



AP Pollution Control Board

ENERGY AUDIT REPORT



CH.S.D.ST.THERESA'S COLEGE FOR WOMEN,
(AUTONOMOUS) ELURU
ELURU DISTRICT.



AP Pollution Control Board

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AKNOWLEDGEMENTS

The team of Audit Committee would like to thank the Sri. SriKanth Reddy, Deputy Inspector Electrical, Eluru District and our management of Ch.S.D.St.Theresa's College for Women (A0, Eluru for assigning this important work of Green Audit. We appreciate the co-operation to the team for completion of assessment.

We would also like to thank Dr.Sr.Mercy, Principal and Dr.C.A.Jyothirmayi, Coordinator, IQAC, for her continuous support and guidance, without which the completion of the project will not be possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

Sr.Maria Christia, Vice Principal

Sr. Suseela, Controller of Examinations

Sr. Innyasiamma, AO

Mr. Sasi Bhushan Reddy – Site Engineer



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Member



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CONCEPT AND CONTEXT

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

In view of the NAAC circular regarding Green auditing, the College management decided to conduct an external environment assessment study by a competent external professional auditor. The green audit aims to examine environmental practices within and outside the College campus, which impact directly or indirectly on the atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of College/college environment. It was initiated with the intention of reviewing the efforts within the institutions whose exercises can cause risk to the health of inhabitants and the environment.

Through the green audit, a direction as how to improve the structure of environment and inclusion of several factors that can protect the environment can be commenced. This audit focuses on the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management & Carbon Footprint etc. being implemented by the institution.



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OVER VIEW OF THE COLLEGE

Ch.S.D.St.Theresa's College for Women is a pioneer Institution in the cause of Women's education. Established in 1953 by the pioneering team of the Sisters of St. Ann of Providence, Italy, with a handful of students at a time when women's education was looked down with disdain, St. Theresa's College has today blossomed into a trend-setter in education and has become a coveted destination for the girl students who aspire to scale the ladder of success. Granted autonomy by UGC in 1987, the Institution has conscientiously adapted itself to the dynamic needs of the learners. Conferment of 'A grade' by NAAC Four consecutive times since 1998 and CPE Grant by UGC in 2006 are strong indications of the visionary leadership and commitment of the Institution to the cause of education.

St. Theresa's is a place where skills and passion coincide with the needs of the society. The Motto of the institution 'Tamasoma Jyothirgamaya' encapsulates the charism of attempting to transform women into beacons of light from ignorance and darkness thereby becoming worthy assets to society and the nation. The institution has been recognized as a well equipped one catering chiefly to women students hailing from rural backgrounds and economically disadvantaged sections. It has earned a reputation of being able to train students of all streams to be technologically savvy and computer literate. Equipped with state of art infrastructure, spacious class rooms, excellent laboratories, audio-visual aids, smart class rooms, well-stocked libraries and a band of dedicated and qualified teaching fraternity the institution has streaked blazing trails across the map of women's education in A.P.





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OVER VIEW OF THE COLLEGE

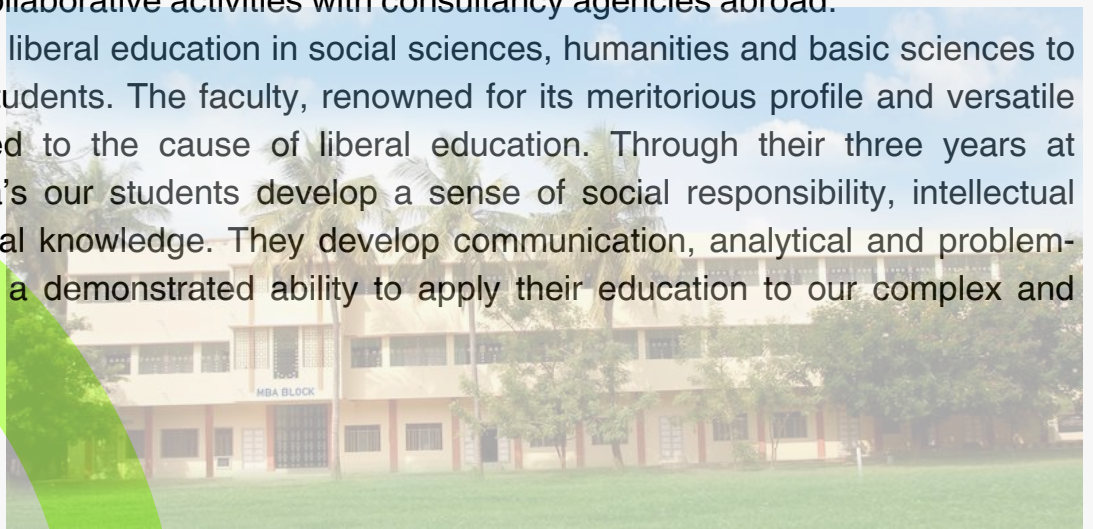
Ch.S.D.St.Theresa's College designed with cool and spacious corridors. The College shares an architectural affinity with other colonial educational institutions of the country. In the past six decades, as the College has grown, several other buildings have been added in consonance with its original design.

