

# ENERGY AUDIT REPORT

of

Sane Guruji Shikshan Prasarak Mandal, Nashik Road,  
**ART'S AND COMMERCE COLLEGE, BARAGAON PIMPRI**

Taluka: Sinnar, District: Nashik 422 103

Year: 2017-18

Prepared by

## **ENRICH CONSULTANTS**

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)



MAHARASHTRA ENERGY DEVELOPMENT AGENCY



**Maharashtra Energy Development Agency**

(A Government of Maharashtra undertaking)

2<sup>nd</sup> Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006

Ph No: 020-26614393/266144403, Fax No: 020-26615031

Email: [econ@mahaurja.com](mailto:econ@mahaurja.com), Web: [www.mahaurja.com](http://www.mahaurja.com)

ECN/2017-18/CR-01/5726

30<sup>th</sup> November 2017

**CERTIFICATE OF REGISTRATION  
FOR CLASS 'A'**

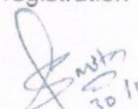
We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor in Maharashtra under Save Energy Programme of MEDA.

**Name and Address of the firm :** Enrich Consultants  
Yashashree, Plot No. 26, Nirmal Baug  
Society, Parvati, Pune - 411009.

**Registration Category :** Empanelled Consultant for Save Energy Programme.

**Registration Number :** MEDA/ECN/CR-01/2017-18/EA-37

- The Save Energy Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid upto **3 year** from the date of registration, to carry out energy audits under the Save Energy Programme of MEDA.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

  
(Smita Kudarikar)  
Manager (EC)





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Ref: EC/ACCS/17-18/01

Date: 4/7/2018

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This is to certify that we have conducted Energy Audit at Sane Guruji Shikshan Prasarak Mandal, Nashik Road, Art's and Commerce College, Baragaon Pimpri, Tal: Sinnar, District: Nashik in the year 2017-18.

The College has adopted Energy Efficient Practices:

- Maximum usage of Day Lighting
- Usage of Energy Efficient LED Fittings

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

For Enrich Consultants,



**A Y Mehendale,**  
BE- Mechanical, M Tech- Energy,  
Certified Energy Auditor: EA-8192



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5	Study of Usage of Alternate Energy	12
6	Study of Usage of LED Lights	13





## **ACKNOWLEDGEMENT**

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We are thankful to all staff members for helping us during the field study.



## EXECUTIVE SUMMARY

1. Sane Guruji Shikshan Prasarak Mandal, Nashik Road, Art's and Commerce College, Baragaon Pimpri, **Taluka: Sinnar, District: Nashik** consumes Energy in the form of **Electrical Energy**; used for various gadgets, Office & other facilities.

### 2. Energy Consumed & CO<sub>2</sub> Emission:

No	Parameter	Energy Consumed, kWh	CO <sub>2</sub> emissions, MT
1	Total	700	0.56
2	Maximum	115	0.09
3	Minimum	28	0.02
4	Average	58.33	0.05

### 3. Various Measures Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting

### 4. Usage of Alternate Energy Source:

- The College has yet to install Roof Top Solar PV Plant.

### 5. Usage of LED Lighting to Total Lighting Load:

- The LED Lighting Load is **0.20 kW**.
- The Total Lighting Load is **0.72 kW**.
- The percentage of LED Lighting Total Lighting load works out to be **27.78 %**

### 6. Assumption:

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

## ABBREVIATIONS

AC	: Air conditioner
BEE	: Bureau of Energy Efficiency
LED	: Light Emitting Diode
kWh	: kilo-Watt Hour
Qty	: Quantity
W	: Watt
kW	: Kilo Watt
PC	: Personal Computer
MT	: Metric Ton
MSEDCL	: Maharashtra State Electricity Distribution Company Limited



## **CHAPTER-I**

### **INTRODUCTION**

#### **1.1 Objectives:**

1. To study Connected Load
2. To study Present Energy Consumption
3. To Study CO<sub>2</sub> emissions
4. To study Scope for usage of Alternate / Renewable Energy
5. To study usage of LED Lighting

#### **1.2 Table No-1: General Details of College:**

No	Head	Particulars
1	Name	Sane Guruji Shikshan Prasarak Mandal, Nasik Road, Art's and Commerce College
2	Address	Baragaon Pimpri, Taluka: Sinnar, District: Nashik 422 103
3	Affiliation	Savitribai Phule Pune University

## CHAPTER-II

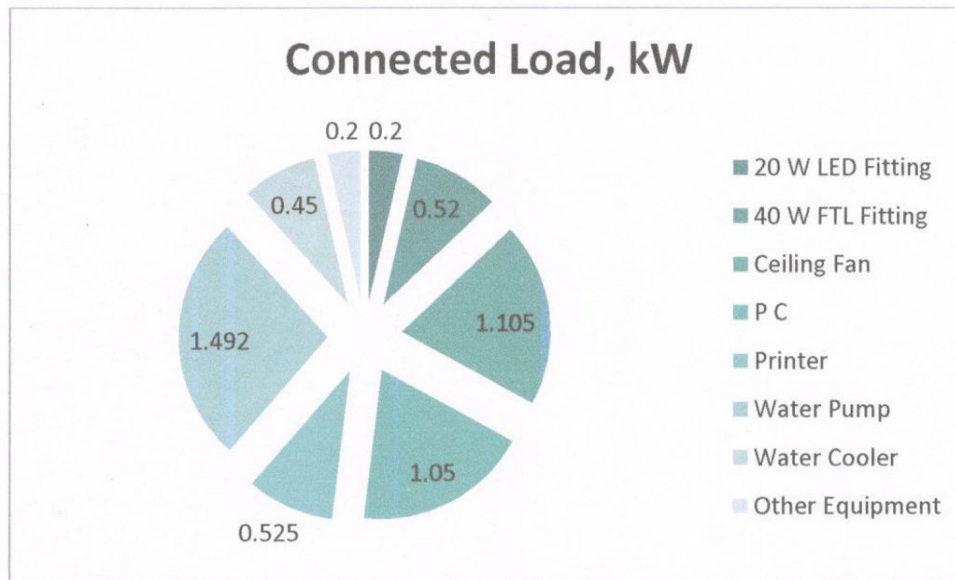
### STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	20 W LED Fitting	10	20	0.2
2	40 W FTL Fitting	13	40	0.52
3	Ceiling Fan	17	65	1.105
4	P C	7	150	1.05
5	Printer	3	175	0.525
6	Water Pump	1	1492	1.492
7	Water Cooler	1	450	0.45
8	Other Equipment	1	200	0.2
9	<b>Total</b>			<b>5.542</b>

Chart No 1: Details of Connected Load:



## CHAPTER-III

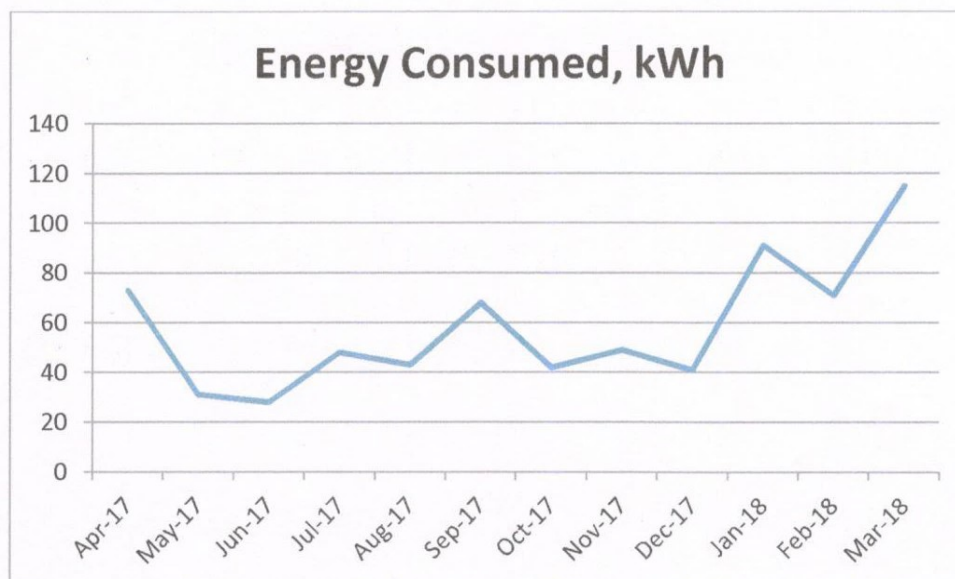
### STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Energy Consumed

Table No 3: Electrical Energy Consumed: 17-18:

No	Month	Energy Consumed, kWh
1	Apr-17	73
2	May-17	31
3	Jun-17	28
4	Jul-17	48
5	Aug-17	43
6	Sep-17	68
7	Oct-17	42
8	Nov-17	49
9	Dec-17	41
10	Jan-18	91
11	Feb-18	71
12	Mar-18	115
13	Total	700
14	Maximum	115
15	Minimum	28
16	Average	58.33

Chart No 2: To study the variation of Month wise Energy Consumed, kWh:





## CHAPTER-IV

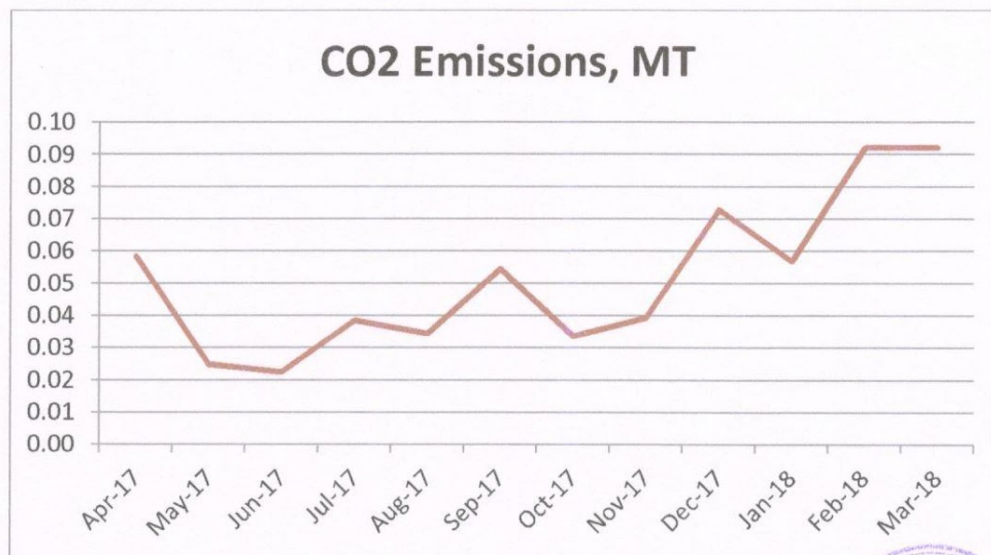
### CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO<sub>2</sub> Emissions:** 1 Unit (kWh) of Electrical Energy releases 0.8 Kg of CO<sub>2</sub> into atmosphere

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Consumed, kWh	CO <sub>2</sub> Emissions, MT
1	Apr-17	73	0.06
2	May-17	31	0.02
3	Jun-17	28	0.02
4	Jul-17	48	0.04
5	Aug-17	43	0.03
6	Sep-17	68	0.05
7	Oct-17	42	0.03
8	Nov-17	49	0.04
9	Dec-17	41	0.07
10	Jan-18	91	0.06
11	Feb-18	71	0.09
12	Mar-18	115	0.09
13	Total	700	0.56
14	Maximum	115	0.09
15	Minimum	28	0.02
16	Average	58.33	0.05

**Chart No 3: Representation of Month wise CO<sub>2</sub> Emissions:**



## **CHAPTER-V**

### **STUDY OF USAGE OF ALTERNATE ENERGY**

The College has yet to install Roof top Solar PV Plant.



## CHAPTER-VI

### STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of usage of LED lights to Total Lighting Load.

**Table No 5: Study of % LED Lighting Load to Total Lighting Load:**

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	13	Nos
2	Load per unit of 40 W FTL Fittings	40	W
3	Total Load of 40 W FTL Fittings	0.52	kW
4	No of 20 W LED Fittings	10	Nos
5	Load per unit of 20 W Fittings	20	W
6	Total Load of 20 W LED Fittings	0.2	kW
7	Total LED Lighting Load=6	0.2	kW
8	Total Lighting Load =3+6	0.72	kW
9	% of LED to Total Lighting Load = $7 \times 100 / 8$	27.78	%



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(Smita Kudarikar)  
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Date: 10/6/2019

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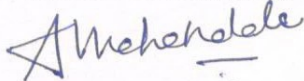
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### 2. Energy Consumed & CO<sub>2</sub> Emission:

No	Parameter	Energy Consumed, kWh	CO <sub>2</sub> emissions, MT
1	Total	895	0.72
2	Maximum	167	0.13
3	Minimum	34	0.03
4	Average	74.58	0.06

### 3. Various Measures Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting

### 4. Usage of Alternate Energy Source:

- The College has yet to install Roof Top Solar PV Plant.

