



25th National Awards for Excellence in Energy Management - 2024

LEKHA BHAVAN

K. Kiran Kumar, IRSEE

Senior Divisional Electrical Engineer

Hyderabad Division

South Central Railway, Secunderabad

1. Brief introduction of Lekha Bhavan



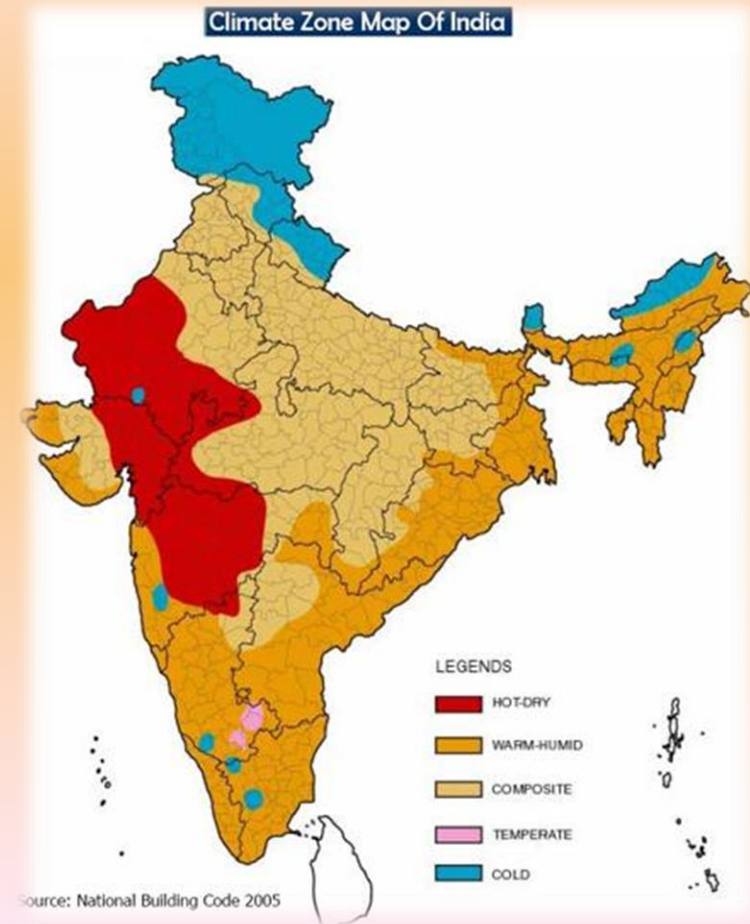
- Lekha Bhavan Office Building was built in the year 1960 and it is the Central office for the accounts department of the South Central Railway.

1. Brief introduction of Lekha Bhavan

- ✓ The core functions in the building are data processing of accounts, traffic costing, exchequer control and monitoring of funds through various accounting packages exclusively developed for Railways.
- ✓ Built up Area: 10,053 Sq.mt.
- ✓ Connected Electrical Load: 150 kW
- ✓ **First Shunya+ (Net Positive Energy) labelled building over Indian Railways.**
- ✓ **ISO 50001:2018 certified building.**
- ✓ Sources of Energy:
 - 11kV/440V Substation with 2 x 500 kVA Transformers.
 - 125 kVA Standby DG Set.
 - 100 kWp Rooftop SPV Solar Plant.

2(a).Passive Design Features

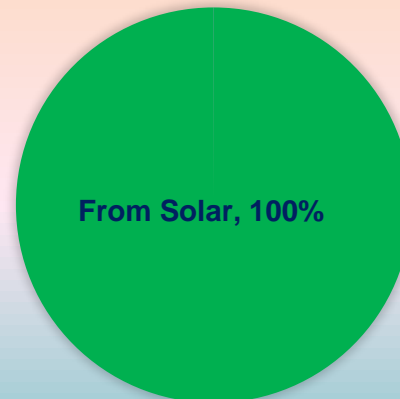
- ✓ Building Architect: Facade with front RCC.
- ✓ Integrated Block of 3 storied building.
- ✓ The most Significant feature of the building is that it is split into two symmetric halves. One half provided with server rooms which deals with the accounts of the entire zone and another half is filled with bustling offices.
- ✓ The entire building is surrounded by lush green patch to provide serene ambience which will also add to the energy conservation measures. The building has been provided with LED garden lights.
- ✓ This building comes in the **COMPOSITE** Climatic Zone.
- ✓ Orientation : West - South direction



2(b). Electrical Energy Consumption Overview

Description	2021-22	2022-23	2023-24
Purchased from Grid (kWh)	84779	46926	0
Consumption through DG set (kWh)	80	45	25
Consumption through Solar (kWh)	84779	85502	174273
Total Consumption (kWh)	169638	132473	174298
Built-up Area (Sq.mt)	10053	10053	10053
SEC (kWh/Sq.mt)	16.87	13.18	17.34

