of retrofitting 14/18 W CFL light with 5W LED lamps fittings.	Rs./No.	1000/-
Total cost of Replacement	Rs.	200000/-
Expected simple pay back period	Months	58

Proposal 11. By retrofitting present 15W/60W GSL Bulbs with energy efficient LED lighting fixtures:

The present AGL lighting fixtures consumes 60W powers per fitting. It is proposed to retrofit the AGL Lamps lighting fixtures with LED lights which consume 3W powers per fitting. The savings shall be as under:

Particulars	Uom	Value
Total No. of 60 Watts AGL lights	Nos.	21
Power consumed by each AGL Lamps	W	15/60
Total power consumed by AGL lamps	KW	0.788
Power consumed by each Retrofit LED light	W	3
Total power consumed by Retrofit Tube lights	KW	0.063
Potential for energy saving	KWh	0.725
Daily operating hours	Hours	8
Annual Energy Saving (240 days/year)	KWh	1392
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annuam	13642/-
Cost of retrofitting AGL Lamps with LED lamps fitting	Rs./No	600/-
Total cost of Replacement	Rs.	12600/-
Expected simple pay back period	Months	11

Fan System:

Particulars	60 W C.Fan	80 W C.Fan	20 W Wall Fan/T.Fan	Ex.Fan-150
No. of Fans	1811	822	41	234

Proposal 12. By replacing present 60W Ceiling Fans with 45 W Energy Efficient Fans.

There are 1811 nos. of 60 W Ceiling fans (48″ Sweep).Instead of these fans we use 45 W energy efficient fans which will be save 15 W power per Fan. They will consume 81.495 KW instead of 108.66 KW.The saving would be 27.165 KW(25 %).

Power saving expected	= 1811 X 15 = 27.165 KW
Annual energy savings	=27.165 X 8 Hrs X 240Days
	= 52157 KWh
Annual Saving	= 52157 X Rs.9.80 / kWh
	= Rs.511139/-
Investment	= 1811 X (actual value in Rs. – salvage Value in Rs.)
	= 1811 X (1300 – 300) = Rs.1811000/-
Simple Payback Period	= (1811000 / 511139) X 12months
	= 43 months

Proposal 13. By replacing present 80W Ceiling Fans with 45 W Energy Efficient Fans.

There are 822 nos. of 80 W Ceiling fans (56″ Sweep).Instead of these fans we use 45 W energy efficient fans which will be save 35 W power per Fan.

Power saving expected	= 822 X 35 W = 28.77 KW
Annual energy savings	=28.77 X 8 Hrs X 240 Days
	= 55238 KWh
Annual Saving	= 55238 X Rs.9.80 / kWh
	= Rs.541332/-
Investment	= 822 X (actual value in Rs. – salvage Value in Rs.)
	= 822 X (1300 – 300)
	= Rs.822000/-
Simple Payback Period	= (822000 / 541332) X 12months
	= 18 months

10. HEATING VENTILATION AND AIR CONDITIONING SYSTEM (HVAC)

Review of Air Conditioners
Split / Window Observations

- Breakup is as under given in table. More detail are at **Annexure 3**

Rated TR	No. of AC
1	40
1.5	256
2	57
Total	**353**

Proposal 14 :

Energy Conservation Option : Installing Energy Saver

The power consumption of present compressor is 1.96 kW per ton ; the power consumption after installing the energy saver will reduce up to 20%. Mega intelligent air conditioner energy saver is based on temperature control technology. It continuously monitors the actual temperature in the room and control temperature along with leads to more precise and accurate temperature in room achieving overall energy saving. The savings shall be as under:

Installing Energy Saver: Parameters	UOM	Value
Quantity of Window/ split 1TAir Conditioner	Nos.	40
Quantity of Window/split 1.5TairConditioner	Nos.	256
Quantity of Window/ split 2Tair Conditioner	Nos.	57
Total Number of A.C.s	Nos.	353
Present power consumption (1.96x538 T)	kW	1054.48
Proposed Power consumption after installing Energy Saver device @ 20%Saving	kW	843.584
Saving by Installing Energy Saver	kW	210.896
Operating hours per annum (6Hrs x 160 days)	Hour	960
Total Units Saved by Energy Saver per year	kWh/annum	202460
Cost Per unit	Rs./kWh	9.80
Total Saving per annum	Rs./annum	1984108/-
Cost of Energy Saver Device	Rs./Unit	6000
Total Cost of Energy Saver devices (353 Nos)	Rs.	2118000/-
Simple Payback Period	Months	13

Technical Specification

- Supply Voltage: 230+_15% V AC, 50 Hz
- Temperature Sensor: Solid State
- Controller Unit Microprocessor Based
- Connected AC Capacity: 1 ton to 5ton
- Energy saving rate: Up to 40%

11. **Computer System**

Presently only 12 buildings are having equipment in the Computer Area as mentioned in Annexure 3B. Hence Total number shall be considered as under.

Computer	:-	190 Nos
Printers	:-	63 Nos
Xerox	: -	10 Nos

Computers are the prime assets at all commercial establishments and consumed lot of Energy. It is also noticed that most of the computer users are unaware of the energy consumption of computers and also how to effectively reduce the same. Some of the energy conservation Tips for Computers Operators.

Proposal 15 :

Energy Conservation Option:

1. Turn off the office computers as well as any photocopiers and printers at night and at weekends.

2. Turn on the computer, monitor, and printer only when you need.

3. Turning a computer on and off doesn't use any extra electricity and won't damage your computer.

4. Shutting it down when not required for some time (recommended 30 min or more) reduces the wear on your computer increasing its life and cuts down on your power use.

5. Save power by turning off the computer monitor when you'll be away from it for more than15minutes.

6. Screen savers are NOT energy savers. Automatic switching to sleep mode or manually turning monitors off is always a better energy-saving strategy.

7. While purchasing, select a printer with power management capabilities. Printers with automatic "power down" features can reduce electricity use by over 65% whilst idle.

8. Preference for Laptop Computer because it consume 90% Less Energy than Desktop Computers.

9. Preference for flat panel LCD Monitor verses conventional CRT Monitor because it saves energy up to 70%.

10. Select the right sizes of the monitor as larger the size of monitor more the Electricity Consumption.

11. We further recommended Power Management Feature for a Window based PC which can save Energy up to 70%

	1. Press 'Start' 2. Go to 'Control Panel' 3. Select 'Power Options' or 'Power Management Options' 4. Set Monitor turn off time (15 mins recommended) System stand-by time (20/30 mins recommended) and other setting depending on your system.

Proposal 15A. :

There are almost 63 printers and 10 Xerox Machines installed as per data collected. The Xerox machines can be directly connected through LAN and 10 printers may be switched OFF for the normal working.

This will save 10 x 200 Watts i.e.2 KW load.

Hence annual saving of almost 2 KW x Load Factor 0.6 x4 Hrsx240 Days.

Annual saving = 1152 kWh

Annual Amount Saved =Rs.9.80 x 1152 = Rs.11290/-

Investment NIL.

Proposal 15 B :

Improvement in monitors

After changing the settings of the computer monitors expected energy saving is 4 % of the total loading of the computer i.e. 8 W out of 200 W.

Power saving expected = 190 X 8
= 1520 W
= 1.52 KW

Annual energy savings =1.52 KW X 8 Hrs X 240Days
= 2918 Units

Annual Savings = 2918 KWh X Rs.9.80 per KWh
= Rs.28596/-

Investment = NIL.

Proposal 15 C :

Improvement in CPU's of system

S. No.	Description	Qty.	Total	Unit
1	Number Of Computers	190	190	Nos.
2	Present power consumption @ 950 x 200 W	190	38	KW
3	Daily Power Consumption with 8 HR @ 60% Load		182.4	KWh
4	Average Daily Saving of 1 HR. after implementation of optimum operation CPU's	190	22.8	kWh
5	Daily Saving @ Rs.9.80 per KWh	190	223.44	Rs.
6	Annual Energy Saving (240days)		5472	KWh
7	Annual saving @ rs.9.80 per KWh		23626	Rs
8	Investment	-	NIL	_

12. WATER PUMPING SYSTEM

There is an underground Water tank where the Water supplied by the Aurangabad Municipal Corporation is received and stored. There are 13 water pumps of capacities as under.

Size	3 HP	5 HP	10 HP	Total
Nos	5	4	4	13
Total HP	15	20	40	75

As per Data collected the above water pumps for Main Building and other buildings run for an average of two hours per day for 260 working days and 1.5 hours per day during the 105 non working days.

Proposal 16:

Energy Conservation Option

Replacing water pumps with energy efficient five star rated water pumps.

Replace all pumps with latest Energy Efficient Pumps having overall efficiency of 75%.All old pumps having more than 15 years service are running at 50% efficiencies only.

Total connected load of water pumps = (10x4+5x4+3x5) x 0.746
= 52.276 KW

Pump Motors running at 70 % Load Factor and average 6 Hrs per day.

Energy consumed by Water Pumps =5 2.762 KW x 70 % x (2 Hrs x 260 days+1.5 Hrs x 105 Days)
= 25022 KWh.

Saving due to overall efficiency improved from 50% to 75% would be
= 25022x0.5/0.75 KWh
= 16681 KWh

Annual Saving =16681 x Rs.9.80
= Rs.163473

Investment = 4 x Rs.15000/- + 4 x Rs.10000/- + 5 x Rs.7000/-
= Rs.135000/-

Simple Pay Back Period = (163473 / 135000) x 12 months
= 10 Months.

13. DIESEL GENERATOR SET

- There is one no D.G Set of capacity 100 kVA installed in Auditorium.
- There are other Two D.G.sets of 30 KVA each in other buildings.
- No load shading has done in Aurangabad. No other form of energy is used in the building. However the D.G. sets of 1 No 100KVA + 2 Nos 30 KVA installed for Supply to the emergency loads at the time of power failure from GTL.
- **Due to limitation of Working Hours of DG Sets the cost recovery and Payback Period may not attract the offer. But it is important to have the sound proof DG Sets as per the latest Technical Specifications.**

14. AIR HANDLING SYSTEMS.

There are 6 Nos of AHUs installed in the Auditorium.

Energy Saving Proposals: NIL

15. FIRE FIGHTING SYSTEM :

Fire fighting system consists of Water Pumps which are to be run only during emergency and hence the running hours are limited.

Energy Saving Proposals: NIL

16.STREET LIGHTS.

150 W SV/MH 152 Nos + 85 W CFL 28 Nos + 40 W Tube 10 Nos.+ Solar Street lights 11 W 142 Nos.

Building Lights 150 W 42 Nos +40 W Tubes 80 Nos +2x24 W CFL Tubes 20 Nos + CFL 45 Nos + MH 70 W 31 Nos = 218 Nos.

MH Flood Lights 70W 12 Nos + 150 W 3 Nos +250 W7 Nos + 400 W 14 Nos = 36 Nos.

It should be noted that the Metal Halide, Sodium Vapor & CFL Street Light fixtures need not be replaced with alternate fixtures as they are themselves quite efficient.

Solar Street Lights themselves are not consuming any Power from the supply source, hence need no proposals. Their Batteries need maintainence which should be taken care.

Only 40 W Tube fixtures need replacement with either CFL or LED fixtures. Replacement with LED fixtures shall be more economic.Hence proposed.

Proposal 17.

Particulars	Uom	Value
Total No. of 40 Watts Tube lights fixtures	Nos.	90
Power consumed by each 40 W Tube light	W	40+12
Total power consumed by T12 Tube lights	KW	4.68
Power consumed by each Retrofit LED Tube light	W	12
Total power consumed by Retrofit LED Tube lights	KW	1.08
Potential for energy saving	KWh	3.60
Daily operating hours	hours	12
Annual Energy Saving (365 days/year)	KWh	**15768**
Average Unit Charges	Rs./ KWh	9.80
Annual Saving	Rs/Annum	**154526/-**
Cost of retrofitting 40 W Tube with LED fittings	Rs./No.	2600/-
Total cost of Replacement	Rs.	**234000/-**
Expected simple pay back period	Months	**18**

17. THERMIC FLUID HEATER/ BOILER

Thermic Fluid Heater/ Boiler this equipment is not applicable for this office.

No Proposal .

18. WATER COOLERS.

As per data collected there are Total 74 Water Coolers installed.
Humanity Bldg 7nos + departments 3 Nos +2 Nos and other singles 27 Nos.