The College is well known for its discipline, value-oriented academic acumen, conducive and student-friendly ambience, innovative program options and job oriented skill training. A rich array of opportunities is provided through co-curricular and extra-curricular programs that transform and empower students to realize their full potential. With state-of-the-art physical facilities, e-class rooms, virtual labs, Digital Museum, resourceful library, caring guidance and exuberant synergy of the faculty, passion and commitment of the management, St. Theresa's is one of the best global Institutions.

With a mission to create empowered women hailing from economically and socially disadvantaged strata of society, St. Theresa's College for Women strides purposefully forward into its seventh decade of inception standing as a model institution for Higher education. The brilliant leadership displayed by administrators has ingrained the ideals of discipline and progressive thinking transforming learning into a dynamic process ever evolving to suit changing trends.

Excellence has been a watchword in all activities related to campus life. Selected as the Best College for NSS activities for many times consecutively. Best College for NCC programmes, one of the best in Cultural activities and Sports and Games, St. Theresa's trains its students to be all rounders. The St. Theresa's Centre for International studies takes a pro active role in providing consultancy services, coaching for entry exams, career guidance and counseling for studies and careers abroad, conducting workshops and carrying out collaborative activities with consultancy agencies abroad.

The College offers liberal education in social sciences, humanities and basic sciences to more than 4000 students. The faculty, renowned for its meritorious profile and versatile talent, is dedicated to the cause of liberal education. Through their three years at Ch.S.D.St.Theresa's our students develop a sense of social responsibility, intellectual rigour, and practical knowledge. They develop communication, analytical and problem-solving skills, and a demonstrated ability to apply their education to our complex and diverse world.





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Vision

To create personally mature, professionally equipped and service oriented integrated women leaders committed to excellence and trained on the lines of Gospel truths to become assests to the Community and Nation.

Mission

True to the Theresian Motto “From Darkness to Light” we strive to create integrated women leaders, empowered and committed to excellence, pro-active, innovative custodians of culture and heritage, channels of human values and lights of God’s transforming love.



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Objectives

The overall goals of this project:

- (1) To introduce students to real concerns of environment and its sustainability of the Campus as a study site
- (2) To analyze the pattern and extent of resource use on the Campus
- (3) To establish a baseline data to assess future sustainability plans
- (4) To make the College a more environmentally sustainable institution of higher learning
- (5) To bring out a status report on environmental and Energy compliance.

The Energy audit is the reflection of institutional sustainability, planning process which quantifies whether or not current and/or future environmental efforts are actually making a difference to our resolve to eradicate environmental poverty.

There are many reasons for undertaking an Energy audit including:

- To introduce and aware students to real concerns of environment and its Sustainability.
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use of the campus.
- To reduce air pollution by planting and maintaining more trees in and around the College campus.
- To identify behavioral change opportunities by evaluating eco-friendly operations to reduce the Energy consumption.

In recent time, the Energy audit along with Green Audit of an institution has been becoming a paramount important for self assessment of the institution which reflects the role of the institution in mitigating the present environmental problems.



ANDHRA PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE: ELURU

*D.No.22B-3-2, Kaanukolanivaari Street, Powerpet Railway Station Road,
Powerpet, Eluru-534002.*

K.Venkateswara Rao
ENVIRONMENTAL ENGINEER

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To
The Principal,
CH.S.D.St.Theresa's Autonomous College for Women,
Eluru,
Eluru District.
Sir,

Sub: APPCB – RO – ELR – CH.S.D.St.Theresa's Autonomous College for Women, Eluru
– Eco-Friendly activities – Appreciation - Reg.,

Ref: Ch.S.D.St.Theresa's College for Women (A), Eluru – Request for Environmental
Audit, Green Audit and Energy Audit -Reg.,

On behalf of all the employees of AP Pollution Control Board, Eluru District, please accept my appreciation for the excellent job you and your staff have done over the past several years for maintaining various Eco friendly activities like Solid Waste Management, Water Harvesting Technologies, Solar Power Units, Paper Recycling Unit Maintenance, Swachh Bharat and Swachh Survekshan activities and so on.

Integrating Environmental Audit framework into sustainable development is the need of the hour. Thus Environmental Audit initiatives at an organizational level will lead to planetary sustainable development, which will ultimately lead to increased stakeholders value & societal welfare in general. Similarly, it is possible to achieve competitive advantage through Green Audit initiatives.