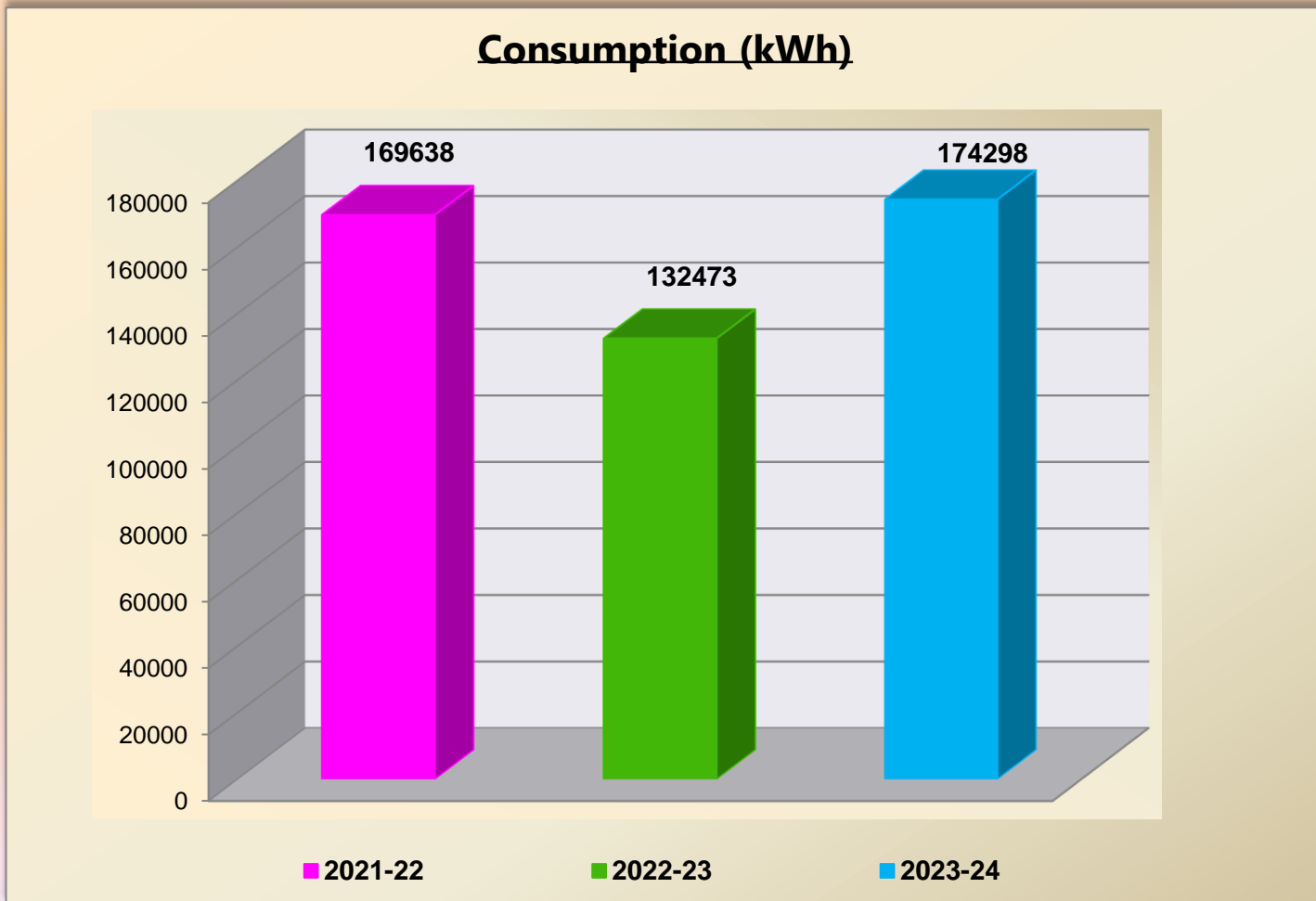
CONSUMPTION



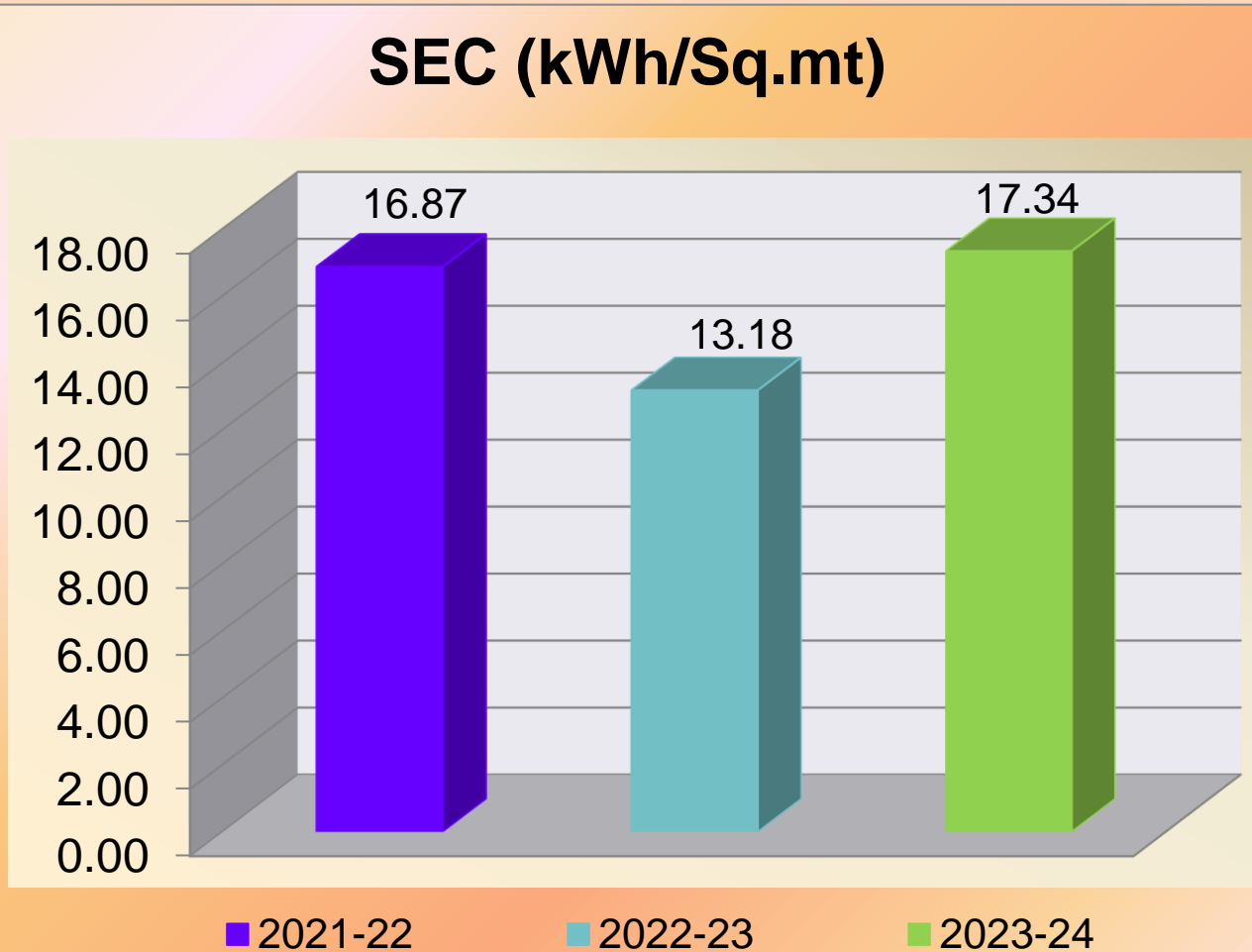
From Grid 0%

From DG, 0%

2(b). Energy Consumption Overview

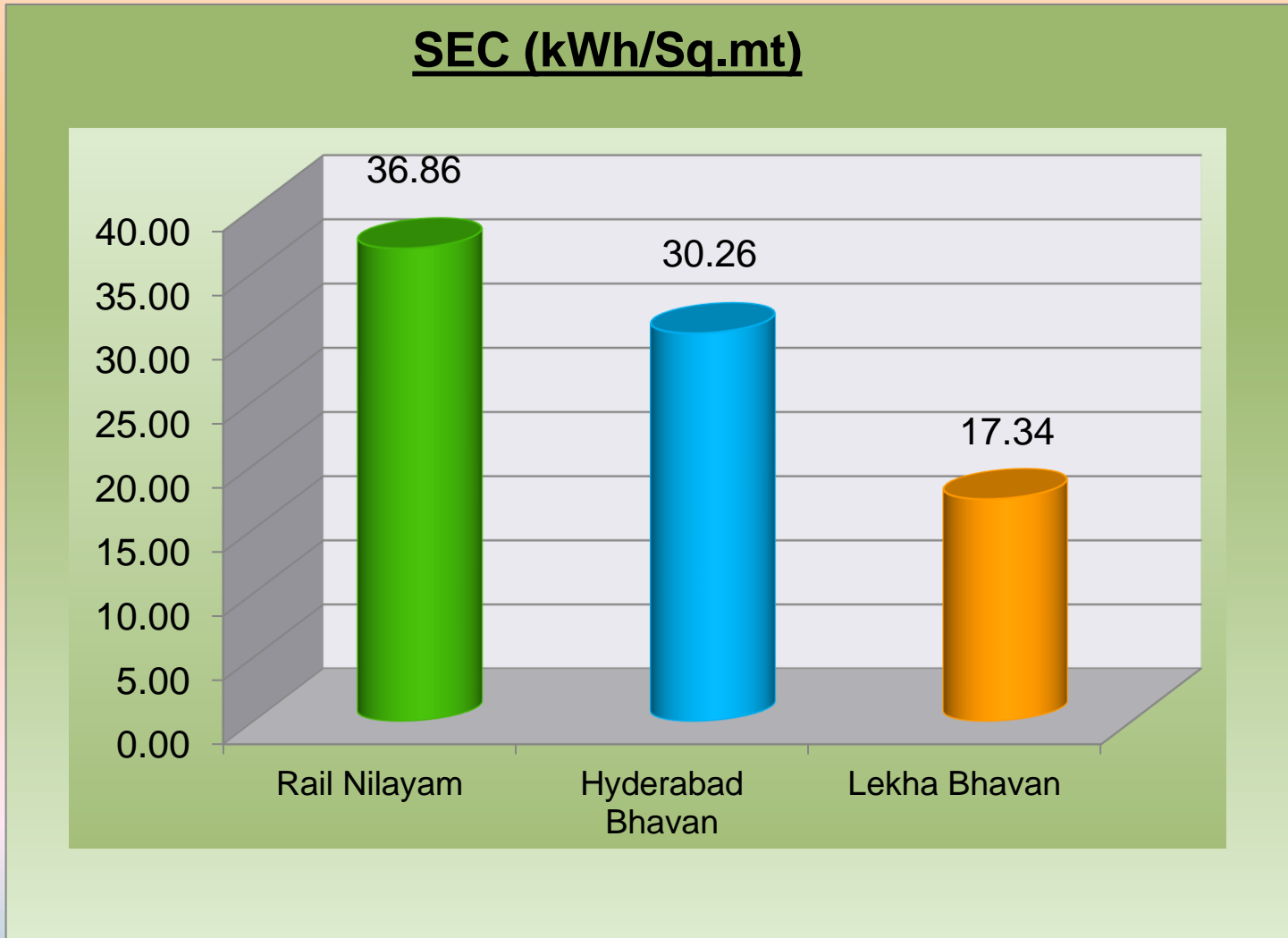


3. Sp. Energy Consumption SEC (kWh/Sq.mt)



4. National Benchmarking

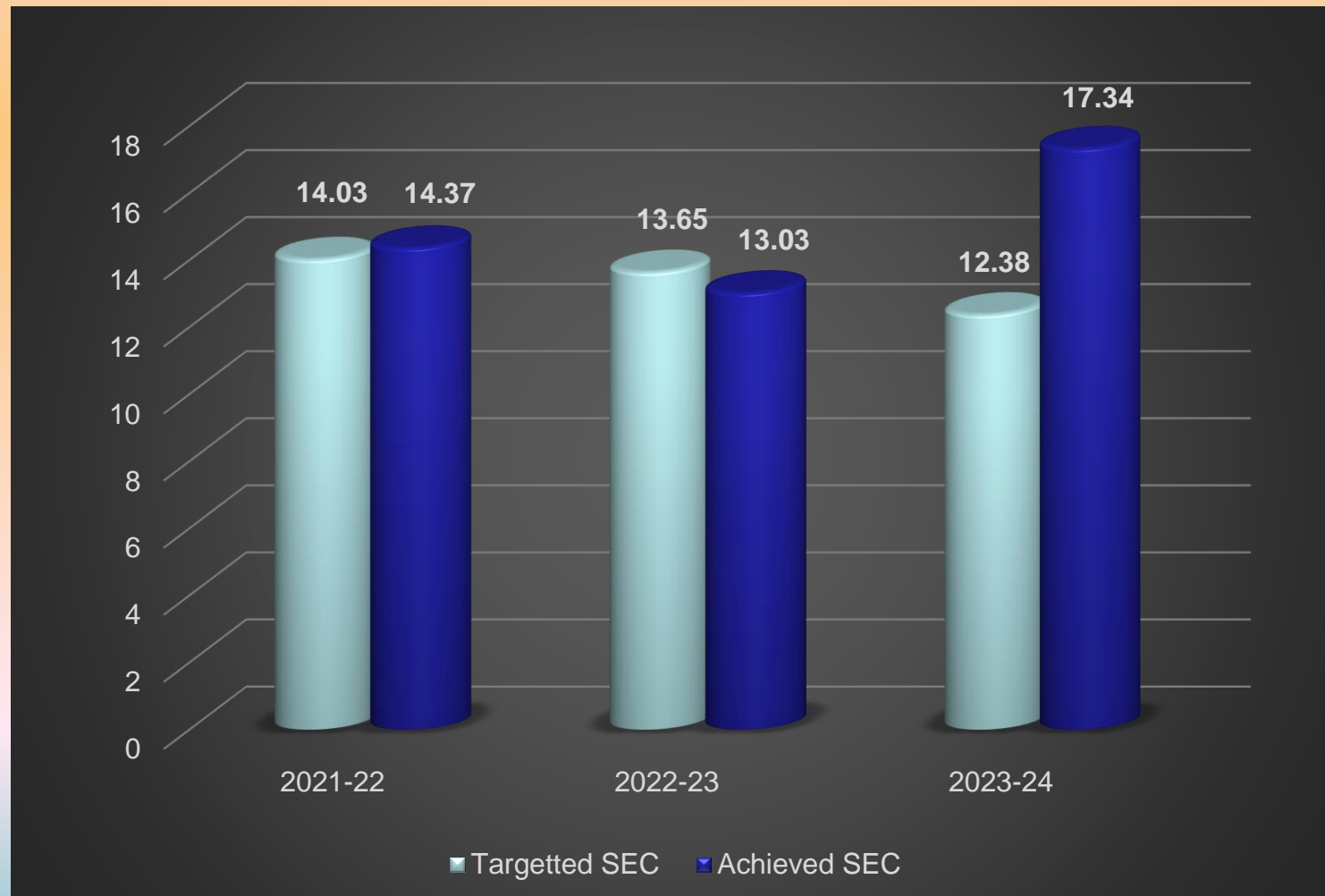
Direct Competitors and National Benchmarking



4. Internal Benchmarking

Target: 5% reduction in preceding year's SEC as assigned by Railway Board.

SEC (kWh/sq.mt)




4. EnCon Projects planned in 2024-25

- ✓ IOT based Energy Monitoring System
- ✓ Web based Intelligent Water Management System.
- ✓ Low carbon cooling system
- ✓ Automation of Pumps
- ✓ Power Quality Restorers

Achieving Energy Efficiency - A Multi Pronged Approach

- ✓ Targeted energy conservation action plan & Implementation.
- ✓ Low cost Innovation & use of new technology.
- ✓ Continuous energy monitoring and Corrections.
- ✓ Energy Audits by In House BEE Accredited Auditors.
- ✓ Renewable energy Initiatives.
- ✓ Very well maintained electrical equipment.
- ✓ Energy Conservation Week celebration and Mass Awareness Program.

A yellow scroll graphic with a dark yellow border and rounded ends, featuring a dark grey shadow on the top right and bottom left corners. The text is centered on the scroll.