Energy Conservation option:

No Proposal.

19.SOLAR WATER HEATERS :

Total 35000 Lit capacity comprising of 500/1000/1500 Lit capacity units.

No Proposal.

20. ENERGY MONITORING AND ACCOUNTING SYSTEM

20.1Present energy monitoring & accounting system

There is no any energy monitoring and accounting System at present.

20.2 Effective energy monitoring & accounting system i.e.

Building Management System (BMS)

Definition: Building Management systems are rapidly developing as all technologies are. Many management systems have been employed for as long as commercial buildings have existed, whether this be through man power loading coal in to coal fired boilers or even opening water pipe valves manually with the use of a round wheel like handle so to enable heated water to flow through a radiator circuit. However, "BMS" as a phrase, is relatively new (past 20 years) the phrase has only really existed since the existence of complexes electronic machines that are capable of retaining bespoke data written for the purposes of "managing the services such as power lighting heating.

Building Management System (BMS) is a computer-based control system installed in buildings that controls and monitors the building's mechanical and electrical equipment such ventilation, lighting, power systems, fire systems, and security systems. A BMS consists of software and hardware; the software program, usually configured in a hierarchical manner, can be proprietary using such protocols as C-bus, Profibus, etc. Recently however

new vendors are producing BMSs that integrate using Internet protocol and open standards like Device net,

SOAP, XML, BACnet, Lon and Modbus

BMS is more typical in a large building. Its core function is to manage the environment temperature, CO2 level and humidity within a building. As a core function in most BMS systems, it controls the production of heating and cooling, manages the systems that distribute this air throughout the building, and then locally controls the mixture of heating and cooling to achieve the desired room temperature. A key secondary function is to monitor the level of human generated CO2, mixing in outside air with waste air to increase the amount of O2 while also minimizing heat/cooling losses. Systems linked to a BMS typically represent 40% of a building's energy usage; if lighting is included this number approaches 70%.BMS systems are a critical component to managing energy demand. Improperly configured BMS systems are believed to account for 20% of building energy usage, or approximately 8% of total energy usage in the United States. BMS systems are delivered as fully integrated systems and services through companies like Siemens, Honeywell, Johnson Controls, TAC and others.

20.3 Integrated Building Management System

Integrated Building Management System (IBMS) is a complete information delivery system that monitors and controls a variety of systems and functions at an optimal level of efficiency.

The systems design of the IBMS consists of the following components: Building Automation System Building Automation System (BAS) is a micro processor control system designed to monitor and control all parameters of HVAC, electrical, PHE, fire protection, elevators and other building services/utilities. BAS helps in conserving energy by executing various energy efficient programs for optimized performance of the systems and to assist the operation and maintenance of the installation.

The system is DDC (Direct Digital Control) based with functions distributed both physically and functionally over the field controllers. The DDC interface, with sensors, actuators and environmental control systems, carries out various functions of energy management, alarm Detection, time/event/holiday/temporary scheduling, communication interface/control and building maintenance & report generation.

These controllers are capable of functioning on a stand-alone mode, even in case of loss of communication with the central control station. We work closely with the owners and architects to install software packages into the system that are customized for the project. Other Integrated packages in the system include active graphics software, energy management software, alarm indication software, maintenance package and billing software.

20.4 Energy Conservation Option

Creating awareness for energy conservation practices and better house keeping

Housekeeping recommendations: These were given during the previous audit and are submitted again and these should be followed regularly by the staff. These can save power consumption by 1%. These are short-term and low investment actions and relates to good and correct practices. The audit team observed following wrong practices and it was suggested to correct the same to stop wastage.

Some of the good practices which can reduce power in room air conditioner are:

i) Regularly clean suction air filter.

ii) Regularly clean fins of evaporator and condenser. Do not use any acid or strong soap solution for cleaning as it might damage outside protective covering provide by good manufacturers.

iii) Insulate the walls and ceiling exposed to sun with 50 mm thermocole. The glass of windows is double or covered with film.

The housekeeping measures involving no investment or very low investment/incentive can easily save at least 2% of present power consumption.

Proposal 18 :

Creating awareness for energy conservation practices.

Power saving expected in by above is at least 1 % of the total consumption.

Considering the annual consumption of the All Buildings for year 2012-2013 as mentioned in Annexure 1 :

Annual consumption is = 982874 kWh

Energy saving expected is 1 %

Annual Energy saving is = **9828 kWh**

Annual Saving = 9828 X Rs. 9.80 per KWh
= **Rs. 96314/-**

Expected Investment = **Rs. 60000/-**

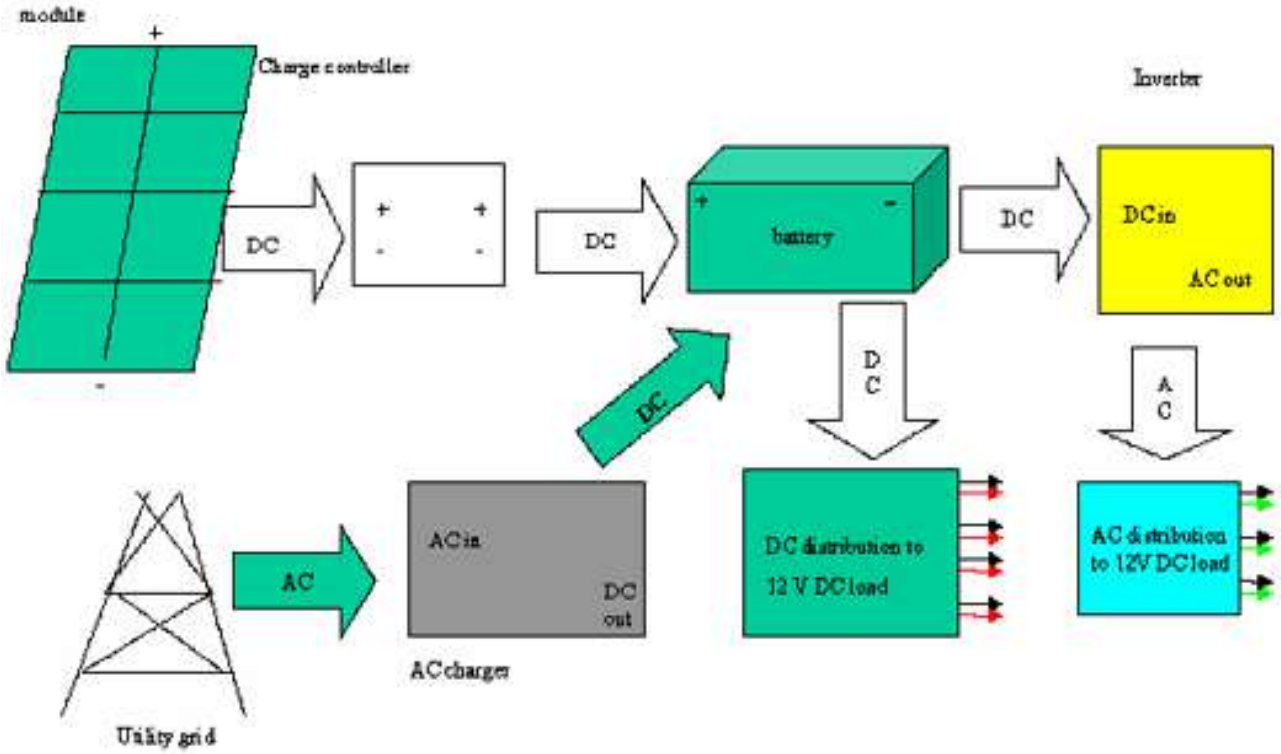
SPP = (60000/96314) x 12 months.
= **8 months.**

21. RENEWABLE ENERGY:

21.1. Solar PV system:

Solar PV power generation systems consists of interconnected components, each having specific function. One of the major features of PV systems is modularity. As your needs grow, individual components can be replaced or added to provide increased power demand. Following are the main components of a typical PV system.

Schematic of Solar PV System:



Solar Array

The solar array comprises of one or more PV modules which convert sunlight into electric energy. The modules are connected in series and/or parallel to provide the voltage and current levels to meet your power needs. The array is normally mounted on a metal structure and inclined to face the sun.

Charge Controller

Charge controllers their main function is to maintain the batteries at the proper charge level, and to protect them from overcharging.

Battery Bank

The battery bank contains one or more set of batteries, connected in series and/or parallel depending on the voltage and current capacity required. The batteries store the power produced by the solar array and discharge it whenever required.

Inverter

The inverter converts the DC power from the solar array/batteries into AC power.

AC and DC Loads

These are the appliances (such as lights or radios), and the components (such as water pumps and microwave repeaters), which consume the power generated by your PV array.

Balance of System

These components provide the interconnections and standard safety features required for any electrical power system. These include: array combiner box, properly sized cabling, fuses, switches, circuit breakers and meters.

Five Steps to Sizing a Solar PV System

- **Determination of Power Consumption Demands**

Make a list of the appliances and/or loads you are going to run from your PV system. Find out how much power each item consumes while operating. Most appliances have a label on the back which lists the wattage

- **Optimization of Power System Demands**

Examine your power consumption and reduce your power needs as much as possible. Identify large and/or variable loads (such as water pumps, outdoor lights, electric ranges, AC refrigerators, etc.) and try to eliminate them or examine alternatives available. Replace incandescent fixtures with fluorescent lights wherever possible. Fluorescent lamps provide the same level of illumination at lower wattage levels. If there is a large load that you cannot eliminate, consider using it only during peak sun hours or only during the summer. Revise your Load Sizing.

- **Sizing of Battery Bank**

Understand characteristics of Batteries and then choose the appropriate battery for your needs.

• **Determine the Sun Hours Available Per Day**

Following factors influence how much sun power your modules will be exposed to are:

- **When the system is being used – summer, winter, or year-round.**
- **Typical local weather conditions.**
- **Fixed mountings vs. trackers.**
- **Location and angle of PV array.**

* Sizing of PV Array

Suitable size PV Array may be installed at every individual building so that various small systems shall be added and the distribution system shall be limited to the particular building only.

Detailed study of above four factors will decide size of PV system.

Typical costing of 50 kW Solar PV system is given hereunder.

Proposal 19:

Installation of Solar power Array.

Installing Solar PV System:		
Solar PV System	Unit	
Present power consumption	kWh/hr.	50
Average sunshine hours	Hours	6
Total no. of days per annum	Days/annum	270
Operating hours per annum	Hour	1620
Total Energy generated	kWh/annum	81000
Cost of power (assumed)	Rs./kWh	10
Present Cost of power generated	Rs./annum	810000
Cost of Solar PV System	Rs.	5000000
Total Saving per annum	Rs./annum	810000
Simple Payback Period	Months	74

22.LIST OF VENDORS:

1. ELECTRONIC BALLAST

- **Elmech Electronics,**

Lake Palace Building,
Marol Village Road ,
Marol Andheri (E) ,
Mumbai .

- **West Coast Instruments & Devices**,

1/1, Sahar Tower Parsiwada
Andheri Sahar Road

- **Philips India Ltd**

Business Group Lamps
P-65 Tarotalla Road
Calcutta – 700 088

- **Eurolight Electricals Ltd**

20 Rahi Chambers, Sadashiv Peth,
L. B. S. Marg
Pune --- 411 030

- **Crompton Greaves ltd**

Lighting Business Group
405, Concorde R.C. Dutt Road
Baroda --- 390 007

2. VOLTAGE CONTROLLER FOR LIGHTING

- **Anupushp Energy & Environmental**

Services Pvt.Ltd.
917/ 19-A shivaji Nagar
Fergusson College Road
Pune - 411 004

• **Energy Systems**
No . 3660, 5th Cross, B- Block
Gayatri Nagar,
Banglore 560021

• **Beblec India Pvt Ltd**
P.B. No 3411, 711, 6th Cross
3rd Block, Koramangala
Banglore --- 560 034

• **Vijay Energy Product Pvt Ltd**
Sp -75 Ambattur Industrial Estates
Chennai 600 058
aceinnov@giasmd01. vsnl. net.in

3. LUX METERS

• **Pulsecho Systems Pvt Ltd**
Unit No 110,
Nirmal Industrial Estate
Near Sion Fort, Sion,
Mumbai -- 400 022

• **Research Instrumentation**
A-10, Nairana Industrial Area,
Phase-1
New Delhi – 110 028

• **Conin Prakiti Instrumentation**
16 Rajandra Nagar Industrial Estates
P.O. Mohan Nagar
Ghaziabad --- 201 007

4. SOFT WARE FOR LIGHTING DESIGN

• **Tata Infotech Ltd**
Noida Export Processing Zone
Noida U.P 201 305
ecolumen.info@tatainfotech.com

5. HIGH EFFICIENCY MOTORS

• **Crompton Greaves Ltd**
Machine Division –1.,
Dr.E. Moses Road, Worli
Mumbai 400 018

• **N.G.E.F .Ltd**
P .B .No 3876 Byappanahalli
Bangalore 560 038

• **Bharat Bijlee Limited**
P.B. No 100, Thane- Belapore Road,
Thane 400 601.