Thanks to your leadership and dedication combined with your staff's and students teamwork and energy, all are now enjoying the sustainable developments. You and your employees should take great pride in this accomplishment.

Yours faithfully,


09/07/2024
ENVIRONMENTAL ENGINEER
ENVIRONMENTAL ENGINEER
ANDHRA PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, ELURU.



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AUDIT ANALYSIS

1. General Information of the Institute:

Despite the institution's substantial growth in student, faculty, and staff populations during the last decade, the college has undertaken several steps to move towards becoming environmentally sensitive and a more sustainable campus. The campus is spread over 7 acres of sprawling campus in Sanivarapupet panchayati and is a heritage landmark of the old world amidst canopy of trees. The College has nearly 2500 students and 135 faculty. The institution is committed to academic excellence and scholarship, and provides students opportunities to develop as scientific leaders and Alumina of the college settled all over the World.



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ENERGY AUDIT REPORT

A Detailed Energy Audit of Ch.S.D.St.Theresa's College for Women(A), Eluru.

1.Ch.S.D.St.Theresa's College for Women(A), Eluru. uses Electrical Energy as the source of Energy for various equipment in the college campus.

2.Present Level of Energy Consumption:

No	Parameter / Value	Energy, kWh	Max Demand KVA	Power Factor	CO2 Emission MT
1	Min	11244	97	1	89.95
2	Max	2000	73	1	16.00
3	Avg	9192	84	1	78.53

3.Various measures adopted for Energy Conservation & renewable Energy:

- Usage of LED tube lights
- Usage of STAR Rated equipment
- Maintenance of good power factor
- Installation of 13 kWp Solar Power roof top plant.



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ENERGY AUDIT REPORT

A Detailed Energy Audit of Ch.S.D.St.Theresa's College for Women(A), Eluru.

4. Percentage of Usage of Alternate Energy:

The College has installed a Roof Top Hybrid Solar plus Wind Energy Plant. The percentage of usage of Alternate Energy to Annual Energy Requirement is 7.27 %.

5. Percentage of Usage of LED Lighting:

The College has various Types of Light fittings, namely: LED, FTL & CFL. The percentage of Annual LED Lighting Usage to Annual Lighting requirement works out to be 32.33 %.

6. Recommendation:

No	Recommendations
1	Replacement of 300 Nos Tube light fittings by 20 W LED fittings

Notes & Assumptions:

- 1 Unit (kWh) of Electrical Energy releases 0.8 Kg of CO₂ into atmosphere
- Daily working hours- 8 Nos.
- Annual workingDays-300 Nos
- Rate of Electrical Energy is considered as Rs 11/ per kWh
- Daily Energy Generated by 13 kW Hybrid Plant as 4 kWh.



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ENERGY AUDIT REPORT

CHAPTER 1 INTRODUCTION

Objectives:

- To study present level of Energy Consumption
- To Study the present CO₂ emissions
- To assess the various equipment/facilities from Energy efficiency aspect
- To study Scope for usage of Renewable Energy

General Details of College: Table No-1:

S.No	Head	Particulars
1	Name of Institution	Ch.S.D.St.Theresa's College for Women (A)
2	Address	Gavaravaram, Eluru-534006
3	Affiliation	Adikavi Nannaya University



