

# Nutan Urja Solutions

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Date: 17/08/2025

## CERTIFICATE

This is to certify that we have conducted Green Audit at D Y Patil International University Akurdi, Pune for the year 2024-25.

The University has already adopted **Green** practices like:

- Installation of Rain Water Harvesting system
- Installation of Sewage Treatment Plant.
- Installation of **350 kW** Roof Top Solar PV Power Plant.
- Usage of Energy Efficient LED
- Usage of Energy Efficient BEE STAR Rated equipment

We appreciate the support of Management, involvement of faculty members and students in the process of making the campus Green.

Nutan Urja Solutions,



K G Bhatwadekar,

Certified Energy Auditor,

EA - 22428



**Report  
On  
Green Audit  
At  
D. Y. Patil International University  
Akurdi, Pune  
(Year 2024-25)**



Prepared by  
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## Contents

Acknowledgement .....	3
Executive Summary .....	4
Abbreviations .....	6
1. Introduction.....	7
1.1 Objectives.....	7
1.2 Audit methodology.....	7
2. Study of Electrical Energy Consumption .....	8
3. Carbon Foot printing.....	10
4. Study of Usage of Alternate Energy .....	12
5. Study of Water System .....	13
5.1 Source of Water.....	13
5.2 Rain Water Harvesting.....	13
5.3 Sewage Treatment Plant.....	13
6. Study of Waste Management.....	15
6.1 Solid Waste Management.....	15
6.2 e-Waste Management.....	15
6.3 Waste Water Management .....	15
7. Study of Green Practices.....	16
7.1 No of students who don't use own Vehicle for coming to Institute.....	16
7.2 Usage of Public Transport.....	16
7.3 Pedestrian Friendly Roads.....	16
7.4 Plastic Free Campus .....	16
7.5 Paperless Office.....	17
7.6 Food Service in institute campus .....	17



7.7 Provision of Ramp for Divyangajan.....	17
7.8 Provision of Sanitary Waste Incinerator .....	17
7.9 Creation of Awareness about Resource Conservation .....	17
7.10. Green Landscaping with Trees and Plants .....	17



## **Acknowledgement**

We at Nutan Urja Solutions, Pune, express our sincere gratitude to the management D. Y. Patil International University, Akurdi, Pune for awarding us the assignment of Green Audit of their university premises.

We hope that the recommendations stated in this report will be useful and worthy of discussions to take things forward to help implementation of energy conservation measures and green practices. While we have made every attempt to adhere to high quality standards, in both data collection and analysis through the report, we would welcome your suggestions so as to improve upon this report further.





## Executive Summary

Green Audit of D. Y. Patil International University Akurdi, Pune is conducted by Nutan Urja Solutions, Pune. Based On the audit field study, following important points can be presented.

### 1. Present Energy Consumption

D. Y. Patil International University Akurdi, Pune uses Electrical Energy as the source of Energy for various equipment in the university campus. In the following Table, we present the details of Energy Consumption.

**Table no 1: Details of energy consumption**

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	69,103	55.28
2	Minimum	-	-
3	Average	40,270	32.22
4	Total	4,83,241	386.59

### 2. Various Measures Adopted for Energy Conservation

1. Usage of STAR Rated ACs at new installations
2. Usage of LED lights at some indoor locations
3. Usage of LED Lights for outdoor lighting.

### 3. Usage of Renewable Energy

The institute has installed **350 kW** Solar PV Power Plant.

### 4. Rain Water Harvesting

The university has installed the Rainwater harvesting project, to reduce dependency on municipal corporation water supply.

### 5. Waste Management

The internal communication is through emails and E waste generated in university is disposed time to time through proper vendors.