• **Kirloskar Electric Ltd**
Unit No 1 P,B.; No 5555
Malleswaram (West)
Bangalore 560 055

• **Siemens Ltd**
Electric Mansion 1086 Appasaheb
Marg, Prabhadevi ,P.B No 19111
Mumbai 400 071

• **Asea Brown Boveri Ltd**
Plot No 32 Industrial Estate
Faridabad 121 001

• **Polyphase Motors**
702 ,GIDC, Makarpura ,
Baroda 390 010

6. STAR DELTA AUTO CONTROLLERS
For Motors
• **Project And Supply**
A-605 ,Sun swept,
Lokhandwala Complex ,
Swami Samarth Nagar
Four Bungalows ,Andheri (west)
Mumbai 400 056

• **Vijay Energy product Pvt Ltd**
SP- 75 Ambattur Industrial Estate
Chennai 600 058
• **Rulac Engineers Pvt Ltd**
111, Gala Complex Dumping Road
Mulund (West)
Mumbai 400 080

7. SOFT STARTERS WITH ENERGY SAVING FEATURES

For Lightly Loaded Motors
• **Bharat Bijlee Limited,**
Indl Electronics Division,
501-502 Swastik Chambers ,
Chembur ,
Mumbai 400 023 .
• **Crompton Greaves Limited**
Industrial Electronic Division,
71/72, MIDC Indl Area,
Satpur, Nashik - 422 007.

• **Allen Bradley India Limited**
C- 1, Industrial Area,site -4 ,
Sahibabad
Ghaziabad 201 010

• **Hi – Rel Electronics Pvt Ltd**
Shanti Chambers .opp. Dinesh Hall,
Navarangpure, Ahmedabad 380 009
• **Amtech Electronics India Pvt Ltd ,**
E-6 , G. I.D.C Electronics Zone .
GANDHINAGAR – 382 044

8. HIGH EFFICIENCY PUMPS

• **Kirloskar Brothers Limited**
Udyog Bhavan
Tilak Road
Pune 411 002

• **KSB Pumps Limited** ,
126 Maker Chambers III,
Nariman Point,
Mumbai 400 021.

• **Sam Chemical Process Pumps Pvt Ltd.**
Bharathi Park Cross Raod ,No -7,
P.B. No 2725,
Coimbatore --- 641 011

• **Jyoti Pumps & Electricals Ltd .**
Industrial Area ,
Vadodara – 390 003

• **Worthington Pumps India LTd** .
8, AJC Bose Raod ,
Calcutta 700 017

9. SOLAR PV SYSTEMS :

M/S Marathwada Institute of Technology,
ESCO Authorised by BEE.
Beed Bypass Road,Aurangabad-431028.
Tel - 0240 2375 116 Fax – 0240 2375275
(M) 09422201327.

10. ENERGY SAVERS.

M/s Arti Electricals & Installation Engineers.
B-36,M.I.D.C.,Waluj-431136.
Distt.- Aurangabad.
Ph. 0240 2333113.
E mail ID :

11. LED LIGHTING RETROFITTINGS.

MEGA ENERGY SOLUTIONS.
Mehta Hospital Building,
Mumbai-Pune Road,
D-111/2,MIDC,CHINCHWAD-411019.
Tel. : 020-64108048 Fax.: 020-66118870
E mail : megaenergysolutions@gmail.com
Website : www.megaenergysolutions.in

ANNEXURE 1.

BILL NO - 01

MARATHWADA UNIVERSITY **CONSUMER NO : 490010633751**

ENERGY METER READING DETAILS :

BUILDING NAME : ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R8043300 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	5418	25	3	150	47222.76
Aug-12	4660	25	3	150	40542.65
Sep-12	3937	25	3	150	33067.04
Oct-12	3767	25	3	190	35249.15
Nov-12	4239	25	3	190	39932.10
Dec-12	3212	25	3	190	27775.66
Jan-13	3948	25	3	190	33092.13
Feb-13	3028	25	3	190	24792.91
Mar-13	3737	25	3	190	32501.61
Apr-13	4994	25	3	190	42661.45
May-13	6298	25	3	190	51635.18
Jun-13	8076	25	3	190	67602.32
SUB TOTAL	55314	25	3	150/190	476074.76

BILL NO - A 02

DR.BAMU **CONSUMER NO : 490010633645**

ENERGY METER READING DETAILS :

BUILDING NAME : PRESS / ADM BUILDING. **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 9000022375 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	518	15	15	200	4110.51
Aug-12	640	15	15	200	5423.68
Sep-12	459	15	15	200	3042.92
Oct-12	468	15	15	230	3612.03
Nov-12	487	15	15	230	3813.69
Dec-12	623	15	15	230	4886.80
Jan-13	467	15	15	230	3325.26
Feb-13	424	15	15	230	2903.07
Mar-13	495	15	15	230	3842.18
Apr-13	1043	15	15	230	9546.26
May-13	708	15	15	230	5637.87
Jun-13	667	15	15	230	5052.62
SUB TOTAL/ANNUAL	6999	15	15	200/230	55196.89

BILL NO - A 03

MARATHWADA UNIVERSITY **CONSUMER NO : 490010083092**

ENERGY METER READING DETAILS :

BUILDING NAME : LIBRARY/ ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 7611239818 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	1789	20	20	150	15340.91
Aug-12	2065	20	20	150	17747.66
Sep-12	1441	20	20	150	12048.99
Oct-12	1149	20	20	190	10567.36
Nov-12	1204	20	20	190	11113.04
Dec-12	906	20	20	190	7627.17
Jan-13	1588	20	20	190	13371.44
Feb-13	1166	20	20	190	9596.46
Mar-13	1208	20	20	190	10439.25
Apr-13	1191	20	20	190	9883.46
May-13	1252	20	20	190	9927.88
Jun-13	1564	20	20	190	12720.55
SUB TOTAL/ANNUAL	16523	20	20	150/190	129540.28

BILL NO -A 04

MARATHWADA UNIVERSITY **CONSUMER NO : 490011509735**

ENERGY METER READING DETAILS :

BUILDING NAME : TOURIIUM DEPT / ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 9000056977 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	289	8	8	150	2507.95
Sep-12	215	8	8	150	1709.63
Oct-12	203	8	8	190	1816.67
Nov-12	222	8	8	190	2036.97
Dec-12	131	8	8	190	1152.66
Jan-13	159	8	8	190	1333.41
Feb-13	125	8	8	190	1102.00
Mar-13	174	8	8	190	1512.25
Apr-13	200	8	8	190	1628.9
May-13	234	8	8	190	1899.64
Jun-13	184	8	8	190	1455.77
Jul-13	203	8	8	190	1632.26
SUB TOTAL	2339	8	8	150/190	19788.11

BILL NO - A 05

MARATHWADA UNIVERSITY **CONSUMER NO : 490010952350**

ENERGY METER READING DETAILS :

BUILDING NAME : JOURNALISM DEPT / ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 9000058396 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	1187	8	8	150	11724.96
Sep-12	1050	8	8	150	10379.69
Oct-12	1183	8	8	190	13128.20
Nov-12	1251	8	8	190	13916.64
Dec-12	965	8	8	190	9938.30
Jan-13	809	8	8	190	7904.00
Feb-13	652	8	8	190	6278.96
Mar-13	1063	8	8	190	11018.56
Apr-13	1439	8	8	190	14529.38
May-13	1369	8	8	190	13149.32
Jun-13	925	8	8	190	8806.99
Jul-13	682	8	8	190	6434.62
SUB TOTAL	13748	8	8	150/190	127209.62

BILL NO - A 06

MARATHWADA UNIVERSITY **CONSUMER NO : 490010153601**

ENERGY METER READING DETAILS :

BUILDING NAME :GARDEN AMBERAI / ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 7611238300 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	29	3	3	100	226.06
Aug-12	0	3	3	100	100
Sep-12					
Oct-12					
Nov-12					
Dec-12					
Jan-13					
Feb-13					
Mar-13					
Apr-13					
May-13					
Jun-13					
Jul-13					
SUB TOTAL					

BILL NO - A 07

MARATHWADA UNIVERSITY **CONSUMER NO : 490010487592**

ENERGY METER READING DETAILS :

BUILDING NAME : HISTORY MUSIUM / ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 7600157115 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	958	11	11	150	8023.55
Sep-12	869	11	11	150	7154.69
Oct-12	703	11	11	190	6360.95
Nov-12	742	11	11	190	6747.89
Dec-12	758	11	11	190	6469.64
Jan-13	1208	11	11	190	10206.50
Feb-13	884	11	11	190	7317.57
Mar-13	1107	11	11	190	9725.10
Apr-13	798	11	11	190	6581.19
May-13	995	11	11	190	7956.41
Jun-13	1002	11	11	190	8091.15
Jul-13	671	11	11	190	5357.13
SUB TOTAL	10695	11	11	150/190	89991.77

BILL NO - A 08

MARATHWADA UNIVERSITY **CONSUMER NO : 490010091702**

ENERGY METER READING DETAILS :

BUILDING NAME : SUMP WELL / UNIVERSITY STADIUM **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER :R0057113 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	264	10	10	150	1943.08
Sep-12	660	10	10	150	2958.11
Oct-12	223	10	10	190	1582.52
Nov-12	268	10	10	190	2028.98
Dec-12	259	10	10	190	1813.82
Jan-13	353	10	10	190	2577.46
Feb-13	282	10	10	190	1970.32
Mar-13	305	10	10	190	2302.59
Apr-13	290	10	10	190	2013.95
May-13	343	10	10	190	2348.21
Jun-13	305	10	10	190	2077.96
Jul-13	305	10	10	190	2191.76
SUB TOTAL	3857	10	10	150/190	25808.75

BILL NO - A 09

MARATHWADA UNIVERSITY **CONSUMER NO : 490010174870**

ENERGY METER READING DETAILS :

BUILDING NAME : EMPLOYMENT OFFICE/ ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 5500022487 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	3116	5	1	150	26995.63
Sep-12	6370	5	1	150	28983.90
Oct-12	2638	5	1	190	25581.88
Nov-12	2794	5	1	190	27129.63
Dec-12	2599	5	1	190	23610.08
Jan-13	2923	5	1	190	25499.68
Feb-13	2259	5	1	190	19516.98
Mar-13	2604	5	1	190	23572.57
Apr-13	2941	5	1	190	25802.93
May-13	3595	5	1	190	30135.39
Jun-13	3746	5	1	190	31780.65
Jul-13	2719	5	1	190	23035.20
SUB TOTAL	38304	5	1	150/190	311644.52

BILL NO - A 10

MARATHWADA UNIVERSITY **CONSUMER NO : 490010067453**

ENERGY METER READING DETAILS :

BUILDING NAME :HUMINITY BUILDING / PARIKSHA BHAWAN **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R0032579 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	3065	15	3	150	26531.86
Sep-12	2656	15	3	150	22601.98
Oct-12	2557	15	3	190	24229.44
Nov-12	2681	15	3	190	25459.70
Dec-12	2045	15	3	190	17910.19
Jan-13	2455	15	3	190	20783.80
Feb-13	1881	15	3	190	15620.72
Mar-13	2679	15	3	190	23716.39
Apr-13	3009	15	3	190	25863.34
May-13	3706	15	3	190	30532.49
Jun-13	2727	15	3	190	22445.54
Jul-13	2203	15	3	190	18309.63
SUB TOTAL	29209	15	3	150/190	274005.08

BILL NO - A 11

MARATHWADA UNIVERSITY **CONSUMER NO : 490010246013**

ENERGY METER READING DETAILS :

