



Thakur Educational Trust's (Regd.)

**THAKUR RAMNARAYAN
COLLEGE OF ARTS & COMMERCE**

ISO 21001:2018 Certified

Thakur Ramnarayan Educational Campus, S. V. Road,
Dehisar (East), Mumbai - 400 068
Mob.: +91 902 902 6799 • Fax : 022 - 2828 1300
E-mail : admin@trcac.org.in • Website : www.trcac.org.in



Criterion – 7 Institution Values and Best Practices

Key Indicator - 7.1 Institutional Values and Social Responsibilities

QnM 7.1.3 - Quality audits on environment and energy regularly undertaken by the Institution.

The institutional environment and energy initiatives are confirmed through the following:

- 1. Green Audit / Environment Audit**
- 2. Energy Audit**
- 3. Clean and Green Campus Initiatives**
- 4. Beyond the Campus Environmental Promotion and Sustainability Activities**

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**Report of Green Audit,
Environment Audit and
Energy Audit**



GO SHOONYA PVT. LTD.

NEUTRALITY REDEFINED

CIN: U37100MH2021PTC368088



Date: 22-08-2022

Site Description	
Building Name	: <u>Thakur Ramnarayan College of Arts & Commerce.</u>
Address	: <u>Thakur Ramnarayan Educational Campus, Swami Vivekananda Marg, Anand Nagar, Dahisar East, Mumbai, Maharashtra 400068.</u>
City	: <u>Dahisar</u>
State	: <u>Maharashtra</u>
Pin code	: <u>400068</u>
Building Type	: <u>Educational Institute</u>
No. of Units	: <u>1 Nos</u>
No. of Floors	: <u>10 Nos</u>
No. of Parking Floors	: <u>0 Nos</u>
Age of Structure	: <u>20 years (Approximately)</u>
No. of Employees (Teaching and Non-teaching staff)	: <u>65 Nos (Approximately)</u>
No. of students	: <u>3308 Nos (Approximately)</u>
No. of Lifts	: <u>2 Nos</u>
Contact Person	:
Position	:
Contact Email	:
Contact Number	:
No. of Connections	:





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Thakur Ramanarayan College of Arts & Commerce- Educational Institute

Electricity Consumption

The institute has several elements that are completely dependent on electrical energy for operations.

It is observed from the bills that:

Electricity	Consumption (units)	Emissions (tons of CO ₂ e)
Daily	162.115	0.145
Monthly	4931	4.437
Yearly	59172	53.254

Based on the consumption in 2022, it was observed that, there is an average fluctuation of approximately 10%. This fluctuation can be the result of **work demand**.

The facility has several types of instruments, equipment, devices and items that includes light fittings, fans, air conditioners, lifts, computer projectors, cameras etc. and items that induce *inductive or capacitive load*. This has a direct impact on the efficiency at which the power is being consumed at the Institute. (In simpler terms, use of such devices has a direct contribution towards the power factor of the facility.)

Based on the bills provided for the months from January 2022 to April 2022, it can be observed that the average power factor for the institute was 0.8889. the month of February has observed the lowest Average Power Factor of 0.8678 for the institute.

Fugitive Emission

Air Conditioners are found on each floor in the specific rooms. Fugitive emissions are introduced due to the leaked refrigerant from the air conditioning system/refrigeration system. The Air conditioning systems were operated throughout the working hours of the college. Refrigerant R-32 was used in each of the air conditioners.

Fugitive Emissions	Emissions (tons of CO ₂ e)
Daily	0.2708
Monthly	8.124
Yearly	98.842





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Commute

Commute of a total of 3373 people was considered which included the students, faculty and the non-teaching staff of the institute. Public transportation such as local trains for long distance travel and buses for short distance travel were considered.

Emissions due to Commute	Emissions (tons of CO ₂ e)
Daily	0.4903
Monthly	14.7094
Yearly	178.9648

Total emissions

Considering all the parameters mentioned earlier, the total emissions generated due to the institute was determined.