### 6. Notes and Assumptions

1. Daily working hours-10 Nos



2. Annual working Days-250 Nos
3. Average Rate of Electrical Energy : **Rs 11/- per kWh**



## Abbreviations

CFL	: Compact Fluorescent Lamp
FTL	: Fluorescent Tube Light
LED	: Light Emitting Diode
V	: Voltage
I	: Current
kW	: Kilo- Watt
kWh	: kilo-Watt Hour
kVA	: Active Power





## **1. Introduction**

D. Y. Patil International University, Akurdi, Pune (DYPIU) has recently become operational as a State Private University and has rolled out with a fundamental mission of covering a remarkable milestone in the history of Higher Education in India. It further aims to convert itself into a Private University of global value by developing socially relevant and contemporary outcome-based programs, carrying out inter and intra disciplinary research in thrust areas, enhancing the scope of collaborations for research, and boosting faculty and student exchange programs worldwide. Also, by its acute focus on empowerment through Education and Academic Excellence, it aspires to provide an inspirational and experiential learning environment for its stakeholders and is also keenly responsive towards serving the prerequisites of the Industry and society by embedding internationalization, employability and value ruminating in all its programs.

### **1.1 Objectives**

1. To study present level of Energy Consumption
2. To Study the present CO<sub>2</sub> emissions
3. To assess the various equipment/facilities from Energy efficiency aspect
4. To measure various Electrical parameters
5. To study Scope for usage of Renewable Energy
6. To study various measures to reduce the Energy Consumption

### **1.2 Audit methodology**

1. Study of connected load
2. Study of various Electrical parameters
3. To prepare the Report with various Encon measures with payback analysis



## 2. Study of Electrical Energy Consumption

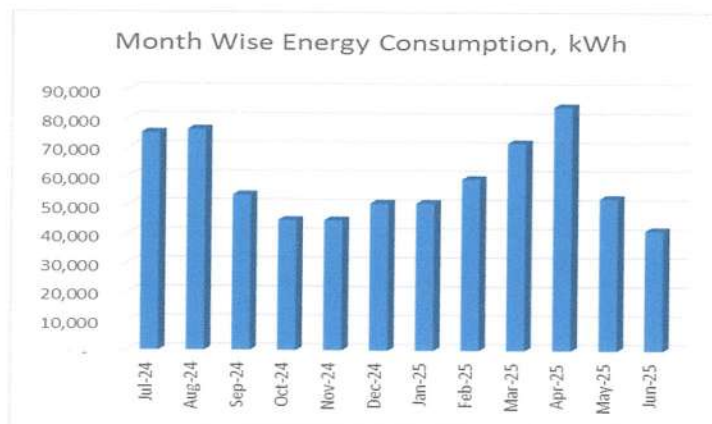
In this chapter, electricity bills are studied for the analysis of electrical energy consumption. The D. Y. Patil International University Akurdi, Pune is situated in Padmashree D. Y. Patil Educational Complex. Entire Padmashree D. Y. Patil Educational Complex is having single energy meter for all institutes situated in complex. The bill analysis is carried for electricity bills of entire campus.

**Table no 2.1: Summary of electricity bills**

No	Month	Energy (kWh)	Bill Amount (Rs)
1	Jun-25	41,568	8,88,690
2	May-25	52,645	10,85,539
3	Apr-25	84,335	18,29,935
4	Mar-25	71,795	14,52,040
5	Feb-25	59,260	10,87,927
6	Jan-25	50,920	10,03,106
7	Dec-24	50,920	10,02,918
8	Nov-24	45,030	9,69,969
9	Oct-24	45,030	9,19,653
10	Sep-24	53,750	9,19,281
11	Aug-24	76,460	15,15,196
12	Jul-24	75,325	14,84,723
	<b>Total</b>	<b>7,07,038</b>	<b>1,41,58,977</b>