BUILDING NAME : AMBERAI WATER PUMP / BOTONICAL GARDEN **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R0522610 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	762	5	5	30	6658.57
Sep-12	1198	5	5	30	3090.23
Oct-12	521	5	5	40	4402.76
Nov-12	316	5	5	40	2197.69
Dec-12	453	5	5	40	3462.47
Jan-13	548	5	5	40	4369.28
Feb-13	122	5	5	40	548.88
Mar-13	465	5	5	40	2884.35
Apr-13	465	5	5	40	2884.35
May-13	243	5	5	40	1376.44
Jun-13	243	5	5	40	1350.57
Jul-13	243	5	5	40	1386.62
SUB TOTAL/ANNUAL	5579	5	5	40	34612

BILL NO - A 12

MARATHWADA UNIVERSITY **CONSUMER NO : 490010170394**

ENERGY METER READING DETAILS :

BUILDING NAME :URDU DEPT / PARIKSHA BHAWAN **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 7605349151 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	429	11	11	150	3376.70
Sep-12	448	11	11	150	3547.94
Oct-12	423	11	11	190	3739.34
Nov-12	397	11	11	190	3481.38
Dec-12	272	11	11	190	2293.18
Jan-13	266	11	11	190	1975.33
Feb-13	236	11	11	190	1735.48
Mar-13	303	11	11	190	2456.64
Apr-13	352	11	11	190	2741.92
May-13	461	11	11	190	3562.28
Jun-13	357	11	11	190	2683.59
Jul-13	288	11	11	190	2131.45
SUB TOTAL	4232	11	11	150/190	33725

BILL NO - A 13

MARATHWADA UNIVERSITY **CONSUMER NO : 490010182643**

ENERGY METER READING DETAILS :

BUILDING NAME :IAS COACHING CENTRE/ ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 5307334118 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	560	6	6	150	4527.43
Sep-12	618	6	6	150	5057.06
Oct-12	716	6	6	190	6635.89
Nov-12	847	6	6	190	7935.62
Dec-12	772	6	6	190	6745.78
Jan-13	1191	6	6	190	10201.09
Feb-13	1003	6	6	190	8517.36
Mar-13	1578	6	6	190	14220.7
Apr-13	2608	6	6	190	22942.76
May-13	2583	6	6	190	21634.67
Jun-13	3250	6	6	190	27629.04
Jul-13	1242	6	6	190	10355.72
SUB TOTAL	16968	6	6	150/190	146403

BILL NO - A 14

MARATHWADA UNIVERSITY **CONSUMER NO : 490010143460**

ENERGY METER READING DETAILS :

BUILDING NAME : SONERI MAHAL DP/COLLEGE OF SOCIAL WELFARE **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 5307334118 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	3436	19	19	150	11844.62
Sep-12	595	19	19	150	5668.97
Oct-12	526	19	19	190	5552.14
Nov-12	574	19	19	190	6108.68
Dec-12	401	19	19	190	3851.97
Jan-13	426	19	19	190	3960.8
Feb-13	315	19	19	190	2833.39
Mar-13	461	19	19	190	4563.8
Apr-13	631	19	19	190	6112.55
May-13	722	19	19	190	6748.92
Jun-13	676	19	19	190	6338.83
Jul-13	356	19	19	190	3169.58
SUB TOTAL	9119	19	19	150/190	66754

BILL NO - A 15

MARATHWADA UNIVERSITY **CONSUMER NO : 49001063311**

ENERGY METER READING DETAILS :

BUILDING NAME : SONERI MAHAL DP / ZOOLOGY DEPT. **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R7334121 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	4040	12	12	150	41031.5
Aug-12	--	--	--	--	--
Sep-12	4094	12	12	150	42235.87
Oct-12	3985	12	12	190	45681.39
Nov-12	3266	12	12	190	37342.6
Dec-12	3420	12	12	190	36674.96
Jan-13	3364	12	12	190	39751.41
Feb-13	3212	12	12	190	32831.67
Mar-13	3230	12	12	190	34466.11
Apr-13	4548	12	12	190	47138.31
May-13	5578	12	12	190	55119.89
Jun-13	5549	12	12	190	55476.01
Jul-13	3699	12	12	190	36874.94
SUB TOTAL	47985	12	12	150/190	504625

BILL NO - A 16

MARATHWADA UNIVERSITY **CONSUMER NO : 490010170424**

ENERGY METER READING DETAILS :

BUILDING NAME : ADMINISTRATIVE BUILDING **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 7611238305 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	699	12	12	150	5764.93
Aug-12	311	12	12	150	2340.16
Sep-12	259	12	12	150	1806.71
Oct-12	258	12	12	190	2050.45
Nov-12	316	12	12	190	2625.89
Dec-12	181	12	12	190	1262.14
Jan-13	273	12	12	190	1985.83
Feb-13	232	12	12	190	1648.21
Mar-13	317	12	12	190	2534.09
Apr-13	505	12	12	190	4060.01
May-13	853	12	12	190	6850.9
Jun-13	959	12	12	190	7824.78
Jul-13	627	12	12	190	5029.85
SUB TOTAL	5790	12	12	190	45783.95

BILL NO - A 17

MARATHWADA UNIVERSITY **CONSUMER NO : 49001009764**

ENERGY METER READING DETAILS :

BUILDING NAME : MATHEMATICS DEPT /SONERI MAHAL DP **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R0055896 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	1104	12	12	150	9306.04
Sep-12	1101	12	12	150	9295.14
Oct-12	1041	12	12	190	8781.13
Nov-12	1106	12	12	190	10426.02
Dec-12	775	12	12	190	6694.41
Jan-13	764	12	12	190	6319.82
Feb-13	850	12	12	190	7048.18
Mar-13	1072	12	12	190	9468.58
Apr-13	1547	12	12	190	13358.1
May-13	2281	12	12	190	18981.89
Jun-13	1588	12	12	190	13216.88
Jul-13	915	12	12	190	7495.29
SUB TOTAL	15089	12	12	190	128317.59

BILL NO - A 18

MARATHWADA UNIVERSITY **CONSUMER NO : 490010097972**

ENERGY METER READING DETAILS :

BUILDING NAME : ENVOIRONMENTAL SCIENCE / SONERI MAHAL DP **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R0059842 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	1340	11	11	150	11379.11
Sep-12	989	11	11	150	8154.75
Oct-12	1057	11	11	190	9800.61
Nov-12	1081	11	11	190	10038.72
Dec-12	818	11	11	190	6954.96
Jan-13	938	11	11	190	7729.86
Feb-13	763	11	11	190	6173.47
Mar-13	963	11	11	190	8322.72
Apr-13	1253	11	11	190	10584.93
May-13	1826	11	11	190	14965.3
Jun-13	2132	11	11	190	17766.31
Jul-13	1139	11	11	190	9357.96
SUB TOTAL	15779	11	11	190	133854.95

BILL NO – A 19

MARATHWADA UNIVERSITY

CONSUMER NO : 490010150067

ENERGY METER READING DETAILS :

BUILDING NAME : CENTRAL WORKSHOP / CHEMICAL TECHNOLOGY.

FLOOR : GF/ FF/ SF/ TF

METER SR. NUMBER : R0190926

MAKE :

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Aug-12	592	16	16	150	4824.3
Sep-12	1444	16	16	150	7285.74
Oct-12	526	16	16	190	4789.71
Nov-12	485	16	16	190	4382.93
Dec-12	379	16	16	190	3130.56
Jan-13	676	16	16	190	5654.43
Feb-13	872	16	16	190	7396.16
Mar-13	969	16	16	190	8635.55
Apr-13	700	16	16	190	5466.63
May-13	754	16	16	190	6087.57
Jun-13	608	16	16	190	4877.25
Jul-13	395	16	16	190	3068.7
SUB TOTAL	8400	16	16	190	65599.53

BILL NO - A 20

MARATHWADA UNIVERSITY

CONSUMER NO : 490010246056

ENERGY METER READING DETAILS :

BUILDING NAME : HISTORY MUSIUM / ADMINISTRATIVE BUILDING

FLOOR : GF/ FF/ SF/ TF

METER SR. NUMBER : 7600056910

MAKE :

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	301	10	10	150	2268.37
Aug-12	301	10	10	150	2254.01
Sep-12	301	10	10	150	2276.3
Oct-12	301	10	10	190	2569.58
Nov-12	301	10	10	190	2569.57
Dec-12	301	10	10	190	2417.52
Jan-13	101	10	10	190	815.9
Feb-13	417	10	10	190	3379.02
Mar-13	1151	10	10	190	10328.5
Apr-13	1859	10	10	190	16283.65
May-13	2608	10	10	190	21898.81
Jun-13	2416	10	10	190	20485.8
Jul-13	1037	10	10	190	8612.88
SUB TOTAL	11395	10	10	190	96159.91

BILL NO - A 21

MARATHWADA UNIVERSITY **CONSUMER NO :490010246064**

ENERGY METER READING DETAILS :

BUILDING NAME :COMPUTER SCIENCE **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R1059578 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Aug-12	2200	10	10	150	22122
Sep-12	2309	10	10	150	23270
Oct-12	2515	10	10	190	28312
Nov-12	2316	10	10	190	26005
Dec-12	1512	10	10	190	15622
Jan-13	1331	10	10	190	13075
Feb-13	1224	10	10	190	11938
Mar-13	2381	10	10	190	24982
Apr-13	3614	10	10	190	37038
Jun-13	3296	10	10	190	32445
Jul-13	1551	10	10	190	15287
SUB TOTAL	24249	10	10	190	250097

BILL NO - A 22

MARATHWADA UNIVERSITY **CONSUMER NO :490010106459**

ENERGY METER READING DETAILS :

BUILDING NAME :PHYSICS DEPT / CHEM TECHNO **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER :R0190930 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Aug-12	1278	10	10	150	10834
Sep-12	842	10	10	150	7022
Oct-12	1146	10	10	190	10865
Nov-12	840	10	10	190	7829
Dec-12	687	10	10	190	5919
Jan-13	877	10	10	190	7368
Feb-13	674	10	10	190	5567
Mar-13	742	10	10	190	6463
Apr-13	743	10	10	190	6197
May-13	1663	10	10	190	13758
Jun-13	2525	10	10	190	21338
Jul-13	1056	10	10	190	8733
SUB TOTAL	13073	10	10	190	111894

BILL NO - A 23

MARATHWADA UNIVERSITY **CONSUMER NO :490010106467**

ENERGY METER READING DETAILS :

BUILDING NAME :PHYSICS
DEPT / CHEM TECHNO **CHEMICAL TECHNOLOGY** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER :7600333720 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Aug-12	1589	11	11	150	13566
Sep-12	1248	11	11	150	10476
Oct-12	1246	11	11	190	11682
Nov-12	1394	11	11	190	13150
Dec-12	1092	11	11	190	9509
Jan-13	1305	11	11	190	11004
Feb-13	1074	11	11	190	8934
Mar-13	1174	11	11	190	10278
Apr-13	1309	11	11	190	11093
May-13	1286	11	11	190	10370
Jun-13	1042	11	11	190	8370
Jul-13	1030	11	11	190	8421
SUB TOTAL	14789	11	11	190	126853

BILL NO - A 24

MARATHWADA UNIVERSITY **CONSUMER NO :490010365535**

ENERGY METER READING DETAILS :

BUILDING NAME :EXT PHYSICS DEPT / CHEM TECHNO **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER :R7333721 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Aug-12	1279	12	12	150	10843
Sep-12	1065	12	12	150	8635
Oct-12	941	12	12	190	8450
Nov-12	1030	12	12	190	9333
Dec-12	824	12	12	190	6811
Jan-13	910	12	12	190	7281
Feb-13	806	12	12	190	6355
Mar-13	974	12	12	190	8225
Apr-13	1368	12	12	190	11428
May-13	2673	12	12	190	21984
Jun-13	3297	12	12	190	27617
Jul-13	1245	12	12	190	10173
SUB TOTAL	16412	12	12	190	137135

BILL NO - A 25

MARATHWADA UNIVERSITY **CONSUMER NO :490010211546**

ENERGY METER READING DETAILS :

BUILDING NAME :RASVANTI WELL / ADM BLDG **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 9000059738 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Aug-12	48	5	5	100	299
Sep-12	48	5	5	100	299
Oct-12	48	5	5	100	299
Nov-12	48	5	5	100	299
Dec-12	48	5	5	100	299
Jan-13	48	5	5	100	299
Feb-13	48	5	5	100	299
Mar-13	48	5	5	100	299
Apr-13	48	5	5	100	299
May-13	48	5	5	100	299
Jun-13	48	5	5	100	299
Jul-13	48	5	5	100	299
SUB TOTAL	576	5	5	100	3586