Total Emissions	Emissions (tons of CO ₂ e)
Daily	0.9061
Monthly	27.183
Yearly	330.7265

Remarks

- There is a 20% error margin due to the lack of verification of the data collected by the volunteers.
-





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Recommendations

Based on the audit conducted, there is a scope of reduction and offsetting the emissions generated within the organizational boundary of the institute.

- Plantations: Planting 1500 trees per year for the next 5 years would make a major contribution in offsetting the emissions generated.
- Energy Audit: Targeted audit can help achieve up to 10-15 % savings on electrical consumption by recommending changes or upgrades to the existing systems in place.
- Solar Installation: Setting up at least 20kW of solar power plant will not only reduce energy consumption from conventional grids but also yield monetary savings.
- Water conservation: Reuse of grey water should be considered wherever possible. Rainwater harvesting with immediate use of water and not from borewells, will
- Waste Management: Design policies for on-site waste management in the organization. For off-site wet and dry waste management partner with registered with organizations like Go Shoonya.
- Shared buses: Set up shared buses for commute up to the railway station as most of the students take local trains.



Annexure

THAKUR RAMNARAYAN COLLEGE OF ARTS & COMMERCE CAMPUS - I (NEW BUILDING) CONSOLIDATED DATA																							
SHOONYA FLOOR	LIGHT	LIGHT TYPE	LIGHT WATT	FAN	FAN TYPE	FAN WATT	A/C	A/C TYPE	A/C WATT	COMPUTERS	COMPUTER TYPE	COMPUTER WATT	OTHERS	OTHERS WATT	TOTAL WATT	NO. OF WATT	NO. OF WATT	NO. OF WATT	NO. OF WATT	NO. OF WATT	NO. OF WATT	NO. OF WATT	NO. OF WATT
G1 FLOOR	RECEPTION	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	CONFERENCE	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	LIBRARY	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G2 FLOOR	RECEPTION	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	CONFERENCE	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	LIBRARY	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	COMPUTER LAB	LED	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



Stair-way lights (up)	led tube light	19	18 watt
Stair-way lights (down)	led tube light	20	18 watt
terrace lights	led tube light	2	18 watt
Stair-way windows (10)			
Stair-way windows (10)			

ashroo	Floors	light Type	Light	Light	Light	Exhaust Fa	Sinks	Flush	Taps	Ventilati on window	Switch board (inside)	Working Switches	Water fountain Switch	Water Fountain taps	Water Fountain below doors	Inside door	Main Door
Ground Floor	Girls wash	led tube light	1	-	1	1	1	1	1	1	1-2 switch	All	-	-	-	-	1
	Boys wash	led tube light	1	-	1	1	1	1	1	1	1-2 switch	All	-	-	-	-	1
	Principal Office	led tube light	2	-	1	1	1	1	1	1	1-4 switch	All	-	-	-	-	1
	Staff Room	led tube light	1	-	1	1	1	1	1	1	1-4 switch	All	-	-	-	-	1
	Girls Com	led tube light	1	-	1	1	1	1	1	1	1-4 switch	Middle 2 v	-	-	-	-	1
	Girls wash	led tube light	2	1	1	3	3	3	3	3	1-10 switch	3 working	1-2 switch	3(middle tap- not proper)	3	3(middle door lock broken)	1
	Girls wash	led tube light	2	1	1	3	3	3	3	3	1-10 switch	3 working	1-2 switch	3	3	3	1
	Girls wash	led tube light	2	1	1	3	3	3	3	3	1-10 switch	3 working	1-2 switch	3	3	3	1
	Girls wash	led tube light	2	1	1	3	3	3	3	3	1-10 switch	3 working	1-2 switch	3	3	3	1
	Boys wash	led tube light	2	1	1	3	2	2	2	3	1-10 switch	3 working	1-2 switch	3	3	3	1
	Boys wash	led tube light	2	1	1	3	2	2	2	3	1-10 switch	3 working	1-2 switch	3	3	3	1
	Boys wash	led tube light	2	1	1	3	2	2	2	3	1-10 switch	3 working	1-2 switch	3	3	3	1
	Boys wash	led tube light	2	1	1	3	2	2	2	3	1-10 switch	3 working	1-2 switch	3	3	3	1