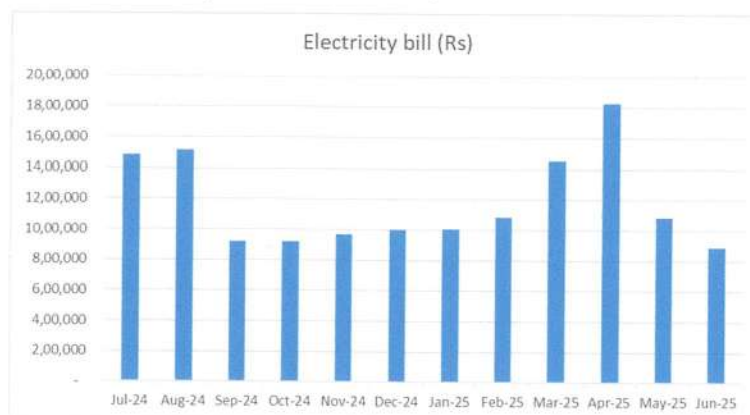
Variation in energy consumption is as follows,





**Figure 2.1: Month wise energy consumption**

Monthly variation in electricity bill is as follows,



**Figure 2.2: Month wise electricity bill**

Key observations of electricity bill are as follows,

**Table no 2.2: Key observations**

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	84,335	67.47
2	Minimum	41,568	33.25
3	Average	58,920	47.14
4	Total	7,07,038	565.63



### 3. Carbon Foot printing

**1. A Carbon Foot print** is defined as the Total Greenhouse Gas emissions (CO<sub>2</sub> 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 university for performing its day to day activities

#### **2. Basis for computation of CO<sub>2</sub> Emissions:**

The basis of Calculation for CO<sub>2</sub> emissions due to Electrical Energy is as under

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO<sub>2</sub>** into atmosphere.

Based on the above Data we compute the CO<sub>2</sub> emissions which are being released in to the atmosphere by the university due to its Day to Day operations.

The D. Y. Patil International University Akurdi, Pune is situated in Padmashree D. Y. Patil Educational Complex. Entire Educational Complex is having single energy meter for all institutes situated in complex. Calculation for CO<sub>2</sub> emissions due to Electrical Energy is carried for entire campus.

We herewith furnish the details of various forms of Energy consumption as under

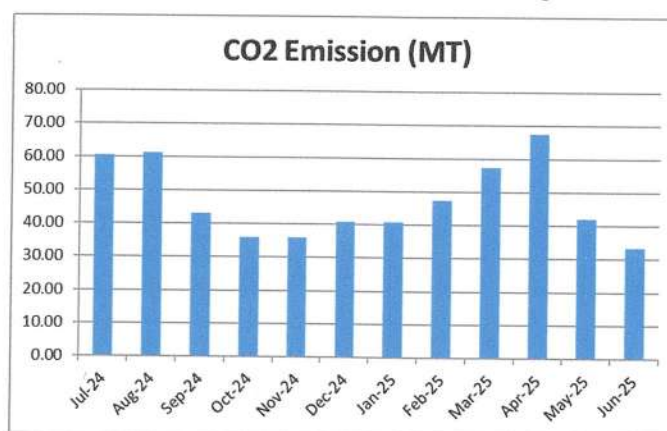




**Table 3.1: Month wise Consumption of Electrical Energy & CO2 Emissions**

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jun-25	41,568	33.25
2	May-25	52,645	42.12
3	Apr-25	84,335	67.47
4	Mar-25	71,795	57.44
5	Feb-25	59,260	47.41
6	Jan-25	50,920	40.74
7	Dec-24	50,920	40.74
8	Nov-24	45,030	36.02
9	Oct-24	45,030	36.02
10	Sep-24	53,750	43.00
11	Aug-24	76,460	61.17
12	Jul-24	75,325	60.26
	<b>Total</b>	<b>7,07,038</b>	<b>565.63</b>

In the following Chart we present the CO2 emissions due to usage of Electrical Energy.



**Figure 3.1: Month wise CO2 Emission**



#### 4. Study of Usage of Alternate Energy

In this Chapter, we compute the percentage of Usage of Alternate/Renewable Energy to Annual Energy Requirement of the institute.

The D. Y. Patil International University Akurdi, Pune is situated in Padmashree D. Y. Patil Educational Complex. Entire Educational Complex is having single energy meter for all institutes situated in complex. The institute have installed Roof Top Solar PV System to cater energy requirement of all institutes of entire campus. The Installed Capacity of Solar PV Plant is 350 kWp.