BILL NO - A 26

MARATHWADA UNIVERSITY **CONSUMER NO :490010633661**

ENERGY METER READING DETAILS :

BUILDING NAME :BOTONY DEPT / CHEM TECHNO **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R7333716 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Aug-12	1886	10	10	150	16175
Sep-12	1511	10	10	150	12817
Oct-12	1284	10	10	190	12049
Nov-12	1494	10	10	190	14132
Dec-12	1434	10	10	190	12351
Jan-13	1581	10	10	190	13451
Feb-13	1199	10	10	190	10031
Mar-13	1307	10	10	190	11496
Apr-13	1435	10	10	190	12352
May-13	1526	10	10	190	12405
Jun-13	1284	10	10	190	10447
Jul-13	1273	10	10	190	10512
SUB TOTAL	17214	10	10	190	148218

BILL NO - A 27

MARATHWADA UNIVERSITY **CONSUMER NO :490010365543**

ENERGY METER READING DETAILS :

BUILDING NAME : **Extn BOTONY DEPT.** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : **R7333717** **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	2014	17	17	150	17317.59
Aug-12	1706	17	17	150	14594.12
Sep-12	1497	17	17	150	12726.71
Oct-12	1502	17	17	190	14246.82
Nov-12	1511	17	17	190	14336.11
Jan-13	1210	17	17	190	10182.88
Feb-13	1080	17	17	190	9012.47
Mar-13	1167	17	17	190	10237.78
Apr-13	1402	17	17	190	11950.94
May-13	1378	17	17	190	15439.56
Jun-13	1724	17	17	190	14277.92
Jul-13	1117	17	17	190	9183.75
SUB TOTAL	17308	17	17	150/190	153506.65

BILL NO - A 28

MARATHWADA UNIVERSITY **CONSUMER NO : 490010101791**

ENERGY METER READING DETAILS :

BUILDING NAME : **botonical garden W/P** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : **R0190929** **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	99	8	8	30	413.62
Aug-12	115	8	8	30	510.2
Sep-12	110	8	8	30	322.87
Oct-12	202	8	8	40	334.94
Nov-12	118	8	8	40	470.92
Dec-12	118	8	8	40	438.5
Jan-13	384	8	8	40	589.7
Feb-13	158	8	8	40	722.96
Mar-13	143	8	8	40	648.66
Apr-13	130	8	8	40	497.68
May-13	157	8	8	40	495
Jun-13	158	8	8	40	495
SUB TOTAL	1892	8	8	30/40	5940

BILL NO –A29

MARATHWADA UNIVERSITY **CONSUMER NO : 490010095333**

ENERGY METER READING DETAILS :

BUILDING NAME : Sports Water Pump **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 500178497 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	737	10	10	100	6458.73
Aug-12	862	10	10	100	7805.31
Sep-12	797	10	10	100	6732.11
Oct-12	875	10	10	130	8362.24
Nov-12	1024	10	10	130	10172.3
Dec-12	865	10	10	130	7697.22
Jan-13	933	10	10	130	8402.65
Feb-13	757	10	10	130	6.77.72
Mar-13	685	10	10	130	5911.85
Apr-13	689	10	10	130	5583.37
May-13	770	10	10	130	6192.15
Jun-13	609	10	10	130	4362.03
SUB TOTAL	9603	10	10	100/130	77679.96

BILL NO - A30

MARATHWADA UNIVERSITY **CONSUMER NO : 490010179812**

ENERGY METER READING DETAILS :

BUILDING NAME : **Health Centre-GIRLS HOSTEL** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : **9000059384** **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	138	11	11	150	999.43
Aug-12	150	11	11	150	1073.18
Sep-12	354	11	11	150	1367.15
Oct-12	143	11	11	190	1108.81
Nov-12	186	11	11	190	1408.12
Dec-12	140	11	11	190	1025.58
Jan-13	185	11	11	190	1286.64
Feb-13	174	11	11	190	1241.14
Mar-13	384	11	11	190	3183.39
Apr-13	417	11	11	190	3302.97
May-13	540	11	11	190	4214.2
Jun-13	503	11	11	190	3921.75
SUB TOTAL	3314	11	11	150/190	24132.36

BILL NO – A 31

MARATHWADA UNIVERSITY **CONSUMER NO : 490010179821**

ENERGY METER READING DETAILS :

BUILDING NAME : pariksha bhavan **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R0058190 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	728	3	3	150	6019.7
Aug-12	501	3	3	150	4009.17
Sep-12	404	3	3	150	3130.37
Oct-12	350	3	3	190	2990.81
Nov-12	358	3	3	190	3070.18
Dec-12	211	3	3	190	1515.78
Jan-13	274	3	3	190	2022.3
Feb-13	199	3	3	190	1400.18
Mar-13	410	3	3	190	3420.52
Apr-13	546	3	3	190	4455.69
May-13	1408	3	3	190	11607.97
Jun-13	1815	3	3	190	15236.48
SUB TOTAL	7204	3	3	150/190	58879.15

BILL NO -A 32

MARATHWADA UNIVERSITY **CONSUMER NO : 490010145322**

ENERGY METER READING DETAILS :

BUILDING NAME : V C QUARTER W/P **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 7611239815 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	2366	10	10	150	23847.55
Aug-12	10048	10	10	150	55694.94
Sep-12	2215	10	10	150	22196.39
Oct-12	2196	10	10	190	24522.27
Nov-12	2292	10	10	190	25635.33
Dec-12	2281	10	10	190	23885.5
Jan-13	2306	10	10	190	23127.69
Feb-13	2313	10	10	190	23115.04
Mar-13	2091	10	10	190	21760.73
Apr-13	2224	10	10	190	22395.79
May-13	2309	10	10	190	22157.37
Jun-13	2128	10	10	190	20581.01
SUB TOTAL	34769	10	10	150/190	308919.61

BILL NO - A33

MARATHWADA UNIVERSITY **CONSUMER NO : 490010380488**

ENERGY METER READING DETAILS :

BUILDING NAME : V C QUARTER **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 7611238430 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	1760	21	21	300	11108.16
Aug-12	653	21	21	300	5684.88
Sep-12	452	21	21	300	3578.44
Oct-12	500	21	21	330	4556.25
Nov-12	486	21	21	330	4407.66
Dec-12	617	21	21	330	5638.44
Jan-13	564	21	21	330	5001.18
Feb-13	1072	21	21	330	4374.23
Mar-13	460	21	21	330	4054.1
Apr-13	621	21	21	330	5537.73
May-13	1010	21	21	330	9395.67
Jun-13	845	21	21	330	7497
SUB TOTAL	9040	21	21	300/330	70833.74

BILL NO - A34

MARATHWADA UNIVERSITY **CONSUMER NO : 490010213981**

ENERGY METER READING DETAILS :

BUILDING NAME :FARM WATER PUMP **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 1007022982 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	599	10	10	100	4906.57
Aug-12	100	10	10	100	2489.17
Sep-12	2860	10	10	100	28260.34
Oct-12	1445	10	10	130	7904.90
Nov-12	1661	10	10	130	13295.64
Dec-12	1375	10	10	130	13614.04
Jan-13	1546	10	10	130	15543.16
Feb-13	1339	10	10	130	13041.75
Mar-13	1403	10	10	130	14404.37
Apr-13	1640	10	10	130	16453.42
May-13	1747	10	10	130	16989.56
Jun-13	1489	10	10	130	13880.45
SUB TOTAL	17204	10	10	100/130	160783.37

BILL NO - A35

MARATHWADA UNIVERSITY **CONSUMER NO : 490010168471**

ENERGY METER READING DETAILS :

BUILDING NAME: **FOREIGN LANGUAGE DEPT V C QUARTER** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : **7611238381** **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	453	11	11	150	1889.87
Aug-12	265	11	11	150	2261.63
Sep-12	292	11	11	150	2457.8
Oct-12	274	11	11	190	2583.83
Nov-12	268	11	11	190	2514.26
Dec-12	230	11	11	190	1876.37
Jan-13	204	11	11	190	1610.62
Feb-13	172	11	11	190	1401.81
Mar-13	232	11	11	190	2046.13
Apr-13	249	11	11	190	2067.17
May-13	230	11	11	190	1876.37
Jun-13	230	11	11	190	1876.37
SUB TOTAL	3099	11	11	150/190	24462.23

BILL NO – A 36

MARATHWADA UNIVERSITY **CONSUMER NO : 490010979444**

ENERGY METER READING DETAILS :

BUILDING NAME : SWIMMING POOL/UNIVERSITY STADIUM **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R0060157 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Aug-12	790	32	32	2400	10976.39
Sep-12	78	32	32	3040	4133.72
Oct-12	78	32	32	3040	4133.72
Nov-12	78	32	32	3040	4133.72
Dec-12	63	32	32	3040	3910.86
Jan-13	73	32	32	3040	3995.73
Feb-13	78	32	32	3040	4133.72
Mar-13	78	32	32	3040	4133.72
Apr-13	78	32	32	3040	4133.72
May-13	78	32	32	3040	4133.72
Jun-13	78	32	32	3040	4133.72
Jul-13	78	32	32	3040	4133.72
SUB TOTAL	1572	32	32	3040	55123.66

BILL NO - A37

MARATHWADA UNIVERSITY **CONSUMER NO : 490010699531**

ENERGY METER READING DETAILS :

BUILDING NAME : GYM HALL/UNIVERSITY STADIUM **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 7611239823 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	708	12	12	150	6827.85
Aug-12	888	12	12	150	8656.04
Sep-12	1208	12	12	150	11824.04
Oct-12	1104	12	12	190	12006.32
Nov-12	1327	12	12	190	14591.92
Dec-12	1012	12	12	190	10243.06
Jan-13	1207	12	12	190	11838.92
Feb-13	1139	12	12	190	11112.32
Mar-13	1218	12	12	190	12485.3
Apr-13	973	12	12	190	9445.26
May-13	1031	12	12	190	9578.07
Jun-13	1020	12	12	190	9558.61
Jul-13	1083	12	12	190	10373.41
SUB TOTAL	12835	12	12	150/190	128167.71

BILL NO – A 38

MARATHWADA UNIVERSITY **CONSUMER NO : 490010168772**

ENERGY METER READING DETAILS :

BUILDING NAME : **BASKET BALL GROUND/ UNIVERSITY STADIUM** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : **5307342072** **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	424	5	1	150	3912.53
Aug-12	458	5	1	150	4242.57
Sep-12	174	5	1	150	1261.92
Oct-12	184	5	1	190	1532.16
Nov-12	304	5	1	190	2868.06
Dec-12	570	5	1	190	5578.08
Jan-13	217	5	1	190	1676.26
Feb-13	126	5	1	190	989.91
Mar-13	96	5	1	190	781.56
Apr-13	118	5	1	190	905.31
May-13	267	5	1	90	2374.84
Jun-13	267	5	1	190	2374.84
SUB TOTAL	3205	5	1	150/190	28498.04

BILL NO - A39

MARATHWADA UNIVERSITY **CONSUMER NO : 490010144717**

ENERGY METER READING DETAILS :

BUILDING NAME : **BOY'S REST HOSTEL 1/ BOTONICAL GARDEN** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : **R7333718** **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	1276	21	21	30	12537.99
Aug-12	1645	21	21	30	16747.34
Sep-12	1519	21	21	30	15556.46
Oct-12	1527	21	21	40	17019.38
Nov-12	1560	21	21	40	17444.81
Dec-12	1430	21	21	40	1464.91
Jan-13	1482	21	21	40	15224.28
Feb-13	1265	21	21	40	12595.71
Mar-13	1409	21	21	40	14929.29
Apr-13	1424	21	21	40	14340.45
May-13	1424	21	21	40	13768.8
Jun-13	1198	21	21	40	10999.46
SUB TOTAL	17159	21	21	30/40	162628.88

BILL NO - A40

MARATHWADA UNIVERSITY **CONSUMER NO : 490010269773**

ENERGY METER READING DETAILS :