CENSUS	JUNIOR COLLEGE	DEGREE COLLEGE
STUDENTS	1352	1956
FACULTY	17	21
NON-TEACHING STAFF	27	
SHRUBS AND TREES	80 SHRUBS & 45 TREES	

R TANK AND P		Water tank and pump details						
water tank	domestic	22,800 L	time to fillup the tanks : 2.5 hours	Motor details				
	fire water	30,200 L		2 big induction motor pump	50HP/27,805 watt	2942 rpm	415v	67A
water tank	flushing tank	27,000 L		2 small centrifugal pump motors	7.5HP/4565 watt	2865 rpm	415v	11A
	fire water	75,000 L						
	domestic	26,000 L						

LIFT 1	G-1	8sec	G-1	8.7sec	Extra details
	1-2	9sec	G-2	9.1sec	
	2-3	9sec	G-3	10.32sec	12*4 led lights
	3-4	9sec	G-4	12.52sec	2 fans
	4-5	9sec	G-5	14.29sec	2 cameras
	5-6	10sec	G-6	17.9sec	
	6-7	10sec	G-7	19.17sec	
	7-8	11sec	G-8	21.11sec	
	8-9	11sec	G-9	21.53sec	
LIFT 2	G-1	7.61sec	G-1	7.61sec	
	1-2	7.80sec	G-2	8.03sec	
	2-3	7.74sec	G-3	10.5sec	
	3-4	7.13sec	G-4	11.7sec	
	4-5	6.98sec	G-5	14.3sec	
	5-6	5.45sec	G-6	16.5sec	
	6-7	8.01sec	G-7	17.1sec	
	7-8	8.23sec	G-8	19.05sec	
	8-9	8.12sec	G-9	22.3sec	
	2 emergency phones		12*4 led lights	2 fans	





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ELECTRICITY BILLS												
January	GROUND FLOOR	1st FLOOR	2nd FLOOR	3rd FLOOR	4th FLOOR	5th FLOOR	6th FLOOR	7th FLOOR	8th FLOOR	9th FLOOR	COMMO	AFF
Bill month	22-Jan	22-Jan	22-Jan	22-Jan	22-Jan	22-Jan	22-Jan	22-Jan	22-Jan	22-Jan	22-Jan	22-Jan
Bill date	03.02.2022	03.02.2022	03.02.2022	03.02.2022	03.02.2022	03.02.2022	03.02.2022	03.02.2022	03.02.2022	03.02.2022	03.02.2022	04.02.2022
Bill no.	9.84E+10	9.84E+10	9.84E+10	9.84E+10	9.84E+10	9.84E+10	9.84E+10	9.84E+09	9.84E+10	9.84E+10	9.84E+10	93626663298
Meter no.	LSC00096	LSC00104	LSC00104	LSC00104	LSC00102	LSC00104	LSC00097	LSC00103	LSC00103	LSC00103	LSC00104	LSC000917
Customer Account no.	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111 2994
Billing demand												
Consumed units	330	307	210	144	187	114	145	151	150	192	537	159
Billed units	330	307	210	144	187	114	145	151	150	192	537	159
Total Bill Value(In Rupees)	8576	9697	8554	8005	8310	7583	7914	7904	7996	8321	14217	20949
Average monthly energy c	218.83 kWh											
TOD DETAILS												
09.00HRS TO 12.00HRS	20	36	24	16	19	14	18	17	16	24	66	21
18.00HRS TO 22.00HRS	74	51	38	26	30	21	27	31	29	34	109	24
22.00HRS TO 06.00HRS	150	88	54	41	50	35	45	45	40	57	105	25
06.00HRS TO 09.00HRS	85	132	94	61	87	45	55	58	64	77	257	88
Meter reading date	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022
Contract demand	36	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	50	115
Demand of penalty	0	0	0	0	0	0	0	0	0	0	0	0
Load factor	0	0	0	0	0	0	0	0	0	0	0	0
Average power factor	0.978(Lead)	0.835(Lead)	0.964(Lead)	0.925(Lead)	0.971(Lead)	0.985(Lead)	0.984(Lead)	0.985(Lead)	0.966(Lead)	0.98(Lead)	0.703(Lead)	0.813(Lead)