### 5. Usage of LED Lighting to Total Lighting Load:

- The LED Lighting Load is **0.24 kW**.
- The Total Lighting Load is **0.64 kW**.
- The percentage of LED Lighting Total Lighting load works out to be **37.50 %**

### 6. Assumption:

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



## **ABBREVIATIONS**

AC	: Air conditioner
BEE	: Bureau of Energy Efficiency
LED	: Light Emitting Diode
kWh	: kilo-Watt Hour
Qty	: Quantity
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## CHAPTER-I INTRODUCTION

### 1.1 Objectives:

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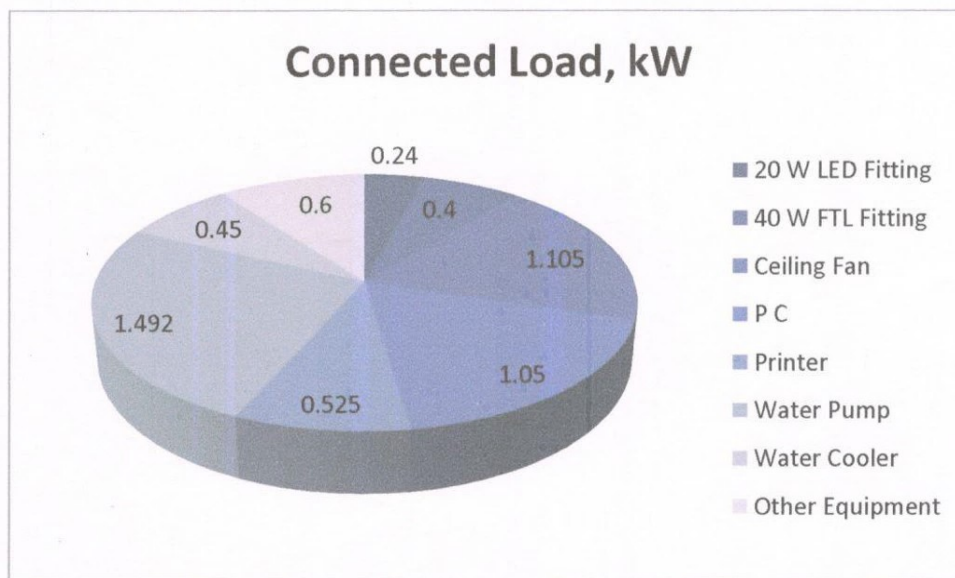
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No	Equipment	Qty	Load, W/unit	Load, kW
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2	40 W FTL Fitting	10	40	0.4
3	Ceiling Fan	17	65	1.105
4	P C	7	150	1.05
5	Printer	3	175	0.525
6	Water Pump	1	1492	1.492
7	Water Cooler	1	450	0.45
8	Other Equipment	3	200	0.6
9	<b>Total</b>			<b>5.862</b>

**Chart No 1: Details of Connected Load:**





## CHAPTER-III

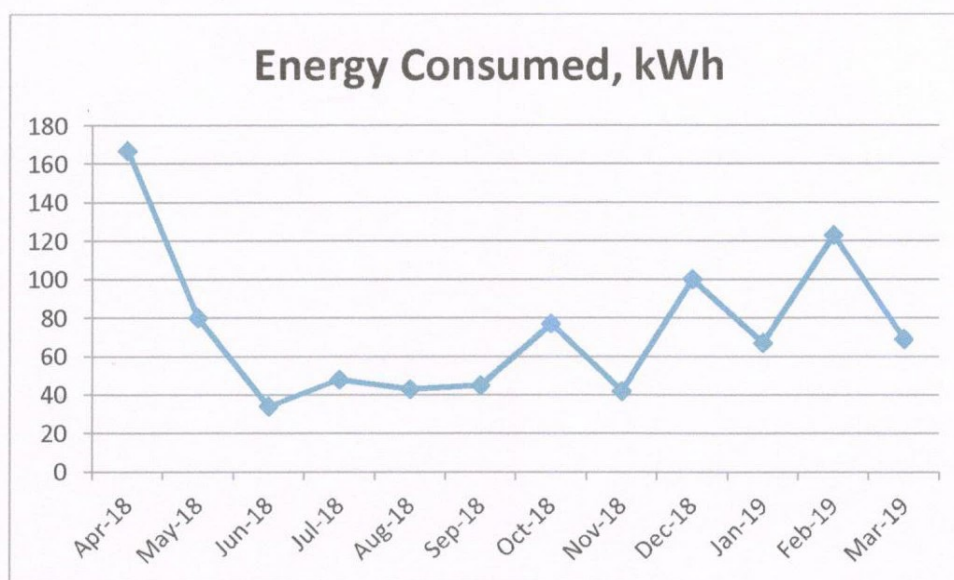
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Table No 3: Electrical Energy Consumed: 18-19:

No	Month	Energy Consumed, kWh
1	Apr-18	167
2	May-18	80
3	Jun-18	34
4	Jul-18	48
5	Aug-18	43
6	Sep-18	45
7	Oct-18	77
8	Nov-18	42
9	Dec-18	100
10	Jan-19	67
11	Feb-19	123
12	Mar-19	69
13	Total	895
14	Maximum	167
15	Minimum	34
16	Average	74.58

Chart No 2: To study the variation of Month wise Energy Consumed, kWh:



## CHAPTER-IV

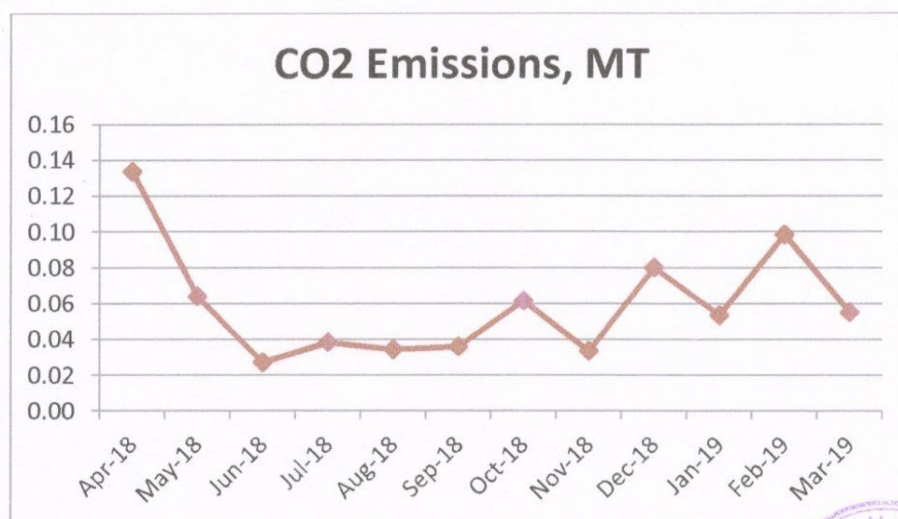
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Table No 4: Month wise CO<sub>2</sub> Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Apr-18	167	0.13
2	May-18	80	0.06
3	Jun-18	34	0.03
4	Jul-18	48	0.04
5	Aug-18	43	0.03
6	Sep-18	45	0.04
7	Oct-18	77	0.06
8	Nov-18	42	0.03
9	Dec-18	100	0.08
10	Jan-19	67	0.05
11	Feb-19	123	0.10
12	Mar-19	69	0.06
13	Total	895	0.72
14	Maximum	167	0.13
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Chart No 3: Representation of Month wise CO<sub>2</sub> Emissions:





## **CHAPTER-V**

### **STUDY OF USAGE OF ALTERNATE ENERGY**

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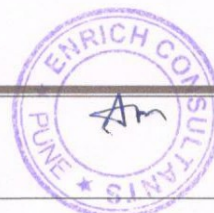
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### 2. Energy Consumed & CO<sub>2</sub> Emission:

No	Parameter	Energy Consumed, kWh	CO <sub>2</sub> emissions, MT
1	Total	664	0.60
2	Maximum	100	0.09
3	Minimum	1	0.00
4	Average	55.33	0.05

### 3. Various Measures Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting

### 4. Usage of Alternate Energy Source:

- The College has yet to install Roof Top Solar PV Plant.