BUILDING NAME : BOY'S HOSTEL 2/ BOTONICAL GARDEN **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : R7333722 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	1114	21	21	1650	13450.39
Aug-12	1483	21	21	1650	17264.32
Sep-12	1406	21	21	1650	16723.95
Oct-12	1399	21	21	2090	18806.69
Nov-12	1352	21	21	2090	18257.01
Dec-12	976	21	21	2090	13124.96
Jan-13	1389	21	21	2090	17176.9
Feb-13	1063	21	21	2090	13746.11
Mar-13	1017	21	21	2090	13278.62
Apr-13	1050	21	21	2090	13433.71
May-13	1041	21	21	2090	12881.33
Jun-13	841	21	21	2090	10929.27
Jul-13	1033	21	21	2090	12866.15
SUB TOTAL	14131	21	21	1650/2090	179073.26

BILL NO - A41

MARATHWADA UNIVERSITY **CONSUMER NO : 490010365527**

ENERGY METER READING DETAILS :

BUILDING NAME : BOY'S HOSTEL 3/ BOTONICAL GARDEN **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 5307333719 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	1051	31	31	400	10353.46
Aug-12	1528	31	31	400	15815.8
Sep-12	1636	31	31	400	17363.08
Oct-12	1697	31	31	430	19659.57
Nov-12	1841	31	31	430	21516.09
Dec-12	1634	31	31	430	17626.4
Jan-13	2260	31	31	430	25035.55
Feb-13	1722	31	31	430	18585.98
Mar-13	1913	31	31	430	21552.93
Apr-13	2069	31	31	430	22446.19
May-13	2289	31	31	430	24051.2
Jun-13	1709	31	31	430	17299.55
SUB TOTAL	21349	31	31	400/430	231305.80

BILL NO – A 42

MARATHWADA UNIVERSITY **CONSUMER NO : 490010578075**

ENERGY METER READING DETAILS :

BUILDING NAME : V C QUARTER **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 9000056771 **MAKE :**

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	1989	21	21	1650	22498.78
Aug-12	1548	21	21	1650	17936.4
Sep-12	1632	21	21	1650	19101.86
Oct-12	1796	21	21	2090	23449.64
Nov-12	1640	21	21	2090	
Dec-12	1432	21	21	2090	18114.65
Jan-13	1398	21	21	2090	17272.36
Feb-13	1203	21	21	2090	15234.46
Mar-13	1601	21	21	2090	19499.54
Apr-13	1907	21	21	2090	22402.34
May-13	2053	21	21	2090	23026.63
Jun-13	1526	21	21	2090	17839.51
SUB TOTAL	19729	21	21	1650/2090	236046.73

BILL NO - A43

MARATHWADA UNIVERSITY

CONSUMER NO : 490010178565

ENERGY METER READING DETAILS :

BUILDING NAME : UNIVERSITY GIRLS HOSTEL 1

FLOOR : GF/ FF/ SF/ TF

METER SR. NUMBER : 5307412608

MAKE :

MONTH	KWH	KW	KW RECORDED	KW CHARGES	ENERGY CHARGES
Jul-12	3253	31	31	400	35897.02
Aug-12	3590	31	31	400	39732.25
Sep-12	4376	31	31	400	49707.15
Oct-12	4815	31	31	430	59858.14
Nov-12	4781	31	31	430	59419.81
Dec-12	3869	31	31	430	44485.51
Jan-13	3969	31	31	430	45602.34
Feb-13	3552	31	31	430	40777.3
Mar-13	3953	31	31	430	46547.92
Apr-13	4437	31	31	430	50558.32
May-13	4396	31	31	430	48004.99
Jun-13	2637	31	31	430	27926.3
SUB TOTAL	47628	31	31	400/430	548517.05

BILL NO – A 44

MARATHWADA UNIVERSITY **CONSUMER NO : 490010205589**

ENERGY METER READING DETAILS :

BUILDING NAME : **UNIVERSITY GIRLS HOSTEL 1** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	2441	20	14	200	27098.91
Aug-12	3285	20	14	200	36011.94
Sep-12	5522	20	14	200	63004.98
Oct-12	6132	20	14	230	76607.46
Nov-12	5556	20	14	230	69181.42
Dec-12	3464	20	14	230	39388.42
Jan-13	4655	20	14	230	53627.94
Feb-13	4857	20	14	230	56372.25
Mar-13	5371	20	14	230	63691.89
Apr-13	6775	20	14	230	78084.32
May-13	8242	20	14	230	91498.89
Jun-13	6189	20	14	230	68371.10
SUB TOTAL	62489	20	14	200/230	722939.52

BILL NO – A 45

MARATHWADA UNIVERSITY **CONSUMER NO : 490011018669**

ENERGY METER READING DETAILS :

BUILDING NAME : PRIYADARSHINI GIRLS HOSTEL **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : 5307334308 **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	2442	20	1.4	100	26144.28
Aug-12	2322	20	1.4	100	24680.13
Sep-12	3035	20	1.4	100	33532.42
Oct-12	3572	20	1.4	130	43487.87
Nov-12	3531	20	1.4	130	42959.29
Dec-12	2339	20	1.4	130	25753.73
Jan-13	2792	20	1.4	130	31092.85
Feb-13	2267	20	1.4	130	24849.87
Mar-13	2909	20	1.4	130	33041.36
Apr-13	3767	20	1.4	130	42259.3
May-13	4232	20	1.4	130	45795.53
Jun-13	2051	20	1.4	130	20870.88
SUB TOTAL	35259	20	1.4	100/130	394467.51

BILL NO – A 46

MARATHWADA UNIVERSITY **CONSUMER NO : 490011833401**

ENERGY METER READING DETAILS :

BUILDING NAME **HARTI CULTURE/ UNIVERSITY STADIUM** **FLOOR : GF/ FF/ SF/ TF**

METER SR. NUMBER : **MAKE :**

MONTH	KWH	KW RECORDED	KW BILLED	KW CHARGES	ENERGY CHARGES
Jul-12	19	0.5	0.5	150	363.87
Aug-12	19	0.5	0.5	150	363.87
Sep-12	29	0.5	0.5	150	387.59
Oct-12	28	0.5	0.5	190	449.95
Nov-12	26	0.5	0.5	190	433.69
Dec-12	19	0.5	0.5	190	366.88
Jan-13	10	0.5	0.5	190	296.35
Feb-13	8	0.5	0.5	190	282.86
Mar-13	14	0.5	0.5	190	331.43
Apr-13	19	0.5	0.5	190	362.24
May-13	19	0.5	0.5	190	363.87
Jun-13	19	0.5	0.5	190	363.87
SUB TOTAL	229	0.5	0.5	150/190	4366.47

BILL NO.B-05

CONSUMER NO:490010082916

BUILDING NAME: LIBRARY

METER SERIAL NO:90_00057116

MONTH	KWH	M.D. BILLED	PF BILLED	ENERGY CHARGES	M.D. CHARGES	PF PEN/ INCENTIVE	TOTAL AMOUNT
Sep-12	2600	8	0.898	21944	1520	0	26710
Oct-12	2721	8	0.9	22965	1520	0	29280
Nov-12	2771	8	0.901	23387	1520	0	29140
Dec-12	2359	8	0.9	19910	1520	0	22880
Feb-13	2400	8	0.9	20256	1520	0	22690
Mar-13	2798	8	0.9	23615	1520	0	26370
Apr-13	2953	8	0.9	24923	1520	0	27300
May-13	2773	8	0.9	23404	1520	0	24480
Jun-13	3860	10	0.9	32578	1900	0	35060
Jul-13	3630	10	0.9	30637	1900	0	31750
TOTAL	28865			243621	15960	0	275660

BILL NO: B-07

ENERGY METER READINGS DETAILS:

CONSUMER NO:490011373922

BUILDING NAME: STAFF COLLAGE **METER SERIAL NO:90_00059740**

MONTH	KWH	KVA	M.D. BILLED	PF BILLED	ENERGY CHARGES	M.D. CHARGES	PF PEN/ INCENTIVE	TOTAL AMOUNT
Sep-12	2376	0	14	0.9	20053.44	2660	0	30520
Oct-12								
Nov-12	1700	1887	8	0.901	14348	1520	0	25150
Dec-12	1485	0	8	0.9	12533.4	1520	0	17380
Feb-13	2158	0	13	0.9	18213.52	2470	0	25230
Apr-13	2030	0	8	0.9	17133.2	1520	0	22420
May-13	2174	0	18	0.9	18348.56	3420	0	27330
Jun-13	3728	0	19	0.9	31464.32	3610	0	44630
Jul-13	3056	0	16	0.9	25792.64	3040	0	34190
TOTAL	18707	1887			157887.1	19760	0	226850

BILL NO - B-16

ENERGY METER READING DETAILS : CONSUMER NO. 490010093853

BUILDING NAME : botony dept

METER SR. NUMBER : 053_17334123

MONTH	KWH	M.D. BILLED	PF BILLED	M.D. CHARGES	PF PEN/ INCENTIVE	ENERGY CHARGES	TOTAL AMOUNT
Sep-12	1530	8	1	1520	-1164.63	12913.2	18012.69
Oct-12	1426	8	1	1520	-1094.74	12035.44	17800.04
Nov-12	1573	8	1	1520	-1217.07	13276.12	18840.28
Dec-12	1362	8	1	1520	-986.85	11495.28	15205.68
Feb-13	1567	8	1	1520	-1041.12	13225.48	16074.92
Mar-13	1450	8	1	1520	-972.58	12238	14988.36
Apr-13							
May-13	1986	8	1	1520	-1228.27	16761.84	19049.27
Jun-13	1877	8	1	1520	-1170.8	15841.88	18351.42
Jul-13	1706	8	1	1520	-1026.9	14398.64	15862.44
TOTAL	14477			13680	-9902.96	122185.88	154185.1

BILL NO - B-17

ENERGY METER READING DETAILS :
CONSUMER No. 490010152451

BUILDING NAME : guest house

METER SR. NUMBER : 53_07412609

MONTH	KWH	M.D. BILLED	PF BILLED	M.D. CHARGES	PF PEN/ INCENTIVE	ENERGY CHARGES	TOTAL AMOUNT
Sep-12	401	12	0.522	2280	2385.23	3384.44	77.9.59
Oct-12	366	12	0.504	2280	2370.38	3089.04	7848.6
Nov-12	503	12	0.538	2280	2673.69	4245.32	9116.41
Dec-12	426	12	0.556	2280	2138.36	3595.44	7458.34
Jan-13	325	12	0.534	2280	1741.27	2743.00	5938.99
Feb-13	453	12	0.555	2280	2016.37	3823.32	6989.96
Mar-13	366	12	0.555	2280	1771.46	3089.04	6038.35
Apr-13							
May-13	334	12	0.555	2280	1622.88	2818.96	5462.7
Jun-13							
Jul-13	388	12	0.615	2280	1413.93	3274.72	5496.89
TOTAL	3562			20520	18133.57	30063.28	54350.24

BILL NO - B- 18

ENERGY METER READING DETAILS :CONSUMER NO. 490010150423

BUILDING NAME : guest house

METER SR. NUMBER : 53_07412609

MONTH	KWH	M.D. BILLED	PF BILLED	M.D. CHARGES	PF PEN/ INCENTIVE	ENERGY CHARGES	TOTAL AMOUNT
Sep-12	6879	8	0.967	1520	-1384.57	58058.76	67854.73
Oct-12	3523	8	1	1520	-2539.81	29734.12	33677.37
Nov-12	3337	8	1	1520	-2455.12	28164.28	32345.28
Dec-12	2855	8	1	1520	-1943.07	24096.2	25503.8
Jan-13							
Feb-13	3036	8	1	1520	-1886.12	25623.84	24761.61
Mar-13	3157	8	1	1520	-1932.17	26645.08	25383.06
Apr-13	3478	8	1	1520	-2060.4	29354.32	27112.46
May-13	4505	10	1	1900	-2541	38022.5	33579.7
Jun-13	4978	8	1	1520	-2787.57	42014.32	37163.24
Jul-13	3052	8	1	1520	-1712.98	25758.88	22462.6
TOTAL	38800			15580	-21242.81	327472.3	329843.85

**BILL NO-
B-19**

ENERGY METER READINGS
DETAILS:CONSUMER NO. 490011549362
BUILDING NAME: VC QUARTER
METER SR.N0 : 90_00252956 METER SR.NO. 90_00252956