February	GROUND FLOOR	1st FLOOR	2nd FLOOR	3rd FLOOR	4th FLOOR	5th FLOOR	6th FLOOR	7th FLOOR	8th FLOOR	9th FLOOR	COMMO	AFF
Bill month	22-Feb	22-Feb	22-Feb	22-Feb	22-Feb	22-Feb	22-Feb	22-Feb	22-Feb	22-Feb	22-Feb	22-Feb
Bill date	03.03.2022	03.03.2022	03.03.2022	03.03.2022	03.03.2022	03.03.2022	03.03.2022	03.03.2022	03.03.2022	03.03.2022	03.03.2022	06.03.2022
Bill no.	9.34E+10	9.2E+10	9.2E+10	9.23E+10	9.2E+10	9.2E+10	9.34E+10	9.2E+10	9.34E+10	9.2E+10	9.23E+10	93252436255
Meter no.	LSC00096	LSC00104	LSC00104	LSC00104	LSC00102	LSC00104	LSC00097	LSC00103	LSC00103	LSC00103	LSC00104	LSC000917
Customer Account no.	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111 2994
Billing demand												
Consumed units	348	419	441	420	360	251	250	250	179	338	0	747
Billed units	348	419	441	420	360	251	250	250	179	338	0	747
Total Bill Value(In Rupees)	8668	10725	10665	10477	9856	8711	8776	8797	8100	9642	6700	27380
Average monthly energy c	333.91 kWh											
TOD DETAILS												
09.00HRS TO 12.00HRS	33	93	124	130	84	58	54	86	48	75	0	126
18.00HRS TO 22.00HRS	61	26	17	12	20	11	13	6	8	41	0	164
22.00HRS TO 06.00HRS	131	22	26	20	27	17	17	6	7	75	0	63
06.00HRS TO 09.00HRS	124	280	274	262	228	165	166	151	116	146	0	395
Meter reading date	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022	28.02.2022
Contract demand	36	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	50	115
Demand of penalty	0	0	0	0	0	0	0	0	0	0	0	0
Load factor	0	0	0	0	0	0	0	0	0	0	0	0
Average power factor	0.986(Lead)	0.853(Lead)	0.946(Lead)	0.957(Lead)	0.973(Lead)	0.998(Lead)	0.987(Lag)	0.992(Lag)	0.997(Lag)	0.971(Lag)	0	0.754(Lag)