**5. EnCON Projects Implemented
from 2021-22 to 2023-24**

Energy Saving Projects 2021-22

Some of the major Energy Saving Projects implemented.

Sl. No.	Project Description	Electrical Energy Savings in kWh	Savings (INR Million)	Investment (INR Million)
1	Timers for water coolers	3600	0.01	0.01
2	Timers for high mast lighting	4161	0.04	0.02
3	Occupancy sensors for lights	17520	0.17	0.06

Energy Saving Projects 2022-23

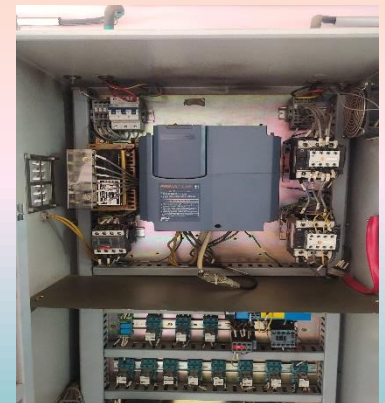
Some of the major Energy Saving Projects implemented.

Sl. No.	Project Description	Electrical Energy Savings in kWh	Savings (INR Million)	Investment (INR Million)
1	BLDC Fans	7008	0.07	0.17
2	Energy Efficient Inverter AC units	12000	0.12	0.43
3	Energy Efficient Pumps	6807	0.068	0.04
4	Occupancy sensors for ACs	39840	0.398	0.04

Energy Saving Projects 2023-24

Some of the major Energy Saving Projects implemented.

Sl. No.	Project Description	Electrical Energy Savings in kWh	Savings (INR Million)	Investment (INR Million)
1	Implementation of Maintenance Schedules	1743	0.02	0
2	Automation of Pumps	5446	0.05	0.01
3	VDF Drives for lifts	990	0.01	0.03





6. Innovative Projects Implemented

Innovative Projects implemented

Sl. No.	Name of the Project	Year of Implementation	Electrical Energy Savings in kWh	Savings (INR Million)	Investment (INR Million)
1	Automation of Pumps	2023-24	5446	0.05	0.01
2	Temperature setting of 22 deg C to 26 deg C in AC	2022-23	32256	0.32	-
3	Implementation of Maintenance Schedules	2023-24	1743	0.02	0

7a.Utilisation of Renewable Energy Sources

Year	Technology	Type of Energy	Onsite/ Offsite	Installed capacity	Generation in kWh	% of overall electrical energy
2021-22	Solar PV	Electrical	Onsite	50 kWp	84779	58.67
2022-23	Solar PV	Electrical	Onsite	100 kWp	173478	132.35
2023-24	Solar PV	Electrical	Onsite	100 kWp	174273	100.00