MONTH	KWH	M.D. BILLED	P.F. BILLED	ENERGY CHARGES	M.D. CHARGES	P.F.PEN/ INCENTIVE	TOTAL AMOUNT
Sep-12	8382	8	0.9	70744.08	1520	0	99459.75
Oct-12	7691	8	0.9	64912.04	1520	0	95136.18
Nov-12	7800	8	0.9	65832.00	1520	0	94483.91
Dec-12	6416	8	0.9	54151.04	1520	0	71428.01
Feb-13	7064	8	0.9	59620.16	1520	0	76529.59
Mar-13	6163	8	0.9	52015.72	1520	0	67081.51
Apr-13	7630	8	0.9	64397.20	1520	0	81280.91
May-13	7059	8	0.9	59577.96	1520	0	72193.26
Jun-13	5542	8	0.9	46774.48	1520	0	57512.49
Jul-13	2330	8	0.9	19665.20	1520	0	24072.80
TOTAL	66077	8		557689.88	15200	0	**739178.41**

BILL
NO-24

ENERGY METER READINGS DETAILS: **CONSUMER NO: 490010183836**

BUILDING NAME: CHHATRAPATI SHIVAJI-MAHARAJ BOY'S HOSTEL NO-1 **METER SR.NUMBER: 55_00178067**

MONTH	KWH	M.D. BILLED	P.F. BILLED	ENERGY CHARGES	M.D. CHARGES	P.F.PEN/ INCENTIVE	TOTAL AMOUNT
Sep-12	5638	11	0.93	46740.44	190	0	64994.3
Oct-12	6612	12	0.9	54917.74	190	0	76952.5
Nov-12	6653	11	0.9	55144.94	190	0	78149.93
Dec-12	4782	8	0.9	39551.98	190	0	48988.7
Feb-13	5332	8	0.9	44160.98	190	0	54623.14
Mar-13	5602	9	1	46489.36	190	0	60135.5
Apr-13	7551	9	1	62735.96	190	0	78604.45
May-13	6886	9	1	57234.1	190	0	68238.87
Jun-13	4718	8	1	39015.66	190	0	47154.84
Jul-13	4110	8	0.947	33900.38	190	0	39279.54
TOTAL	57884			479891.54	1900	0	617121.8

BILL NO-25

ENERGY METER READINGS
DETAILS: **CONSUMER NO : 490010269765**

BUILDING NAME: NEW BOYS HOSTEL NO-2. METER SR.No. : 053_70333723

MONTH	KWH	M.D. BILLED	P.F. BILLED	ENERGY CHARGE	M.D. CHARGE	P.F.PEN/ INCENTIVE	TOTAL AMOUNT
Aug-12	1004	8	0.99	8913	190	0	10387
Sep-12	1124	8	0.93	8913	190	0	12578
Oct-12	1189	8	0.981	9473	190	0	13876
Nov-12	1097	8	0.993	8586	190	0	12353
Dec-12	901	8	0.998	7029	190	0	8931
Jan-13							
Feb-13	1166	8	0.993	9250	190	0	11715
Mar-13	1003	8	0.967	7950	190	0	10507
Apr-13	1244	8	0.994	9883	190	0	12581
May-13	1088	8	0.975	8647	190	0	10510
Jun-13	1122	8	0.983	8881	190	0	10910
Jul-13	1107	8	0.986	8735	190	0	10296
TOTAL	12045			96260	2090	0	124643

ANNEXURE -2.

VOLTAGES AS MEASURED ON 04.12.2013.

	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
V.C.LONGE											
RY	409		411	411	425	428	415	416	420	419	427
RB	417		419	420	434	438	425	426	429	427	436
YB	414		412	413	429	434	419	420	424	423	428
RN	232		230	235	243	246	231	238	240	239	244
YN	231		232	225	241	244	235	236	238	238	241
BN	234		235	236	245	248	240	241	244	242	247
STADIUM											
RY	416		415	414	429	434	419	422	424	421	432
RB	412		420	418	434	437	426	429	431	428	436
YB	417		417	418	433	437	423	425	428	425	438
RN	249		237	235	242	246	239	240	242	241	245
YN	241		236	235	244	247	236	239	241	240	247
BN	226		239	239	249	250	242	243	246	243	251
PRIYADARSHINI											
RY	425		428	427	446	446	436	440	438	439	444
RB	420		425	425	437	441	431	433	433	433	441
YB	421		427	427	440	444	432	436	435	435	443
RN	243		242	241	251	252	246	248	248	248	251
YN	249		243	243	251	254	247	249	249	249	254
BN	242		240	241	248	250	244	245	245	245	250
BOTONY											
RY	425		418	416	432	434	424	424	424	424	430
RB	420		414	412	427	429	418	420	414	425	425
YB	426		421	414	436	437	426	427	428	432	433
RN	240		235	234	242	244	236	238	238	241	242
YN	243		239	238	241	248	241	242	243	246	247
BN	240		237	235	244	245	239	239	240	243	246
CHEMICAL											
RY	409		416	414	423	426	418	418	418	426	425
RB	401		419	414	428	430	423	422	422	427	430
YB	416		418	412	429	429	422	421	421	429	431
RN	240		236	233	243	244	240	240	239	243	242
YN	240		237	234	242	244	237	238	238	243	243
BN	242		239	235	245	243	240	240	240	244	246

	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
CFC											
RY	426		425	420	434	434	425	428	427	440	432
RB	421		420	419	432	430	422	425	424	437	428
YB	427		427	425	438	436	428	431	430	442	433
RN	240		240	238	245	244	240	241	241	249	244
YN	243		243	240	248	248	243	244	244	252	247
BN	240		240	235	246	245	241	242	242	250	244
SONERI MAHAL											
RY	422		421	414	430	430	422	424	424	437	429
RB	425		422	423	432	432	424	426	426	438	430
YB	421		419	417	434	425	418	420	421	432	422
RN	242		241	240	246	245	241	235	244	249	246
YN	240		238	237	243	242	238	238	240	247	243
BN	239		239	238	244	243	238	239	245	248	242
HISTRY MUSIUM											
RY	438	435		430	439	438	432	432	434	445	441
RB	431	430		424	435	434	427	428	430	440	438
YB	435	432		428	437	436	429	430	432	443	441
RN	246	245		243	248	248	244	244	245	250	249
YN	248	246		244	249	246	245	245	247	252	250
BN	245	245		241	247	246	247	244	245	250	250
ESTATE											
RY	432		425	421	429	428	423	423	421	431	435
RB	434		428	425	433	431	427	425	424	434	436
YB	428		423	421	427	426	422	420	418	428	429
RN	227		242	240	244	243	240	241	239	246	248
YN	244		240	239	243	243	241	239	239	244	246
BN	245		241	241	244	242	240	240	239	245	245
PARIKSHA BHAVAN											
RY	427		427	422	431	430	426	426	422	432	435
RB	431		424	420	427	425	423	422	418	427	430
YB	434		430	426	437	432	430	428	425	435	436
RN	243		241	238	242	241	239	239	237	243	245
YN	245		221	240	246	245	243	242	240	247	248
BN	210		243	241	245	244	242	242	240	246	246

ANNEXURE3:

LIST OF LIGHTING LOAD DETAILS :

BUILDING NAME : guesthouse

ROOM NO	CFL 5W	TUBE T5	TUBE T8	BULB 100W	C.FAN 60W	zero bulb	Induction cooker	AC	PC	TV
GF 1	2		3		2			1		1
2	2		3		2			1	1	1
3	2		3		2	1		1		1
4	2		3		2			1		1
12	29				2			2	1HP	LCD32"
corridor		8			2					
store		1								
5	2		3		2			1		1
6	2		3		2			1		1
7	2		3		2			1		
8	2	1	2		2			1		
9	2	2	3		2	1		1		
10	2	2			2	1		1		
FF										
corridor		8		1						
dining hall		15			12					
kitchen		4			2		1			
SUB TOTAL	49	41	26	1	38	3	1	12	1	6

Building Name :
Chemical Tech.

ROOM NO	CFL 5W	CFL 10W	CFL 14W	TUBE 40 w	Bulb 60w	TUBE 20w	C.FAN 60W	T.FAN	E.FAN 30W	AC
chem engg.Lab				14	6		6		8	
engg. Lab pass				**2**						
lab 2				16			6		8	
food lab 2						4	8			
fd l. 2 cabin 1				1			1			
drawing hall				4						
computer lab				11						3
com lab cabin 1				3		1		1		
dept lab pass				4						
food lab 2 pass						5				
Cabin (g.a.kala)				4			2			1
food lab 1						5	5			1(1.5t)
Cabin (bhusar)						1	1			1(1.5t)
m.tech pharma				8			6			
pass (pharma)				3						
pharma lab 5						2	8			
enternce	18									
chemistry lab 1				10			4		3	
chemistry lab 2		6		19			6		8	
chemical store				2			1			
chemical pass				3						
drug design lab						4				3(2 t)
main passage		5								
metting room	10					4				2 (2t)
Office						3	2			
Cabin (c.d. g.)			1			4	1			
cabin (p.s.v.)			4			4				1(1t)
SUB TOTAL	**28**	**11**	**5**	**104**	**6**	**37**	**57**	**1**	**27**	**12**

BUILDING NAME : chemical tech **FLOOR :**

ROOM NO	PC	Printer	cctv	fridge	inverter	router	scanner	water cooler	xerox	projector	lcd tv
chemical engg. Lab											
engg. Lab passage			1								
lab 2				1							
food lab 2				1							
food lab 2 cabin 1											
drawing hall											
computer lab	28				1						
computer lab cabin 1	2	1				1					
dept lab passage											
food lab 2 passage			1								
Cabin (g.a.kallawar)	1	1									
food lab 1											
Cabin (bhusare)	1	1					1				
m.tech pharma tech 4											
passage (pharma lab)			1								
pharma lab 5											
enternce											
chemistry lab 1	1			1							
chemistry lab 2											
chemical store room											
chemical passage			2					1			
drug design lab	2						1				
main passage											
metting room			1							1	
office	2	1	1			1			1		
cabin c. d. g .	1	1									
cabin (p.s.vakte)	1										1
SUB TOTAL	**39**	**5**	**7**	**3**	**1**	**2**	**2**	**1**	**1**	**1**	**1**

BUILDING NAME ;
BOTONY **FLOOR :**

ROOM NO	CFL 18W	TUBE T5	TUBE T8	TUBE T12	C.FAN 60W	T.FAN	AC	PC
HOD				1	1			
ASS. PORF		10	12			1	2	1
INST. ROOM			1	4	2			
SEMINAR HALL				20	10			
STORE				4	5			
LAB				7	4			
STORE KEEPER				1	1			
ASS. PORF			2	2	2			
LIB				14	5			
SEED HEALTH LAB				6	3			
PROF. ROOM				2	1			
CULTURIST			1	1	1			
RESEARCH LAB 11								
RESEARCH LAB 9								
RESEARCH LAB 10								
RESEARCH LAB 15								
PROF. ROOM				2	1			
TOILET			1					
OFFICE			2		1			
PROF. & HEAD 1	4				2			
PROF & HEAD 2		1		1	1			
RESEARCH LAB 5								
RESEARCH LAB 3								
HERBRIUM		12			5		1	2
SUB TOTAL	**4**	**23**	**19**	**65**	**45**	**1**	**3**	**3**

BUILDING - EXAM BLD

FLOOR : G.F.