### 5. Usage of LED Lighting to Total Lighting Load:

- The LED Lighting Load is **0.34 kW**.
- The Total Lighting Load is **0.5 kW**.
- The percentage of LED Lighting Total Lighting load works out to be **68 %**

### 6. Assumption:

- 1 kWh (Unit) of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere

### 7. Reference:

- For CO<sub>2</sub> Emission Calculations: [www.tatapower.com](http://www.tatapower.com)

## **ABBREVIATIONS**

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### INTRODUCTION

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4. To study Scope for usage of Alternate / Renewable Energy
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#### 1.2 Table No-1: General Details of College:

No	Head	Particulars
1	Name	Sane Guruji Shikshan Prasarak Mandal, Nasik Road, Art's and Commerce College
2	Address	Baragaon Pimpri, Taluka: Sinnar, District: Nashik 422 103
3	Affiliation	Savitribai Phule Pune University



## CHAPTER-II

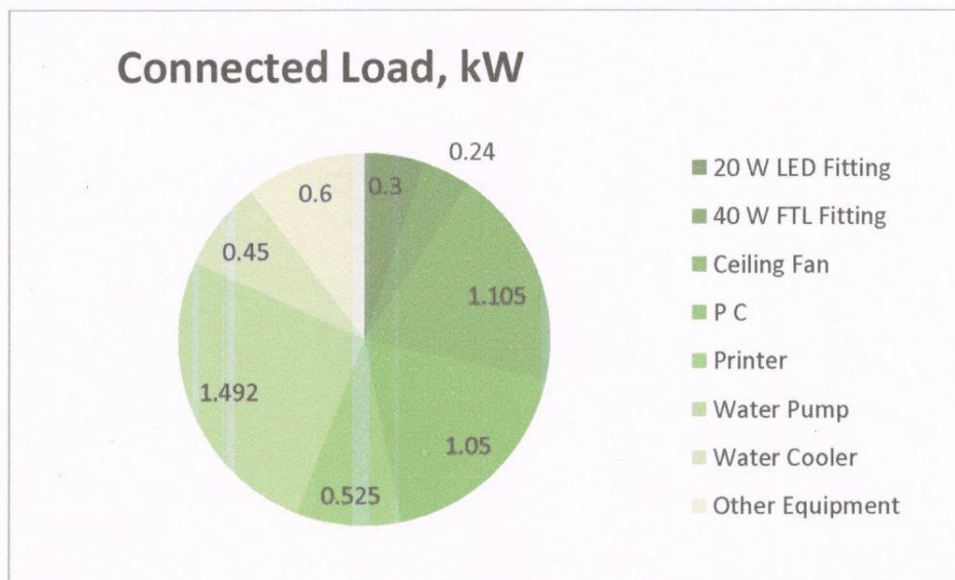
### STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	20 W LED Fitting	15	20	0.3
2	40 W FTL Fitting	6	40	0.24
3	Ceiling Fan	17	65	1.105
4	P C	7	150	1.05
5	Printer	3	175	0.525
6	Water Pump	1	1492	1.492
7	Water Cooler	1	450	0.45
8	Other Equipment	3	200	0.6
9	<b>Total</b>			<b>5.762</b>

Chart No 1: Details of Connected Load:



## CHAPTER-III

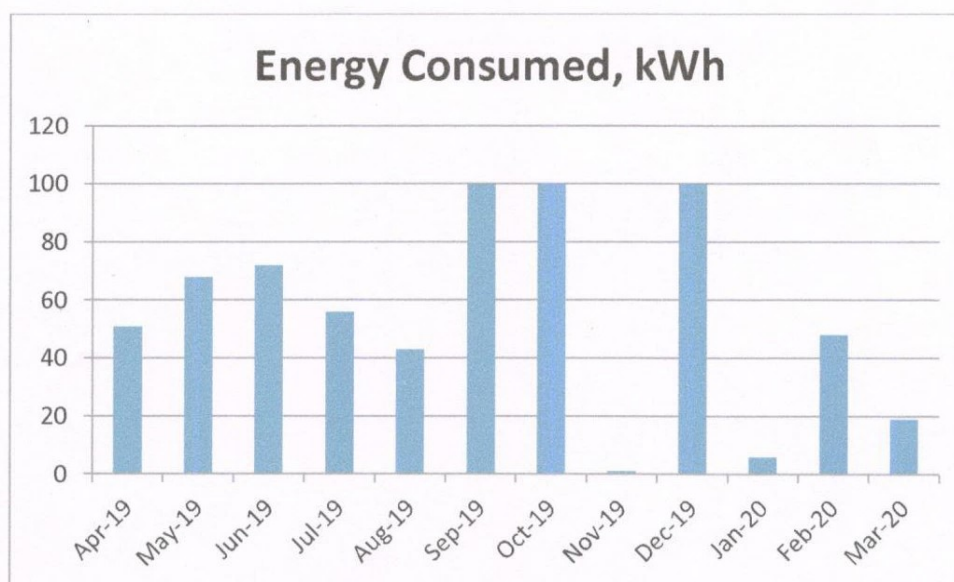
### STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Energy Consumed.

**Table No 3: Electrical Energy Consumed: 19-20:**

No	Month	Energy Consumed, kWh
1	Apr-19	51
2	May-19	68
3	Jun-19	72
4	Jul-19	56
5	Aug-19	43
6	Sep-19	100
7	Oct-19	100
8	Nov-19	1
9	Dec-19	100
10	Jan-20	6
11	Feb-20	48
12	Mar-20	19
13	Total	664
14	Maximum	100
15	Minimum	1
16	Average	55.33