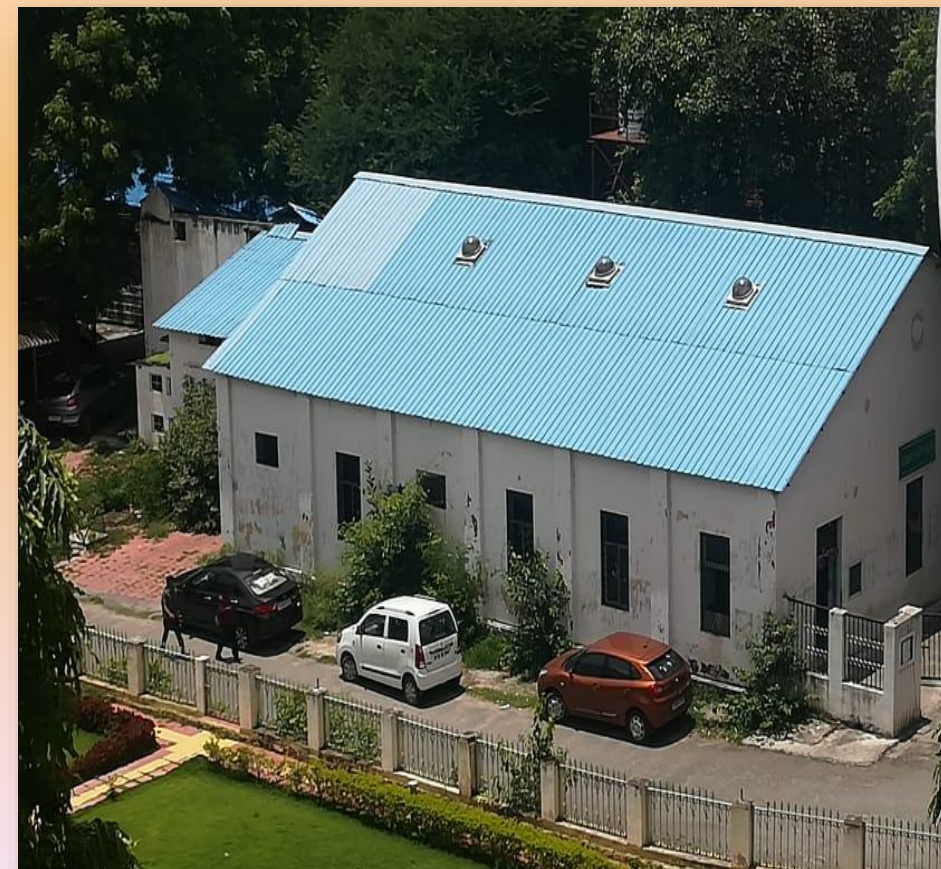
Other Energy Conservation Measures



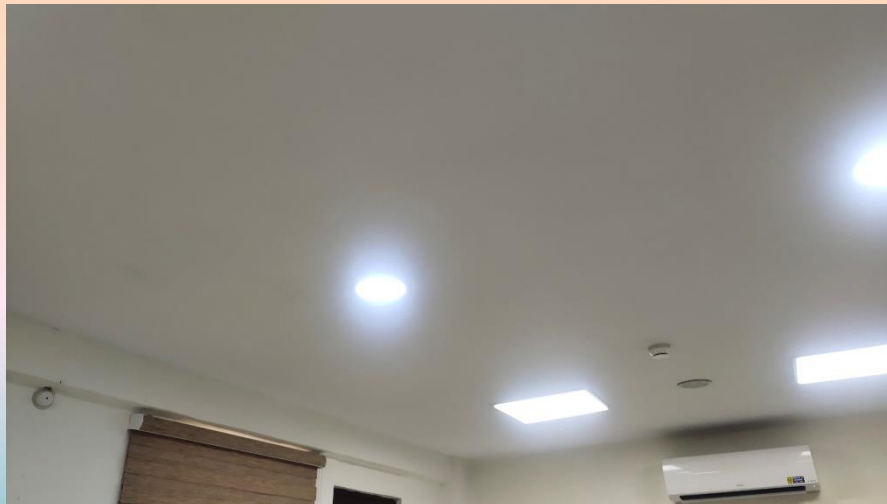
100% LED Lighting



Natural Day Light Pipe System

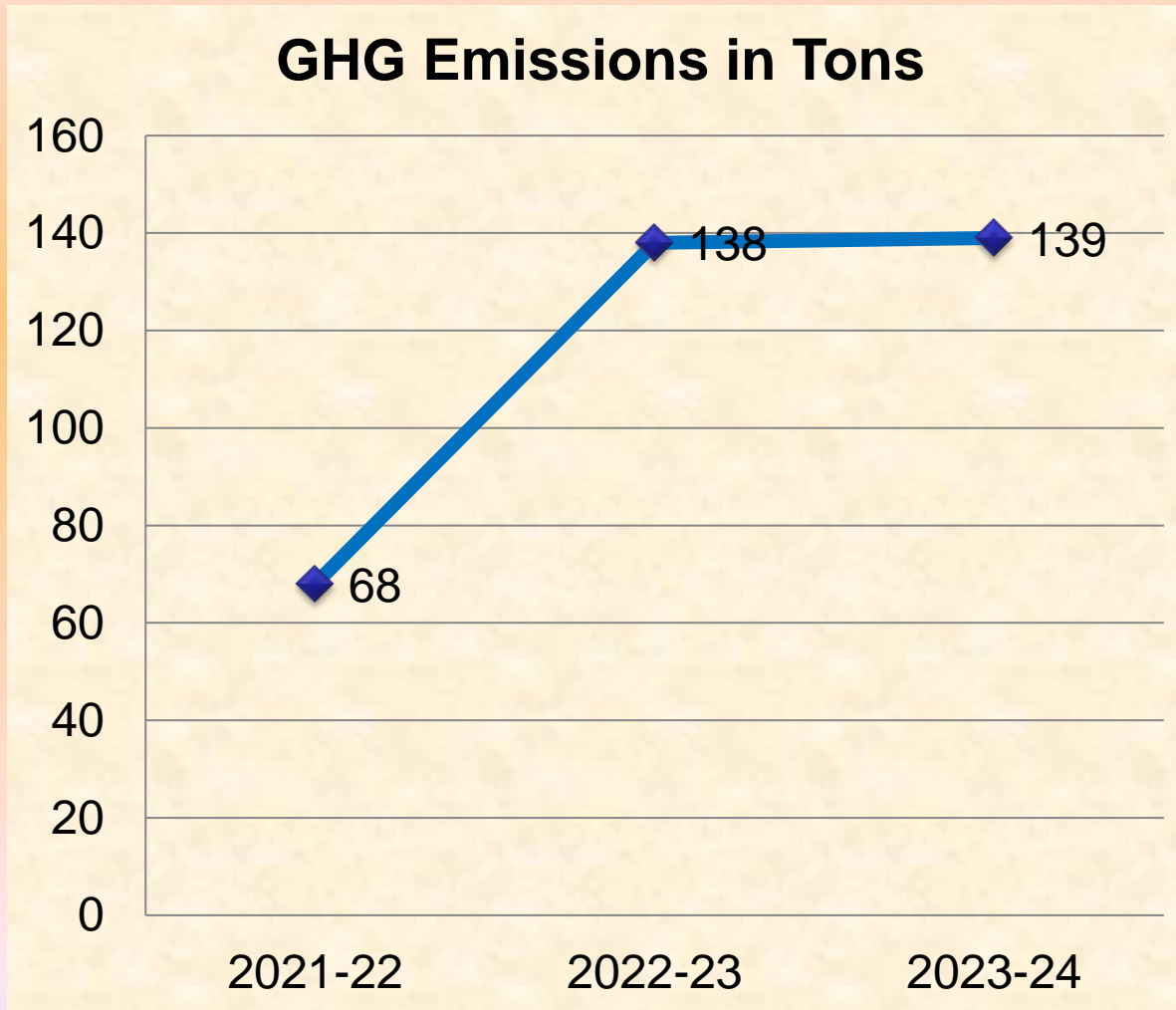


Use of Occupancy Sensors



8.GHG EMISSIONS & INDOOR AIR QUALITY

8. GHG Emissions and Indoor Air Quality



- **By provision of 100 kWp CO₂ emissions reduced by 139 Tons**

Energy Conservation and GHG Policy



Energy Conservation Policy of Hyderabad Division

1. Daily monitoring the Energy consumption through specially designed software.
2. Creating awareness among the users through various activities such as brochures / seminars.
3. To minimize the specific energy consumption w.r.t previous years.
4. Conducting of regular inter departmental energy audits aimed to minimize the energy losses.
5. Implemented the action plan of energy conservation items to reduce the Energy Consumption at least by 10% every year w.r.t. previous years targets.
6. Promote use of the renewable sources of energy.
7. Use of latest BEE 5 star rated Electrical Fittings and Equipments.

A handwritten signature in blue ink, appearing to read 'Kiran'.

K. Kiran Kumar

**Senior Divisional Electrical Engineer,
Hyderabad Division, South Central Railway.**



GHG Policy of Hyderabad Division

1. We committed to use products which reduce the GHG emission.
2. Using of eco-friendly refrigerants in HVACs, Refrigerators, Water Coolers etc.
3. Converting Existing Office Buildings into Green Buildings.
4. Use of Solar and Wind Energy.
5. Ensuring availability of resources for continual reduction of GHG emissions intensity.

A handwritten signature in blue ink, appearing to read 'Kiran'.

K. Kiran Kumar

**Senior Divisional Electrical Engineer,
Hyderabad Division, South Central Railway.**

Green Initiatives and Features at Lekha Bhavan

- Building has Green tree façade by Asoka (saraca-asoca) tree
- Roof top 100 kWp solar power plant
- Day light pipe system
- Sun control film on window pans
- Massive tree plantations
- e-office working system
- LED signage and name boards
- Occupancy indicators and display panels
- Pan IR video conference system
- In building potted plantation
- Segregation of waste and waste management
- Periodical Energy Audits

Green Initiatives and Features



Waste Management

- Building is provided with separate garbage bins for collection of dry and wet waste.
- EN & HM Department is educating the employees about segregation wet and dry waste.
- Daily collection and segregation of dry and wet waste from each floor and effective disposal of the same.