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CHAPTER-II

STUDY OF PRESENT ENERGY CONSUMPTION

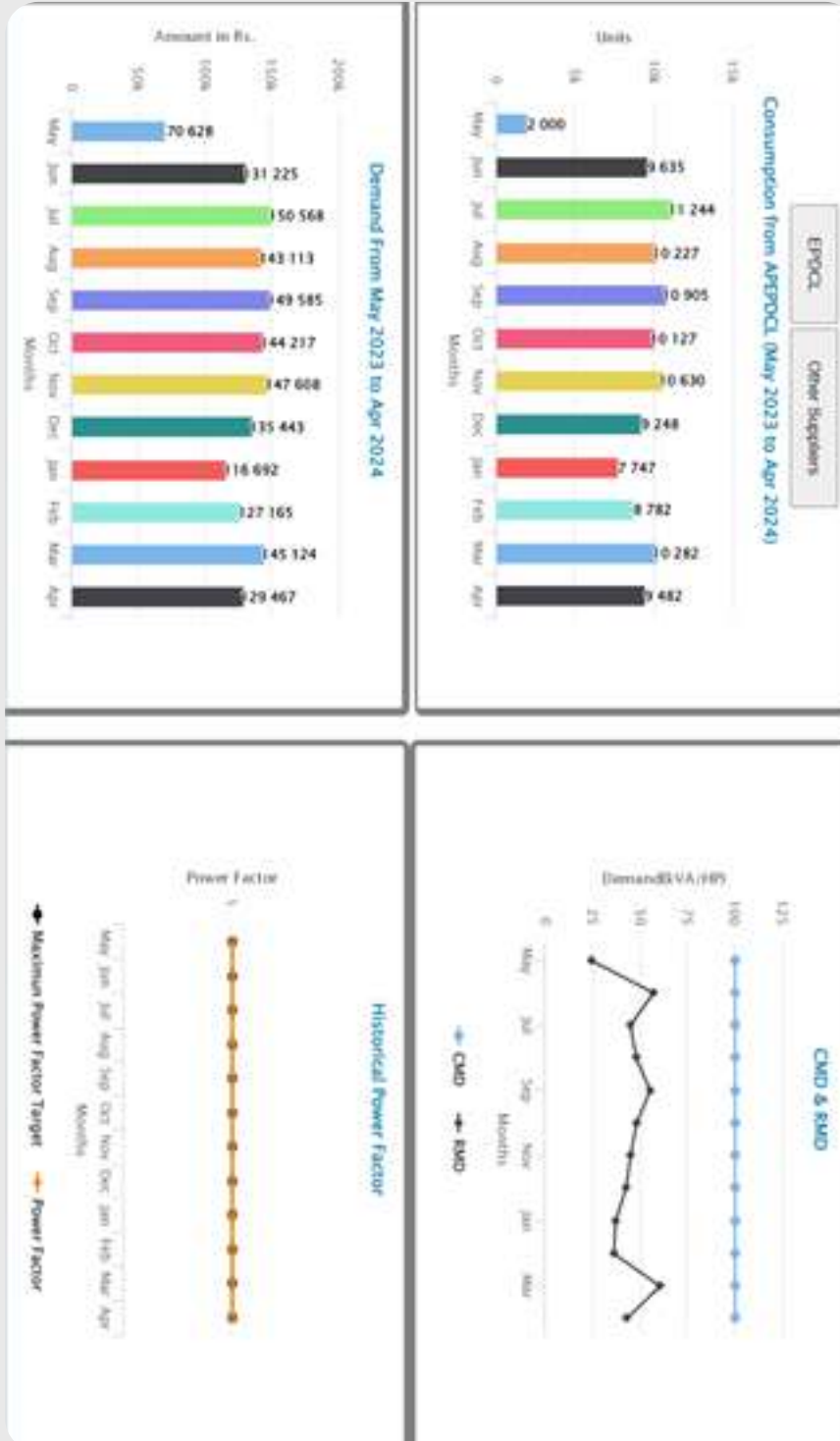
In this chapter, we present the analysis of 2023-2024 Electricity Bills

Table No-2: Electrical Bill Analysis- 2023-2024:

No	Month	Energy Consumed kWh	Power Factor	CO2 Emission MT
1	May-2023	2000	1	16.00
2	June-2023	9635	1	77.08
3	July-2023	11244	1	89.95
4	Aug-2023	10227	1	81.81
5	Sep-2023	10905	1	87.24
6	Oct-2023	10127	1	81.01
7	Nov-2023	10630	1	85.04
8	Dec-2023	9248	1	73.98
9	Jan-2024	7747	1	61.97
10	Feb-2024	8782	1	70.25
11	March-2024	10282	1	82.25
12	April-2024	9482	1	75.85
13	Maximum	11244	1	89.95
14	Minimum	2000	1	16.00
15	Average	9192	1	73.53



Variation of Energy Consumed





CHAPTER III

CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO₂ emissions), emitted due to various activities. In this we compute the emissions of Carbon-Di- Oxide, by usage of the various form of Electrical Energy used by the College for performing its day to day activities.

Basis for computation of CO₂ Emissions:

The basis of Calculation for CO₂ emissions due to Electrical Energy is as under 1 Unit (kWh)of Electrical Energy releases 0.8 Kg of CO₂ into atmosphere, Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day to Day operations. We herewith furnish the details of various forms of Energy consumption as under

Table No-3: Month wise Consumption of Electrical Energy & CO₂ Emissions:

No	Month	Energy Consumed kWh	CO ₂ Emission MT
1	May-2023	2000	16.00
2	June-2023	9635	77.08
3	July-2023	11244	89.95
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13	Maximum	11244	89.95
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15	Average	9192	73.53



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CHAPTER V

USAGE OF ALTERNATE ENERGY

In this Chapter, we compute the percentage of Usage of Alternate/Renewable Energy to Annual Energy Requirement of the College. The College has installed Roof Top Solar Wind Hybrid System of Capacity 13 kW.

Photograph of Hybrid Solar/Wind Power Generation Plan:





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CHAPTER V

USAGE OF ALTERNATE ENERGY



**CH.S.D.ST.THERESA'S COLEGE FOR WOMEN,
(AUTONOMOUS) ELURU
ELURU DISTRICT.**



**ENERGY AUDIT
REPORT**



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