**Chart No 2: To study the variation of Month wise Energy Consumed, kWh:**





## CHAPTER-IV

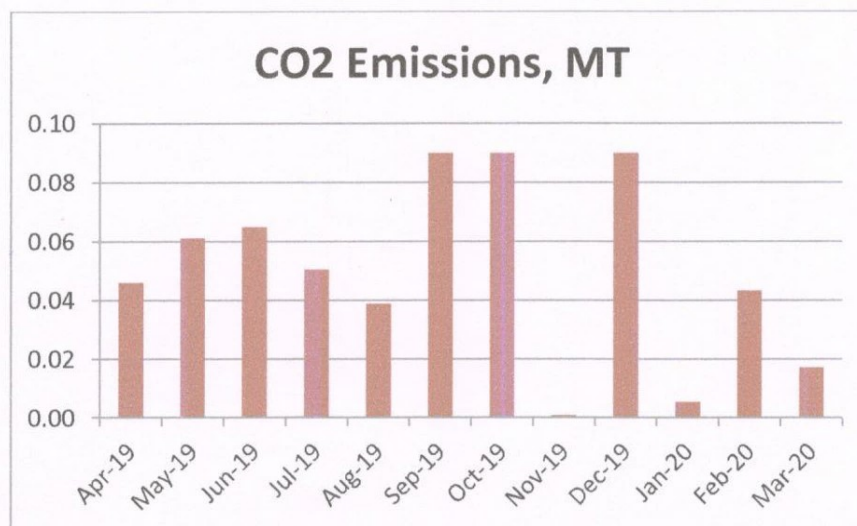
### CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO<sub>2</sub> Emissions:** 1 Unit (kWh) of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Apr-19	51	0.05
2	May-19	68	0.06
3	Jun-19	72	0.06
4	Jul-19	56	0.05
5	Aug-19	43	0.04
6	Sep-19	100	0.09
7	Oct-19	100	0.09
8	Nov-19	1	0.00
9	Dec-19	100	0.09
10	Jan-20	6	0.01
11	Feb-20	48	0.04
12	Mar-20	19	0.02
13	Total	664	0.60
14	Maximum	100	0.09
15	Minimum	1	0.00
16	Average	55.33	0.05

**Chart No 3: Representation of Month wise CO<sub>2</sub> Emissions:**





## **CHAPTER-V**

### **STUDY OF USAGE OF ALTERNATE ENERGY**

The College has yet to install Roof top Solar PV Plant.



## CHAPTER-VI

### STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of usage of LED lights to Total Lighting Load.

**Table No 5: Study of % LED Lighting Load to Total Lighting Load:**

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	6	Nos
2	Load per unit of 40 W FTL Fittings	40	W
3	Total Load of 40 W FTL Fittings	0.24	kW
4	No of 20 W LED Fittings	15	Nos
5	Load per unit of 20 W Fittings	20	W
6	Total Load of 20 W LED Fittings	0.3	kW
7	Total LED Lighting Load=6	0.3	kW
8	Total Lighting Load =3+6	0.54	kW
9	% of LED to Total Lighting Load= $7 \times 100 / 8$	55.56	%

# ENERGY AUDIT REPORT

of

Sane Guruji Shikshan Prasarak Mandal, Nashik Road,  
**ART'S AND COMMERCE COLLEGE, BARAGAON PIMPRI**

Taluka: Sinnar, District: Nashik 422 103



Year: 2020-21

Prepared by

**ENRICH CONSULTANTS**

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)





**MAHARASHTRA ENERGY DEVELOPMENT AGENCY**

An ISO 9001 : 2000 Reg. no. : RQ 91 / 2462



**Maharashtra Energy Development Agency**

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,  
Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

Email: [eee@mahaurja.com](mailto:eee@mahaurja.com), Web: [www.mahaurja.com](http://www.mahaurja.com)

ECN/2021-22/CR-14/1577

22<sup>nd</sup> April, 2021

**CERTIFICATE OF REGISTRATION  
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

**Name and Address of the firm** : **M/s Enrich Consultants**  
Yashashree, Plot No. 26, Nirmal Bag Society,  
Near Muktangan English School, Parvati,  
Pune - 411009.

**Registration Category** : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

**Registration Number** : **MEDA/ECN/2021-22/Class A/EA-03**

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **21<sup>st</sup> April, 2023** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)



## Enrich Consultants

Yashashree, 26, Nirmal Bag Society,  
Near Muktangan English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)

Ref: EC/ACCS/20-21/01

Date: 18/7/2021

### CERTIFICATE

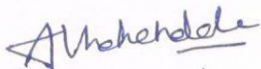
This is to certify that we have conducted Energy Audit at Sane Guruji Shikshan Prasarak Mandal, Nashik Road, Art's and Commerce College, Baragaon Pimpri, Tal: Sinnar, District: Nashik in the year 2020-21.

The College has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting

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

For Enrich Consultants,



**A Y Mehendale,**  
BE- Mechanical, M Tech- Energy,  
Certified Energy Auditor: EA-8192





## INDEX

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4	Carbon Foot printing	11
5	Study of Usage of Alternate Energy	12
6	Study of Usage of LED Lights	13



## **ACKNOWLEDGEMENT**

We Enrich Consultants, Pune, express our sincere gratitude to the management of Sane Guruji Shikshan Prasarak Mandal, Nashik Road, Art's and Commerce College, Baragaon Pimpri, Taluka: Sinnar, District: Nasik, for awarding us the assignment of Energy Audit of their College Campus for the Year: 20-21.

We are thankful to all staff members for helping us during the field study.



## EXECUTIVE SUMMARY

1. Sane Guruji Shikshan Prasarak Mandal, Nashik Road, Art's and Commerce College, Baragaon Pimpri, Taluka: Sinnar, District: Nashik consumes Energy in the form of Electrical Energy; used for various gadgets, Office & other facilities.

### 2. Energy Consumed & CO<sub>2</sub> Emission:

No	Parameter	Energy Consumed, kWh	CO <sub>2</sub> emissions, MT
1	Total	1209	1.09
2	Maximum	231	0.21
3	Minimum	56	0.05
4	Average	100.75	0.09

### 3. Various Measures Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting

### 4. Usage of Alternate Energy Source:

- The College has yet to install Roof Top Solar PV Plant.

### 5. Usage of LED Lighting to Total Lighting Load:

- The LED Lighting Load is **0.34 kW**.
- The Total Lighting Load is **0.5 kW**.
- The percentage of LED Lighting Total Lighting load works out to be **68 %**

### 6. Assumption:

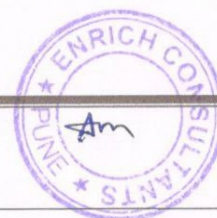
- 1 kWh (Unit) of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere

### 7. Reference:

- For CO<sub>2</sub> Emission Calculations: [www.tatapower.com](http://www.tatapower.com)

## **ABBREVIATIONS**

AC	: Air conditioner
BEE	: Bureau of Energy Efficiency
LED	: Light Emitting Diode
kWh	: kilo-Watt Hour
Qty	: Quantity
W	: Watt
kW	: Kilo Watt
PC	: Personal Computer
MT	: Metric Ton
MSEDCL	: Maharashtra State Electricity Distribution Company Limited





## CHAPTER-I INTRODUCTION

### 1.1 Objectives:

1. To study Connected Load
2. To study Present Energy Consumption
3. To Study CO<sub>2</sub> emissions
4. To study Scope for usage of Alternate / Renewable Energy
5. To study usage of LED Lighting