**Table 4.1: Computation of % Usage of Alternate Energy to Annual Energy Requirement**

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	7,07,038	kWh/Annum
2	Energy Generated by Roof Top Solar PV System	5,25,000	kWh/Annum
3	Total Energy Requirement of university	12,32,038	kWh/Annum
4	% of Usage of Alternate Energy to Annual Energy Requirement	43	%

#### Photograph of Solar PV plant





## **5. Study of Water System**

### **5.1 Source of Water**

university gets water from Pimpri- Chinchwad Municipal Corporation. The RO treated water is provided for drinking.

### **5.2 Rain Water Harvesting**

The university has already installed Rain Water Harvesting project, wherein the rain water falling on the terrace is collected and through pipes it is fed to underground Water Storage tank. This stored water is then reused for domestic purpose.

#### **Photograph of Rain Water Harvesting**



### **5.3 Sewage Treatment Plant**

The waste water generated in university campus is treated in Sewage Water Treatment Plant. This plant aims to remove contaminants from sewage to produce an effluent that is suitable for reuse application. The sewage water treatment plant is operating with 350 KLD water capacity.

### Photograph of Sewage Treatment Plant



## **6. Study of Waste Management**

### **6.1 Solid Waste Management**

The garbage collected in university is segregated into wet and dry centrally in campus. Waste bins are placed in university campus for collection of waste.

### **6.2 e-Waste Management**

The E- waste generated in university is disposed time to time through authorized vendor

### **6.3 Waste Water Management**

The waste water generated in university campus is treated in Sewage Water Treatment Plant. The sewage water treatment plant is operating with 250 KLD water capacity.



## **7. Study of Green Practices**

### **7.1 No of students who don't use own Vehicle for coming to Institute**

Student hostels are located near campus only. Many students live in hostel campus. Many of the Out of total students coming to Institute, about 60% students use own Automobile. During the lockdown of Covid 19 negligible vehicles are reported on the campus during the year 2019-20 and 2020-21. Online teaching mode used for the teaching learning processes.

### **7.2 Usage of Public Transport**

Padmashree D. Y. Patil Educational Complex campus can be conveniently reachable by public transport. Most of the staff is using own vehicles i.e cars and two wheelers. The capacity of parking is enough to accommodate all vehicles. During the Students transport study, it was revealed that the local students who are residing near areas make use of Public Transport like Municipal Transport local buses, local sharing type auto rickshaws. Institute encourages students to not to use automobiles.

### **7.3 Pedestrian Friendly Roads**

The Institute has well defined pedestrian foot paths as to facilitate the easy movement of the students within the campus.

#### **Photograph of Road within campus**



### **7.4 Plastic Free Campus**

The Institute is an active participant in the Government of India's most prestigious project of SWATCHH BHART ABHIYAN. The Institute has displayed boards in the Campus, to make the campus plastic free. Various measures adopted for this purpose are as follows

- Installation of Separate waste bins for Dry waste & wet waste
- Usage of paper tea cups in the Institute canteen





- Display of boards in the campus for Plastic Free campus

### **7.5 Paperless Office**

The internal communication of the Institute is through the Internet. There are hardly any day to day operations, where printing is required.

### **7.6 Food Service in institute campus**

There are canteens and cafeterias within institute campus. Students need not to travel outside the institute for food. Canteen contractor have Food license and shop act certificate. Hygiene in canteen is well maintained.

### **7.7 Provision of Ramp for Divyangajan**

The university has made provision of ramp for Divyangajan

### **7.8 Provision of Sanitary Waste Incinerator**

The university has installed Sanitary Waste Incinerator to dispose of the sanitary waste.

### **7.9 Creation of Aareness about Resource Conservation**

The university has displayed Posters on Importance of energy conservation and water conservation.

### **7.10. Green Landscaping with Trees and Plants**

The Institute has beautiful maintained Garden.



**Figure 7.1: Beautiful maintained Garden of university**