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CIN: U37100MH2021PTC368088

March	GROUND FLOOR	1st FLOOR	2nd FLOOR	3rd FLOOR	4th FLOOR	5th FLOOR	6th FLOOR	7th FLOOR	8th FLOOR	9th FLOOR	COMMC	AFF
Bill month	22-Mar	22-Mar	22-Mar	22-Mar	22-Mar	22-Mar	22-Mar	22-Mar	22-Mar	22-Mar	22-Mar	22-Mar
Bill date	02.04.2022	03.04.2022	02.04.2022	03.04.2022	03.04.2022	03.04.2022	03.04.2022	03.04.2022	03.04.2022	02.04.2022	03.04.2022	02.04.2022
Bill no.	9.96E+10	9.8E+10	9.96E+10	9.8E+10	9.24E+10	9.8E+10	9.8E+10	9.8E+10	9.8E+10	9.96E+10	9.8E+10	99626665552
Meter no.	LSC00096	LSC00104	LSC00104	LSC00104	LSC00102	LSC00104	LSC00097	LSC00103	LSC00103	LSC00103	LSC00104	LSC00097
Customer Account no.	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111 2994
Billing demand												
Consumed units	240	776	620	775	736	277	430	481	391	420	0	769
Billed units	240	776	620	775	736	277	430	481	391	420	0	769
Total Bill Value(In Rupees)	7849	13701	12154	13508	13054	8951	10446	10894	10016	10352	6700	26979
Average monthly energy c	495.16 kWh											
TOD DETAILS												
09.00HRS TO 12.00HRS	31	251	252	282	202	84	101	133	87	118	0	152
18.00HRS TO 22.00HRS	47	35	12	22	47	9	28	34	18	28	0	147
22.00HRS TO 06.00HRS	67	10	20	34	24	10	19	39	7	39	0	82
06.00HRS TO 09.00HRS	95	480	335	438	463	174	282	275	278	236	0	415
Meter reading date	31.03.2022	31.03.2022	31.03.2022	31.03.2022	31.03.2022	31.03.2022	31.03.2022	31.03.2022	31.03.2022	31.03.2022	31.03.2022	31.03.2022
Contract demand	36	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	50	115
Demand of penalty	0	0	0	0	0	0	0	0	0	0	0	0
Load factor	0	0	0	0	0	0	0	0	0	0	0	0
Average power factor	0.984(Lead)	0.933(Lead)	0.975(Lead)	0.980(Lead)	0.989(Lead)	0.998(Lag)	0.983(Lag)	0.979(Lag)	0.992(Lag)	0.984(Lag)	0	0.834(Lead)

April	GROUND FLOOR	1st FLOOR	2nd FLOOR	3rd FLOOR	4th FLOOR	5th FLOOR	6th FLOOR	7th FLOOR	8th FLOOR	9th FLOOR	COMMC	AFF
Bill month	22-Apr	22-Apr	22-Apr	22-Apr	22-Apr	22-Apr	22-Apr	22-Apr	22-Apr	22-Apr	22-Apr	22-Apr
Bill date	03.05.2022	03.05.2022	03.05.2022	03.05.2022	03.05.2022	03.05.2022	03.05.2022	03.05.2022	03.05.2022	03.05.2022	03.05.2022	03.05.2022
Bill no.	9.863E+10	9.2E+10	9.2E+10	9.863E+10	9.863E+10	9.2E+10	9.2E+10	9.2E+10	9.863E+10	9.863E+10	9.863E+10	98626729987
Meter no.	LSC00096	LSC00104	LSC00104	LSC00104	LSC00102	LSC00104	LSC00097	LSC00103	LSC00103	LSC00103	LSC00104	LSC00097
Customer Account no.	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111	9000 0111 2994
Billing demand												
Consumed units	331	1110	746	983	775	338	605	532	335	436	0	989
Billed units	331	1110	746	983	775	338	605	532	335	436	0	989
Total Bill Value(In Rupees)	8,810	16,732	13,485	15,483	13,585	9,792	22,647	11,652	9,847	10,794	7,100	29,220
Average monthly energy c	598.3 kWh											
TOD DETAILS												
09.00HRS TO 12.00HRS	39	423	263	287	181	95	125	137	81	92	0	164
18.00HRS TO 22.00HRS	58	30	19	31	64	5	25	34	12	42	0	168
22.00HRS TO 06.00HRS	108	2	18	41	58	3	17	48	5	83	0	146
06.00HRS TO 09.00HRS	127	655	446	624	473	235	438	313	237	218	0	511
Meter reading date	30.04.2022	30.04.2022	30.04.2022	30.04.2022	30.04.2022	30.04.2022	30.04.2022	30.04.2022	30.04.2022	30.04.2022	30.04.2022	30.04.2022
Contract demand	36	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	50	115
Demand of penalty	0	0	0	0	0	0	0	0	0	0	0	0
Load factor	0	0	0	0	0	0	0	0	0	0	0	0
Average power factor	0.99(Lead)	0.969(Lead)	0.978(Lead)	0.983(Lead)	0.987(Lead)	0.996(Lag)	0.993(Lag)	0.973(Lag)	0.991(Lag)	0.971(Lag)	0	0.872(Lead)