ROOM NO	TUBE T8	TUBE T12	C.FAN 60W	C.FAN 80W	AC	PC	Printer
Prof unit	8	4	9			1	1
Eng unit	4	7	9			3	2
BA unit	2	8	10			5	1
BCS unit		2	2			1	1
Shrikant kamble		2	2		1	1	
Inward unit		1	1				
MA unit	3	3	5	1		1	1
B/M com	3	3	6			1	1
convocation	3	3	6			1	1
Degree unit	1	5	2	2		3	1
ADE D.T	3	4	5			3	2
Msc unit		3	2			1	1
Corridor	14		4				
SUB TOTAL	**41**	**45**	**63**	**3**	**1**	**21**	**12**

BUILDING NAME : EXAMINATION BUILDING FLOOR FF

ROOM NO	TUBE T8	TUBE T12	C.FAN 60W	T.FAN	E.FAN 15W	AC	PC	Printer
Store room		6	6				1	1
coordinate unit		8	6				3	2
Toilet					1			
comp unit 1	6	9		4		6	16	10
comp unit 2	1	14		3		6	17	8
SUB TOTAL	**7**	**37**	**12**	**7**	**1**	**12**	**37**	**21**

BUILDING NAME : GIRLS' HOSTEL-3 FLOOR :GF

ROOM NO	TUBE T5	TUBE T8	TUBE T12	FAN 60W	PC	Printer	LAPTOP	AQUA GUARD	GEYSER
warden office	1			1					
office	1			1	1	1			
8	1			1			1		
6	1			1			1		
10	1			1			1		
11	1			1					
12									
13									
14	1			1		1			
15									
16									
17	1			1			1		
18									
19									
20									
21									
22	1			1			1		
corridor1		1						1	
washroom1		1							1
corridor2		1						1	
washroom2		1							1
SUB TOTAL	**9**	**4**		**9**	**1**	**2**	**5**	**2**	**2**

BUILDING NAME : GIRLS' HOSTEL-3 FLOOR : FF

ROOM NO	TUBE T5	TUBE T8	C.FAN 60W	LAPTOP	CHARGER	AQUAGAURD	GEYSER
25	1		1		2		
26							
27							
28,29	2		2				
30							
31	1		1		2		
32							
33							
34	1		1		2		
35	1		1		2		
36							
37							
38	1		1		2		
39	1		1		2		
40	1		1	1	2		
41							
42							
43							
44							
45							
46							
47	1		1	1			
corridor1		5					
corridor2		2					
corridor3		2					
corridor4		3					
washroom		1					1
washroom corridor		1				1	
TOTAL	**10**	**14**	**10**	**2**	**14**	**1**	**1**

BUILDING NAME : **STAFF COLLEGE** **FLOOR : GF**

ROOM NO.	CFL 18W	TUBE T5	TUBE T12	C.FAN	COMP	PRINTER	XEROX	A/C 2 T	A/C 1.5 T	PROJEC	WATER COOLER
GROUND											
1			2	1	0	0					
2			2	1	0	0					
3			2	1	1	1	1				
4			2	1	2	1					
5			2	1	1	0					
6			2	1	2	1					
7			22	8	28	0		5		1	
8	1		2	1	1	1			1		
9			3	1	1	1			1		
10			6	1	1	1		1			
11			3	2	0	0			1		
12			4	2	0	1					
13			2	0	0	0					
14			11	7	1	0		5			
15			2	1	0	0					
16			2	1	0	0					
17		6	2	0	0	0					
FIRST											
1											
2			1	1							
3			1	0							
4			1	0							
PASSAGE	3		2	1							1
SUB TOTAL	**4**	**6**	**76**	**32**	**38**	**7**	**1**	**11**	**3**	**1**	**1**

BUILDING NAME: NATYAGRUH

ROOM NO.	CFL 5W	CFL 10W	TUBE T5	TUBE T8	TUBE T12	C.FAN	E.FAN	MV	HALO	HALO	HALO
						60W		70W	400W	500W	1000W
1	0	80	14			16	0				
2	0					0	0			24	25
3	2				8	3	2				
4	1				65	3	2				
5	1	15				2	1				
6	1	15				2	1				
7	0				11	8	1				
8	0				12	11					
9					8	2					
10					2	1					
11					0	0		48	3		
12		60		20	6	2					
13					0	0					
14					4	2					
15					8	0	4				
16					13	0					
17					0	0					
18		26			6	2					
19											
20					4	2					
21					0	0					
22					2	2					
23	4	4			4	0	4				
SUB TOTAL	**9**	**200**	**14**	**20**	**153**	**58**	**15**	**48**	**3**	**24**	**25**

BUILDNAME BHASHA BHAVAN

ROOM NO.	TUBE T12	C.FAN	E.FAN	COMPU	PRINTR	XEROX
GF		**60W**				
1	0	0	0			
2	0	0	0			
3	0	0	0			
4	7	4	0			
5	6	4	0			
6	1	0	1			
7	1	0	1			
8	1	0	1			
9	0	0	0			
10	2	1	0	1		
11	1	1	0	1	1	1
12	0	0	0			
13	2	1	0	1		
14	2	1	0			
15	4	0	0			
FF						
1	2	1		1		
2	2	1		1		
3	2	1		2	1	
4	2	1		2	1	1
5	2	1				
6	2	1				
7	2					
8	7	4				
9	7	4				
10	7	4				
11	0					
12	4					
TOTAL	**66**	**30**	**3**	**9**	**3**	**2**

LIST OF LIGHTING LOAD DETAILS :

BUILDING NAME: COMMERCE FLOOR : GF/FF

ROOM NO.	TUBE T12	C.FAN	COMP	PRINTR	XEROX	A/C
GF 1	5	5	2	2		
2	3	1	0	0		
3	4	4	1	1		
4	5	5	0	0		
5	5	5	0	0		
6	6	2	0	0		
7	2	1	0	0		
8	2	1	0	0		
9	2	1	1	1		
10	2	1	1	1		
11	1	0	0	0		
12	1	0	0	0		
13	2	1	1	1		
14	10	0	0	0	4	
15	3	3	18	0		2
16	0	0	0	0		
17	2	1	1	0		
18	0	0	0	0		
19	2	1	1	0		
FF 1	8	5				
2	8	5				
3	11	7				
4	10	7			1	
5	0	0				
6	2	1				
7	2	1				
8	2	1				
9	4	1				
10	1	0				
11	2	1				
12	2	1				
13	0	0		2		
14	2	1				
15	2	1				
16	2	1				
PASAGE	13	1				
TOTAL	**128**	**66**	**26**	**8**	**5**	**2**

BUILDING : G HOSTEL 2 **FLOOR : GF/FF**

ROOM NO.	CF 5W	CFL 80	TUBE T5	TUBE T8	C.FAN	E.FAN	WATER	GEYSER	COMP	PRINTR	FRIGE
OFFICE			4		2				1	1	
1			4		2						
2			4		2						
3			4		2						
4			4		2						
5			4		2						
6			4		2						
7			4		2						
8			4		2						
9			4		2						
10			4		2						
11			4		2						
12			4		2						
27			42		1						
VARA				14	2		1				
WAITI				1	1						
BATH				4	0	2		2			
MESS			12	8	16	1	1				1
STOR			2		1						
TV			7		3		1				
13			2		1						
14			4		2						
15			4		2						
16			4		2						
17			4		2						
18			4		2						
19			4		2						
20			4		2						
21			4		2						
22			4		2						
23			4		2						
24			4		2						
25			4		2						
26			4		2						
VARA/BATH	12	2		17		4		2			
TOP		2				1					
TOTAL	**12**	**2**	**169**	**44**	**77**	**8**	**3**	**4**	**1**	**1**	**1**

BUILDING NAME : **FINE ARTS** **FLOOR :** **GF**

ROOM NO.	CFL 10W	TUBE T5	TUBE T12	C.FAN	SV-W	COMP	PRINTER	XEROX	WATER COOLER	A/C 1.5 T
1			27	14		1	1			
2			6	2		11	2	1		1
3			2							
4			3	2						
5			4	2						
6			6	6						
7			5	4		2	1			
8			13	16						
PASSAGE			2						1	
10		14		6						
11	4				2					
SUB TOTAL	**4**	**14**	**68**	**52**	**2**	**14**	**4**	**1**	**1**	**1**

ANNEXURE 3 A
LIST OF LIGHTING LOADS:

NAME OF BUILDING	CFL	WATER	C.FAN	W.FAN	EX FAN	T5	T8	T12
	5/10/18W	COOLER						
PRIYAD. HOSTEL	48	2	61		2	77		6
GIRLS HOSTEL 1	24	2	61			18		63
GIRLS HOSTEL 2	24	3	77		5	129		44
GIRLS HOSTEL 3	42	3	69			56	50	
UNI GUEST HOUSE	116	1	72		25	49		75
HEALTH CENTRE	4	1	10			29		
HUMINITY BLDG	5	7	165		11	38		394
COMMERCE BLDG	2	1	66		2			168
VIDYA PRABODHINI	26	2	36		3			99
ECONOMICS DEPT			15		1			33
BHASHA BHAVAN		1	30		3			66
EXAM BHAVAN		3	131	4	13	44		256
STHAWAR DEPT	20	2	23	1		30		26
AAJIVAN SHIKSHAN	15	1	22		2	6		21
PRESS DEPT		1	20			1		59
IAS COACHING	14	1	20		2			48
LAW DEPT	11	1	26		4	36		
PARYATAN DEPT	5	1	43		1			73
LIBRARY	144	4	126		10	84		213
NATYA SHASTRA		1	41	5	2	105		4
NATYAGRUH	209					14	20	153
GRANTH +VRUTTPATRA		2	68		9	54		119
SPORTS DEPT		1	29	2	3			141
SUB TOTAL	**709**	**41**	**1211**	**12**	**98**	**770**	**70**	**2061**

NAME OF BUILDING	CFL	WATER	C.FAN	W.FAN	EX FAN	T5	T8	T12
	5/10/18W	COOLER						
CFC	99		72	5	15	7	99	4
FINE ART	4	1	54			14	74	
COMP DEPT	42	1	22			63	21	
BOYS HOSTEL 4		1	43			62	16	
BOYS HOSTEL 2		2	64			56	23	
BOYS HOSTEL 3		1	22			3	35	
BOYS HOSTEL 1		2	111		2	2	119	
BOYS HOSTEL 5		1	2			4	33	
BIO CHEMISTRY		1	46			65	20	
BOTONY		2	75		11	31	132	
CHEM TECHNO.	22	2	92		24	57	7	99
STAFF COLLEGE	14					6		76
SUB TOTAL	**181**	**14**	**603**	**5**	**52**	**370**	**579**	**179**

ANNEXURE 3 B LOAD DETAILS OF 12 BUILDINGS ONLY.

BLDG	CFL 5W	CFL10W	CFL 14W	CFL 18W	T5	T8	T12
GUEST HOUSE	49				41	26	
CHEM TECH	28	11	5				104
BOTONY				4	23	19	65
EXAMBLD/GF						41	45
EXAM BLD/FF						7	37
GIRL HOST 3/GF					9	4	
GIRL HOST 3/FF					10	14	
STAFF COLL/GF	10			4	6		76
NATYAGRUH	9	200			14	20	153
BHASHA BHAVAN							66
COMMERCE							128
GIRL HOST 2	12			2	169	44	
FINE ARTS		4			14		68
SUB TOTAL	**108**	**215**	**5**	**10**	**286**	**175**	**742**

BLDG	T 20W	BULB	MV	HALO	HALO	HALO	C FAN
			70W	400W	500W	1000W	60W
GUEST HOUSE		4					38
CHEM TECH	22	6					
BOTONY							45
EXAMBLD/GF							63+3
EXAM BLD/FF							12
GIRL HOST 3/GF							9
GIRL HOST 3/FF							10
STAFF COLL/GF							32
NATYAGRUH			48	3	24	25	58
BHASHA BHAVAN							30
COMMERCE							66
GIRL HOST 2							77
FINE ARTS			2				52
	22	**10**	**50**	**3**	**24**	**25**	**429**

BLDG	W.FAN /T.FAN	E.FAN	WATER COLER	REFRIG	A/C 1 T	A/C 1.5T	A/C 2 T
GUEST HOUSE						12	
CHEM TECH	1	27	1	3	1	2	9
BOTONY	1						3
EXAMBLD/GF						1	
EXAM BLD/FF	7	1				12	
GIRL HOST 3/GF							
GIRL HOST 3/FF							
STAFF COLL/GF			1		11	3	
NATYAGRUH		15					
BHASHA BHAVAN		3					
COMMERCE						2	
GIRL HOST 2		8	3	1			
FINE ARTS			1			1	
	9	**54**	**6**	**4**	**12**	**33**	**12**

BLDG	PC	PRINT	XEROX	TV	GEYSER	INDUCT HEATER	
GUEST HOUSE	1			6		1	
CHEM TECH	39	5	1	7			
BOTONY	3						
EXAMBLD/GF	21	12					
EXAM BLD/FF	37	21					
GIRL HOST 3/GF	1	2			1		
GIRL HOST 3/FF					1		
STAFF COLL/GF	38	7	1				
NATYAGRUH							
BHASHA BHAVAN	9	3	2				
COMMERCE	26	8	5				
GIRL HOST 2	1	1			4		
FINE ARTS	14	4	1				
	190	**63**	**10**	**13**	**6**	**1**	