### 1.2 Table No-1: General Details of College:

No	Head	Particulars
1	Name	Sane Guruji Shikshan Prasarak Mandal, Nasik Road, Art's and Commerce College
2	Address	Baragaon Pimpri, Taluka: Sinnar, District: Nashik 422 103
3	Affiliation	Savitribai Phule Pune University

## CHAPTER-II

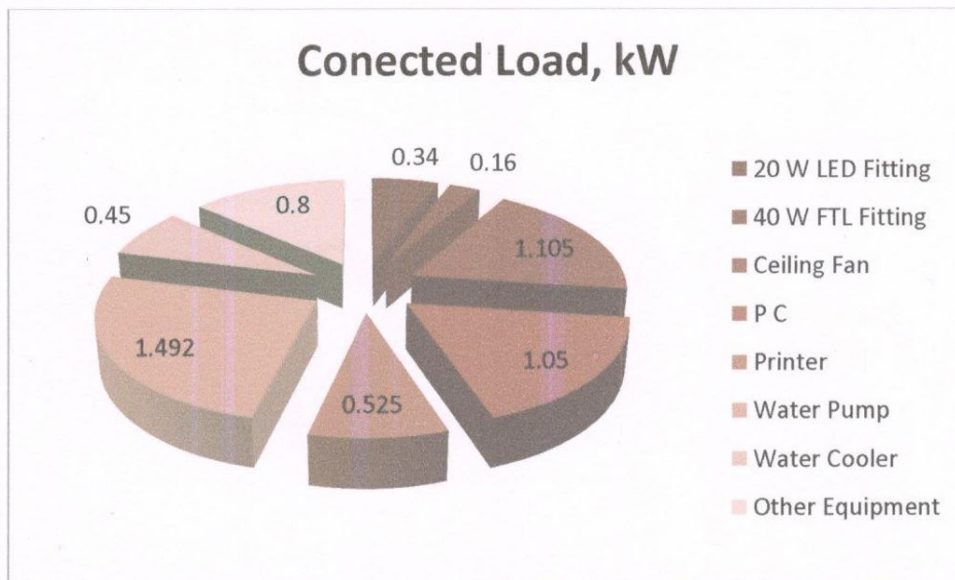
### STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	20 W LED Fitting	17	20	0.34
2	40 W FTL Fitting	4	40	0.16
3	Ceiling Fan	17	65	1.105
4	P C	7	150	1.05
5	Printer	3	175	0.525
6	Water Pump	1	1492	1.492
7	Water Cooler	1	450	0.45
8	Other Equipment	4	200	0.8
9	<b>Total</b>			<b>5.922</b>

Chart No 1: Details of Connected Load:





### CHAPTER-III

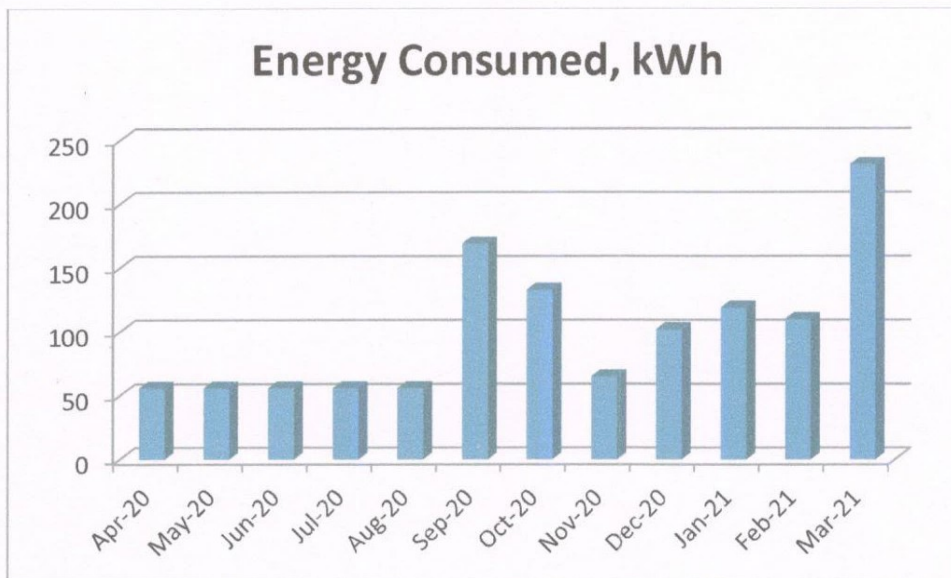
### STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Energy Consumed

**Table No 3: Electrical Energy Consumed: 20-21:**

No	Month	Energy Consumed, kWh
1	Apr-20	56
2	May-20	56
3	Jun-20	56
4	Jul-20	56
5	Aug-20	56
6	Sep-20	169
7	Oct-20	133
8	Nov-20	65
9	Dec-20	102
10	Jan-21	119
11	Feb-21	110
12	Mar-21	231
13	Total	1209
14	Maximum	231
15	Minimum	56
16	Average	100.75

**Chart No 2: To study the variation of Month wise Energy Consumed, kWh:**





## CHAPTER-IV

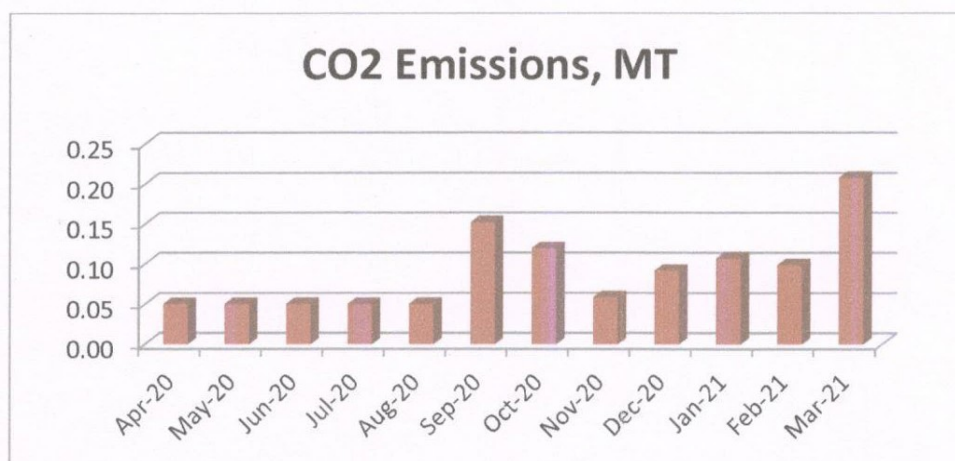
### CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO<sub>2</sub> Emissions:** 1 Unit (kWh) of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Apr-20	56	0.05
2	May-20	56	0.05
3	Jun-20	56	0.05
4	Jul-20	56	0.05
5	Aug-20	56	0.05
6	Sep-20	169	0.15
7	Oct-20	133	0.12
8	Nov-20	65	0.06
9	Dec-20	102	0.09
10	Jan-21	119	0.11
11	Feb-21	110	0.10
12	Mar-21	231	0.21
13	Total	1209	1.09
14	Maximum	231	0.21
15	Minimum	56	0.05
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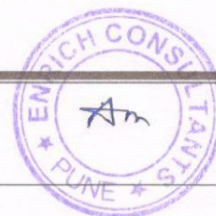
**Chart No 3: Representation of Month wise CO<sub>2</sub> Emissions:**



## **CHAPTER-V**

### **STUDY OF USAGE OF ALTERNATE ENERGY**

The College has yet to install Roof top Solar PV Plant.