Team Work, Employee Involvement & Monitoring




on OnePlus
Road, Telangana 2022/12/14 10:37
Parul



9.BMS & Certification

On line Energy Monitoring

FOURTH PARTNER ENERGY SOLAR LI

Plant Name 

SCR Hyderabad

Showing 1 to 1 of 1 entries

SCR Hyderabad

Plant Capacity: 1638 kWp

Hyderabad, Sunrise: 05:40
Sunset: 18:44

23 May 2024

EPC Project Code: 123

Live Graphs Detail

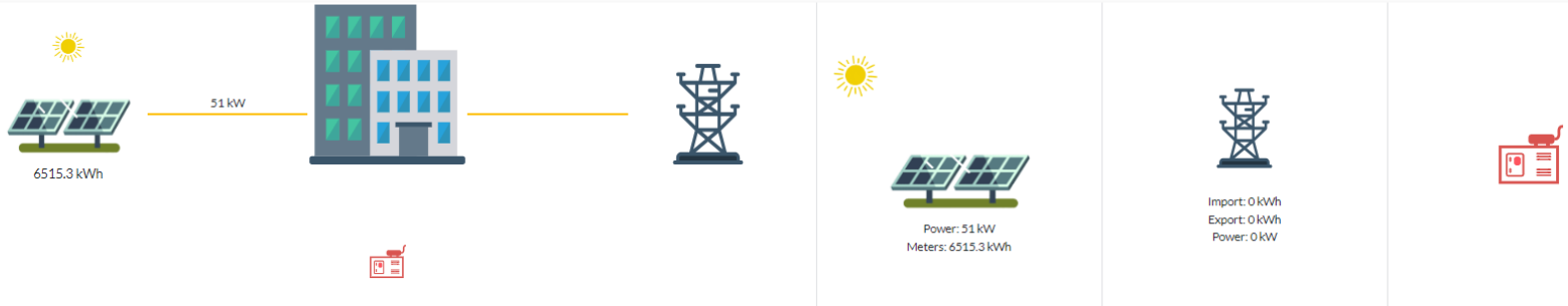
Statistics

3.98 kWh/kWp Yield


74.6% PR

N.A. Temp. Corrected PR



16.6% CUF



Inverters

SL.No	Name	Energy Today	Power Now	Op. State
IRISET 1&2 (SLN00B42DG) 				
1	Inverter1	231.7 kWh	-kW	-
2	Inverter2	232.6 kWh	-kW	-
3	Inverter3	228.9 kWh	-kW	-

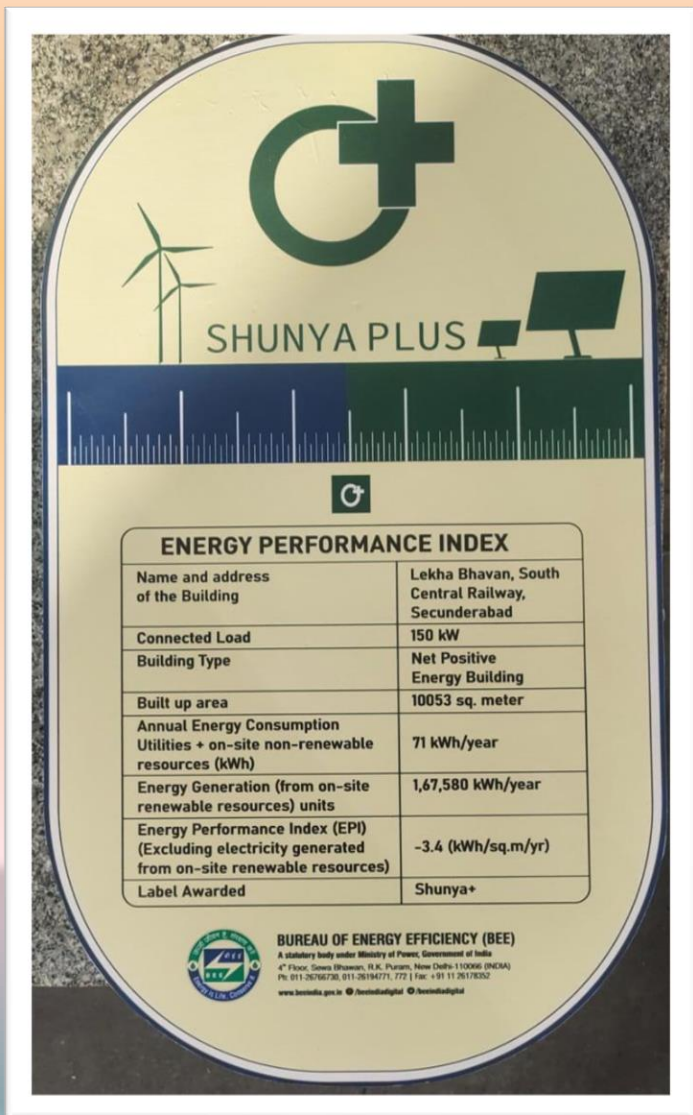
Energy Meter Now


SL.No	Yesterday Reading	Today Reading	MF	Today Generation
IRISET 1&2 (SLN00B42DG) 				
Meter 1	478588.59	478817.59	1	229 kWh
Meter 2	906133.5	906598.5	1	465 kWh
ZRTI-Admin Building (SLN00BB27H) 				

ISO 50001:2018 Certification




First Shunya+ Labelled building over Indian Railways





ऊर्जा दक्षता ब्यूरो
(भारत सरकार, विद्युत मंत्रालय)
BUREAU OF ENERGY EFFICIENCY
(Government of India, Ministry of Power)



आज़ादी का
अमृत महोत्सव


No.: BEE/Shunya-Labeling/Certificates/23-24/01

*It is certified that **Lekha Bhavan, South Central Railway, Secunderabad** has been awarded a BEE **Shunya Plus** Label with the details below:*

<i>Name and address of the building</i>	<i>Lekha Bhavan, South Central Railway, Secunderabad</i>
<i>Connected load</i>	<i>150 kW</i>
<i>Building Type</i>	<i>Net Positive Energy Building</i>
<i>Built up area</i>	<i>10053 sq. meter</i>
<i>Annual Energy Consumption (Utilities + on-site non-renewable resources (kWh))</i>	<i>71 kWh/year</i>
<i>Energy Generation (from on-site renewable resources) units</i>	<i>1,67,580 kWh/year</i>
<i>Energy Performance Index (EPI) (Excluding electricity generated from on-site renewable resources)</i>	<i>-3.4 (kWh/sq.m/yr)</i>
<i>Label Awarded</i>	<i>Shunya+</i>

The label would be valid for a period of 3 years from the date of issue.

Date: 10th April 2023



(Saurabh Diddi)
Director



10. Net Zero Action Plan

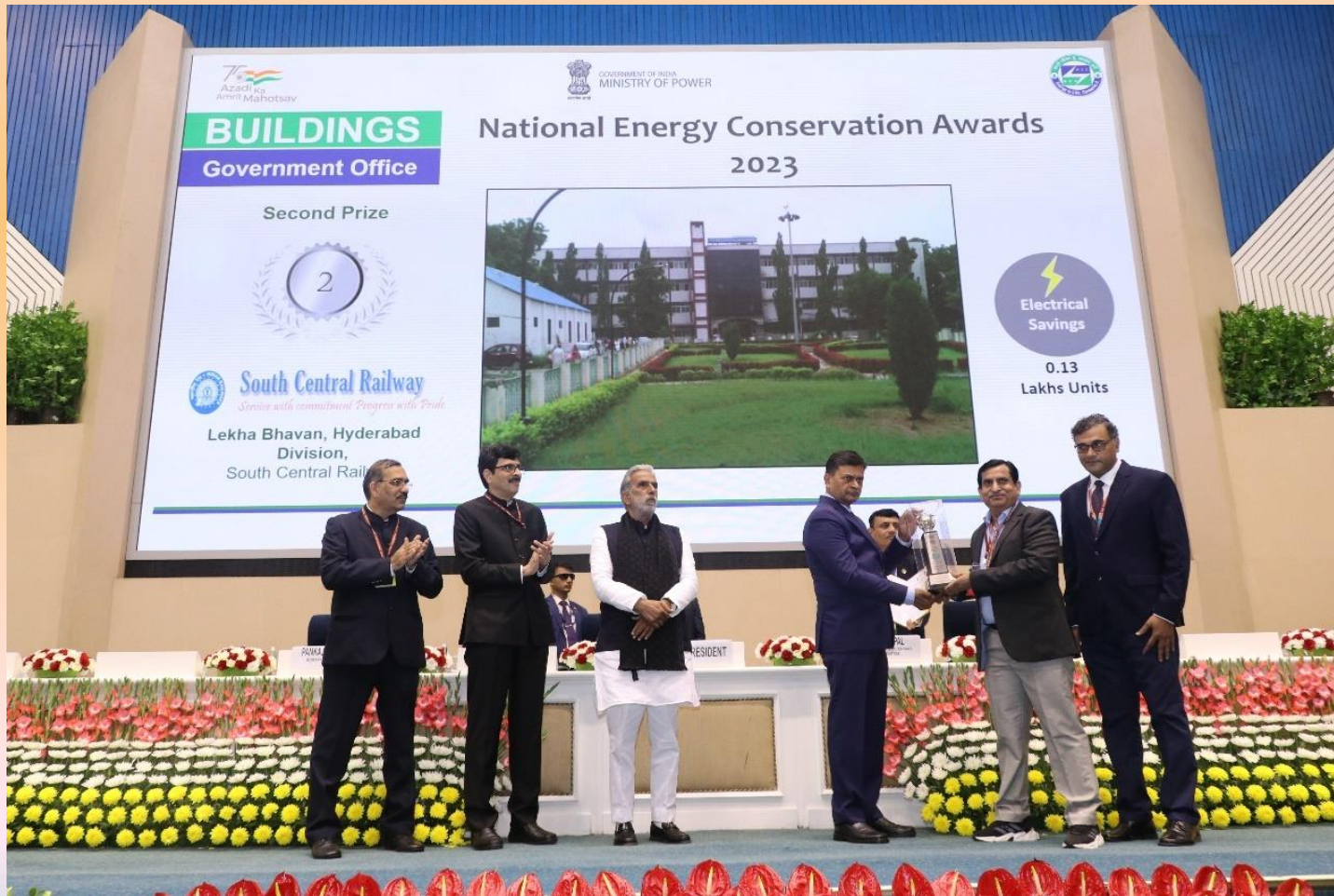
10. Net Zero Action Plan

- **Lekha Building has been declared as “Net Positive Energy Building” by Bureau of Energy Efficiency.**
- **To maintain Net Positive Energy on future expansion of loads the following action plan was made.**
 - i. Implementation of SMART Energy Management System.
 - ii. Provision of more number solar street lighting.
 - iii. Provision of Energy efficient Pumps
 - iv. Use of IoT Technology for Electrical Energy Monitoring and Controlling.
 - v. Water conservation by implementing the water saving adaptors.
 - vi. Introduction of E-Vehicle and increase in existing fleets.
 - vii. EV charging station for employees at office.

Awards & Achievements

National Energy Conservation Award-2023

✓ Second Prize in Office Buildings Category.



24th National Awards for Excellence in Energy Management - 2023

✓ Lekha Bhavan Building has won Excellent Energy Efficient Unit Award by CII



Telangana State Energy Conservation Awards - 2023

- ✓ Lekha Bhavan Building has received **Gold Award** in Government Buildings category by TSREDCO, Government of Telangana.



Telangana State Energy Conservation Awards - 2022

- ✓ Lekha Bhavan Building has received Silver Award in Government Buildings category by TSREDCO, Government of Telangana.



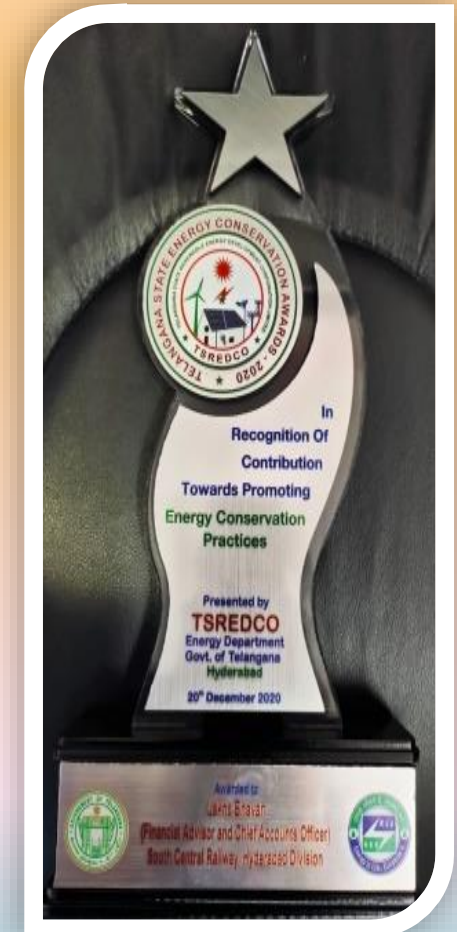
22nd National Award for Excellence in Energy Management - 2021

✓ Lekha Bhavan Building has received Energy Efficient Unit Award by CII



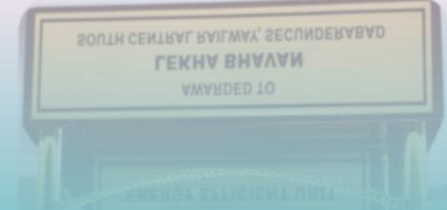
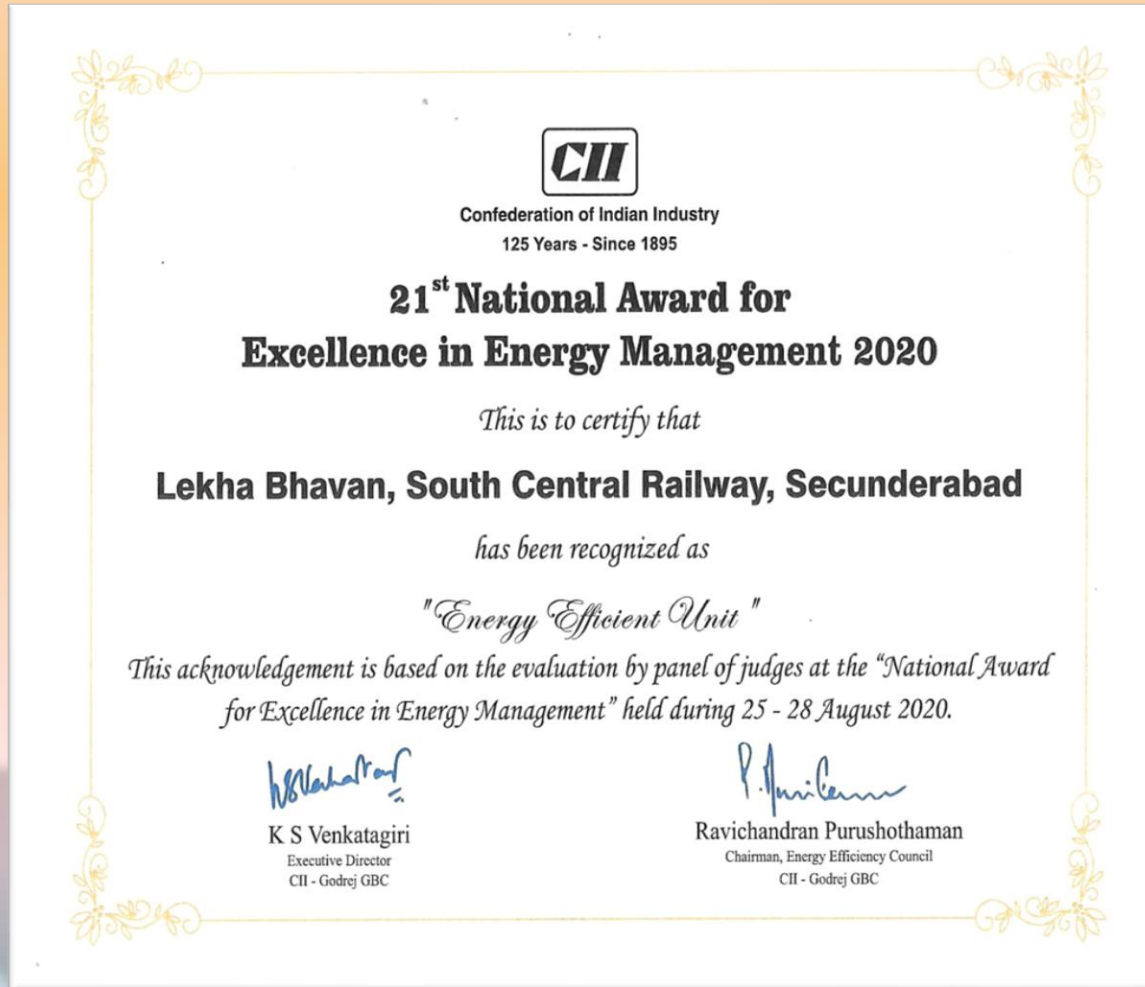
Telangana State Energy Conservation Awards - 2020