## CHAPTER-VI

### STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of usage of LED lights to Total Lighting Load.

**Table No 5: Study of % LED Lighting Load to Total Lighting Load:**

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	4	Nos
2	Load per unit of 40 W FTL Fittings	40	W
3	Total Load of 40 W FTL Fittings	0.16	kW
4	No of 20 W LED Fittings	17	Nos
5	Load per unit of 20 W Fittings	20	W
6	Total Load of 20 W LED Fittings	0.34	kW
7	Total LED Lighting Load=6	0.34	kW
8	Total Lighting Load =3+6	0.5	kW
9	% of LED to Total Lighting Load= $7 \times 100 / 8$	68	%



# ENERGY AUDIT REPORT

of

Sane Guruji Shikshan Prasarak Mandal, Nashik Road,  
**ART'S AND COMMERCE COLLEGE, BARAGAON PIMPRI**

Taluka: Sinnar, District: Nashik 422 103



Year: 2021-22

Prepared by

## ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society  
Near Muktangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)



MAHARASHTRA ENERGY DEVELOPMENT AGENCY



**Maharashtra Energy Development Agency**

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,

Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

Email: [eee@mahaurja.com](mailto:eee@mahaurja.com), Web: [www.mahaurja.com](http://www.mahaurja.com)

ECN/2022-23/CR-43/1709

10<sup>th</sup> May, 2022

**CERTIFICATE OF REGISTRATION  
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

**Name and Address of the firm** : M/s Engress Services  
Yashshree, 26, Nirmal Bag Society,  
Near Mukangan English School,  
Parvati, Pune - 411 009.

**Registration Category** : *Empanelled Consultant for Energy Conservation  
Programme for Class 'A'*

**Registration Number** : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
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- This empanelment is valid till **09<sup>th</sup> May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

  
General Manager (EC)





## ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,  
Near Muktangan English School, Parvati, Pune 411 009  
Tel: 020-24220747 Email: [engress123@gmail.com](mailto:engress123@gmail.com)

Ref: ES/ACCS/21-22/01

Date: 21/6/2022

### CERTIFICATE

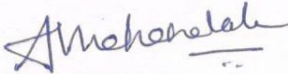
This is to certify that we have conducted Energy Audit at Sane Guruji Shikshan Prasarak Mandal, Nashik Road, Art's and Commerce College, Baragaon Pimpri, Tal: Sinnar, District: Nashik in the year 2021-22.

The College has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting

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

For Engress Services,



A Y Mehendale,  
BE- Mechanical, M Tech- Energy,  
Certified Energy Auditor: EA-8192





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## **ACKNOWLEDGEMENT**

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We are thankful to all staff members for helping us during the field study.



## EXECUTIVE SUMMARY

1. Sane Guruji Shikshan Prasarak Mandal, Nashik Road, Art's and Commerce College, Baragaon Pimpri, Taluka: Sinnar, District: Nashik consumes Energy in the form of Electrical Energy; used for various gadgets, Office & other facilities.

### 2. Energy Consumed & CO<sub>2</sub> Emission:

No	Parameter	Energy Consumed, kWh	CO <sub>2</sub> emissions, MT
1	Total	2293	2.06
2	Maximum	456	0.41
3	Minimum	110	0.10
4	Average	191.08	0.17

### 3. Various Measures Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting

### 4. Usage of Alternate Energy Source:

- The College has yet to install Roof Top Solar PV Plant.

### 5. Usage of LED Lighting to Total Lighting Load:

- The LED Lighting Load is **0.36 kW**.
- The Total Lighting Load is **0.48 kW**.
- The percentage of LED Lighting Total Lighting load works out to be **75 %**

### 6. Assumption:

- 1 kWh (Unit) of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere

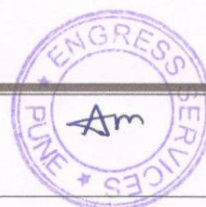
### 7. Reference:

- For CO<sub>2</sub> Emission Calculations: [www.tatapower.com](http://www.tatapower.com)



## ABBREVIATIONS

AC	: Air conditioner
BEE	: Bureau of Energy Efficiency
LED	: Light Emitting Diode
kWh	: kilo-Watt Hour
Qty	: Quantity
W	: Watt
kW	: Kilo Watt
PC	: Personal Computer
MT	: Metric Ton
MSEDCL	: Maharashtra State Electricity Distribution Company Limited



## CHAPTER-I INTRODUCTION

### 1.1 Objectives:

1. To study Connected Load
2. To study Present Energy Consumption
3. To Study CO<sub>2</sub> emissions
4. To study Scope for usage of Alternate / Renewable Energy
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### 1.2 Table No-1: General Details of College:

No	Head	Particulars
1	Name	Sane Guruji Shikshan Prasarak Mandal, Nasik Road, Art's and Commerce College
2	Address	Baragaon Pimpri, Taluka: Sinnar, District: Nashik 422 103
3	Affiliation	Savitribai Phule Pune University

### 1.3 Google Earth Image:





## CHAPTER-II

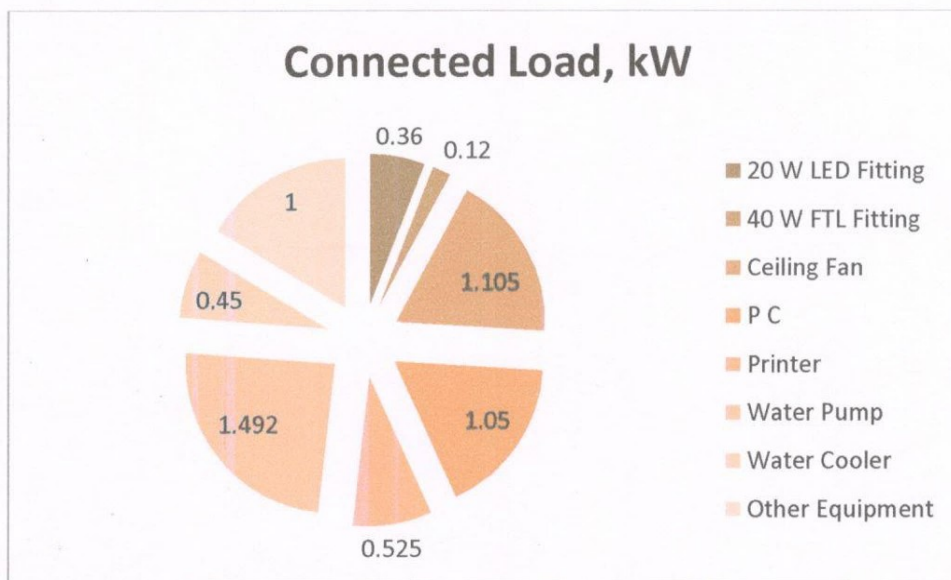
### STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