- ✓ Lekha Bhavan Building has won **Silver Award** in Government Buildings category announced by TSREDCO, Government of Telangana for the year 2020.



21st National Awards for Excellence in Energy Management - 2020

✓ Lekha Bhavan Building has won Energy Efficient Unit Award by CII



National Energy Conservation Awards - 2019

✓ Lekha Bhavan Building has bagged First Prize in Office buildings Category by BEE




राष्ट्रीय ऊर्जा संरक्षण पुरस्कार

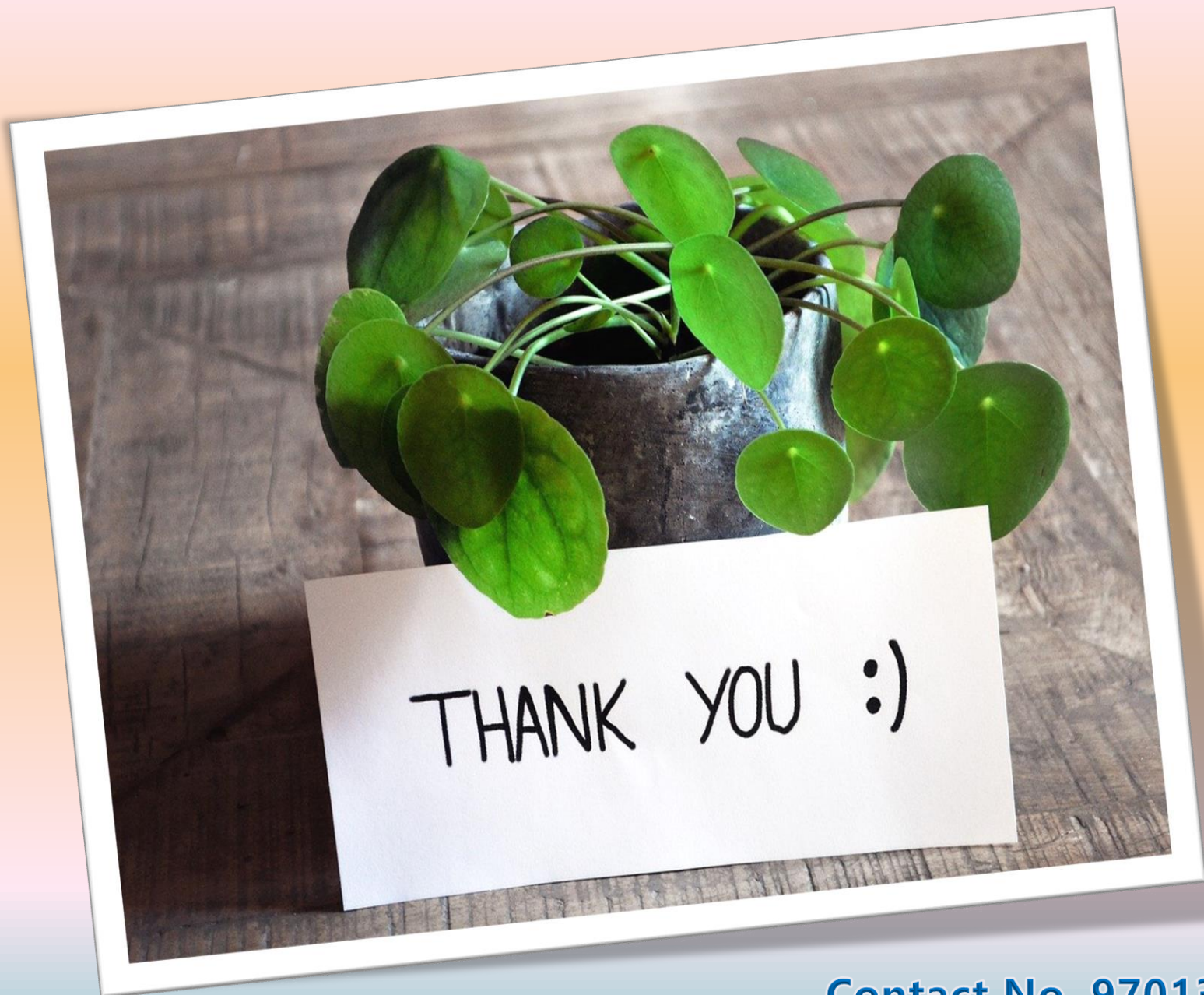
ऊर्जा संरक्षण हेतु किए गए
प्रशंसनीय कार्य
जो कि सीपीडब्ल्यूडी, पीएचईडी और राज्य पीडब्ल्यूडी
सेक्टर में
प्राप्त की गई उपलब्धियों से सम्बन्धित है
वर्ष 2019 के लिए
भारत सरकार, विद्युत मंत्रालय द्वारा
लेखा भवन
सिकंदराबाद (तेलंगाना) को
प्रथम पुरस्कार से
सम्मानित किया जाता है।

विद्युत मंत्रालय
नई दिल्ली
14 दिसम्बर, 2019


सचिव,
भारत सरकार

11. Learning from Previous Years CII Energy Awards

- Interaction with professional peers of other buildings & implemented new ideas.
- R&D buildings and IT buildings are different with regard to energy usage.
- GHG emission classification under Scope 01, Scope 02 & Scope 03.
- Clarity on EPI/SEC & Contribution to Nation Building.
- BMS system.



Contact No. 9701372300
e-mail: srdeemhyb@gmail.com