**Table No 2: Study of Equipment wise Connected Load:**

No	Equipment	Qty	Load, W/unit	Load, kW
1	20 W LED Fitting	18	20	0.36
2	40 W FTL Fitting	3	40	0.12
3	Ceiling Fan	17	65	1.105
4	P C	7	150	1.05
5	Printer	3	175	0.525
6	Water Pump	1	1492	1.492
7	Water Cooler	1	450	0.45
8	Other Equipment	5	200	1
9	<b>Total</b>			<b>6.102</b>

**Chart No 1: Details of Connected Load:**





## CHAPTER-III

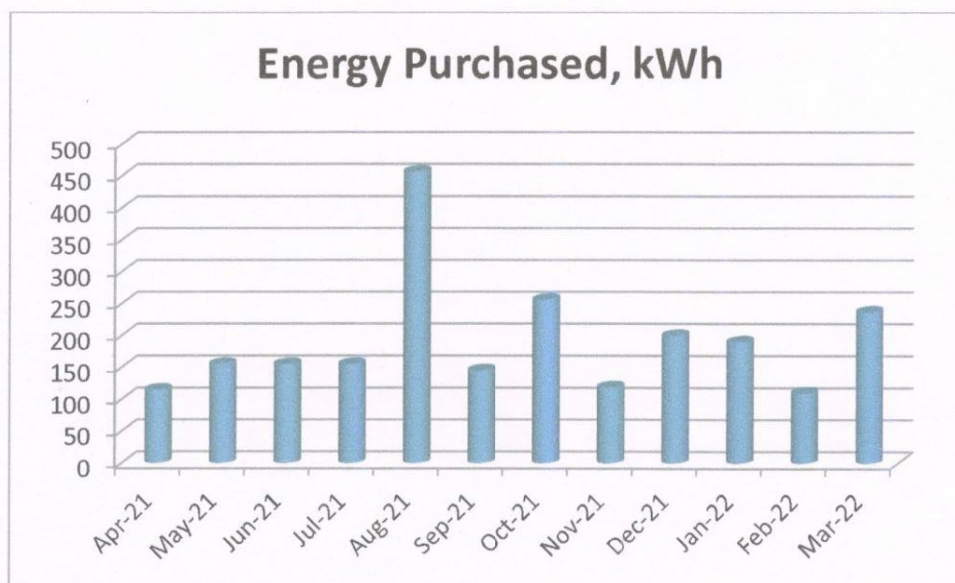
### STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Energy Consumed

**Table No 3: Electrical Energy Consumed: 21-22:**

No	Month	Energy Purchased, kWh
1	Apr-21	115
2	May-21	155
3	Jun-21	155
4	Jul-21	155
5	Aug-21	456
6	Sep-21	145
7	Oct-21	256
8	Nov-21	119
9	Dec-21	200
10	Jan-22	190
11	Feb-22	110
12	Mar-22	237
13	Total	2293
14	Maximum	456
15	Minimum	110
16	Average	191.08

**Chart No 2: To study the variation of Month wise Energy Consumed, kWh:**



## CHAPTER-IV

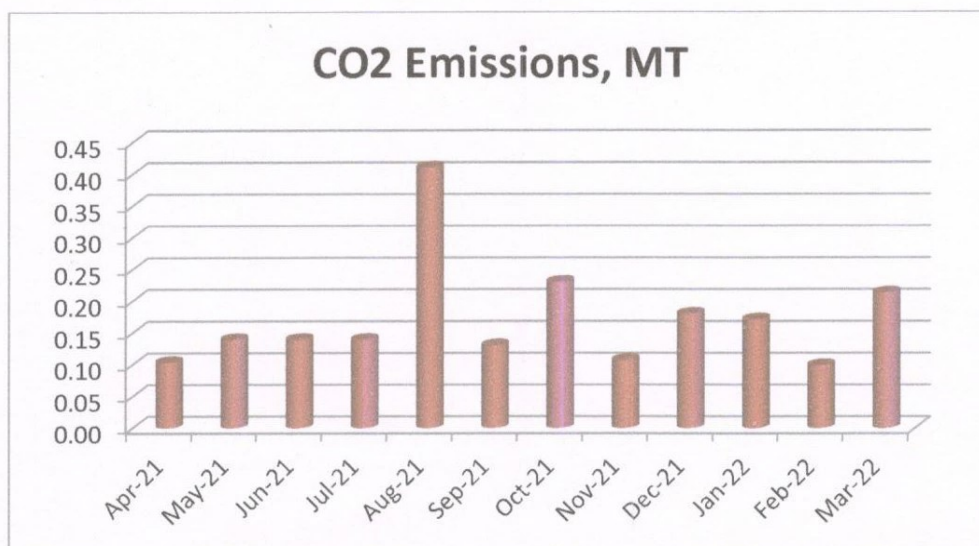
### CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO<sub>2</sub> Emissions:** 1 Unit (kWh) of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere.

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Purchased, kWh	CO2 Emissions, MT
1	Apr-21	115	0.10
2	May-21	155	0.14
3	Jun-21	155	0.14
4	Jul-21	155	0.14
5	Aug-21	456	0.41
6	Sep-21	145	0.13
7	Oct-21	256	0.23
8	Nov-21	119	0.11
9	Dec-21	200	0.18
10	Jan-22	190	0.17
11	Feb-22	110	0.10
12	Mar-22	237	0.21
13	Total	2293	2.06
14	Maximum	456	0.41
15	Minimum	110	0.10
16	Average	191.08	0.17

**Chart No 3: Representation of Month wise CO<sub>2</sub> Emissions:**



## **CHAPTER-V**

### **STUDY OF USAGE OF ALTERNATE ENERGY**

The College has yet to install Roof top Solar PV Plant.





## CHAPTER-VI

### STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of usage of LED lights to Total Lighting Load.

**Table No 5: Study of % LED Lighting Load to Total Lighting Load:**

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	3	Nos
2	Load per unit of 40 W FTL Fittings	40	W
3	Total Load of 40 W FTL Fittings	0.12	kW
4	No of 20 W LED Fittings	18	Nos
5	Load per unit of 20 W Fittings	20	W
6	Total Load of 20 W LED Fittings	0.36	kW
7	Total LED Lighting Load=6	0.36	kW
8	Total Lighting Load =3+6	0.48	kW
9	% of LED to Total Lighting Load= $7 \times 100 / 8$	75	%