Environmental Consciousness and Sustainability

The Institution has facilities for alternate sources of Energy and Energy conservation measures

1. Solar Energy

UNIVERSITY SIGNED A M.O.U. / PPA (POWER PURCHASE AGREEMENT) FOR 25 YEARS WITH M/S CLEANMAX ENVIRO ENERGY SOLUTIONS, WINNER OF THE BID / TENDER FLOATED BY SOLAR ENERGY CORPORATION OF INDIA (SECI) UNDER MINISTRY OF NEW & RENEWABLE ENERGY (MNRE) FOR "IMPLEMENTATION OF 1000 MW GRID CONNECTED SOLAR PV SYSTEM SCHEME FOR GOVERNMENT BUILDINGS IN DIFFERENT STATES/UNION TERRITORY OF INDIA UNDER CAPEX/RESCO MODEL" AS PER COMPETITIVE BIDDING UNDER RFS NO.: SECI/C&P/MNRE/1000MW RT/IND/122016 DATED: 09-12-2016.

UNDER THIS SCHEME OF SECI / MNRE, UNIVERSITY UTILIZED THE BENEFITS OF THE RESCO MODEL, WHERE RISK MITIGATION OF EXTENT OF POWER GENERATION BY SOLAR IRRADIATION AS WELL AS NO UPFRONT CAPITAL EXPENDITURE REQIRED TO BE MADE BY THE UNIVERSITY.

THE ENTIRE PROJECT COST WAS SOLELY BORNE BY THE DEVELOPER i.e. M/S CLEANMAX ENVIRO ENERGY SOLUTIONS AND UNIVERSITY HAS TO PAY FOR SOLAR UNITS GENERATED FROM THESE SOLAR PLANTS ON THE BASIS OF PPA (POWER PURCHASE AGREEMENT) SIGNED AT FIX RATE OF RS. 3.91 / UNIT FOR 25 YEARS. AFTER 25 YEARS, PLANT WILL BE COMPLETELY HANDED OVER TO THE UNIVERSITY WITHOUT ANY ADDITIONAL EXPENDITURE.

SALIENT DETAILS OF PLANT

- CAPITAL EXPENDITURE MADE BY THE UNIVERSITY : NIL
- MODE OF EXECUTION : RESCO MODEL
- PROJECT COST : 4.5 CRORES (APPROX.)
- TOTAL ROOFTOP SOLAR AREA : 7500 SQ. MTRS
- INSTALLED CAPACITY : 750 KWP
- NO OF ROOFS USED : 9 ROOFS AND 2 PARKING AREA
- SOLAR MODULES : 2300 (MAKE – ADANI)
- INVERTERS : 18 (MAKE – DELTA)
- DESIGNED NOMINAL GENERATION DAY(APPROX.) : 3000 UNITS /
- SUBSIDY FROM SECI : 30% OF TOTAL PROJECT COST
- DESIGNED ANNUAL GENERATION : 10,31,250 KWH
- DEPRECIATION RATE OF GENERATION : 1.0% EVERY YEAR
- PROJECT COST RECOVERY PERIOD INCLUDING O&M : 25 YEARS

BUILDING WISE SOLAR PV INSTALLATION DETAILS

BUILDING	Total Installed Capacity (in KWp)	Total Area Covered by Solar Plant (in Sq mtrs)
Chitralekha Hostel	31.2	315
Yashodhara Hostel	31.2	315
Sanghmitra Hostel	101.4	1000
Ashoka Hostel	50.7	510
SBBT 1	50.7	510
SBBT 3	62.4	625

Legal Studies	50.7	510
Central Library	71.5	715
UIET	50.7	510
Car Park – Library	118.625	1200
Car Park - Auditorium	128.375	1300
Total	747.5	7510

FINANCIAL YEAR WISE ENERGY / MONETARY SAVING & CLEAN ENERGY UTILIZATION

Sr. No.	Financial Year	Days of Operation	Energy Generated / Saved	Direct Monetary Saving
1.	**2018 - 2019**	151*	**3,03,660.2* KWH (Units)** **from Date of Operation i.e. after Oct 2018*	**Rs. 14,18,093.13***
2.	**2019 - 2020**	365	**9,93,799.08 KWH (Units)**	**Rs. 46,39,781.22**
3.	**2020 - 2021**	365	**9,48,768.53KWH (Units)**	**Rs. 66,57,053.10**
4.	**2021 - 2022**	365	**9,87,447.22 KWH (Units)**	**Rs. 63,99,064.33**
5.	**2022 - 2023**	305	**7,77,556.72 KWH (Units)** **from April 2022 to 30 Jan 2023*	**Rs. 39,52,339.28** **from April 2022 to 30 Jan 2023*

Sensor-based Energy Conservation

Total Number of Sensor based Energy Conservational fittings installed – 65 Nos.

Sr. No	Type of fitting	No of LED Purchase	Wattage of Each LED fitting	Wattage of Each Conventional Tube Light	Power saving by LED fitting (In Watt)	Number of Running Hours	Total Power saving (In watt)
1	LED Tube Light fitting	65	12	70	58	10	37,700.00
				Total Energy Saving (in Watt Hour / Day)			37,700.00

Based on the above data, annual monetary savings achieved is as per below mentioned calculations:

- Total Energy Saving per Year -37,700.00 Watt Hour
- Energy Saving per Year - 37700 X 365 = 13760500 Watt Hours = 13760.5Units
- Annual Monetary Savings -13760.5 Units X Rs. 10 / Unit = Rs. 137605.00 per Annum (Approx.)

Use of LED bulbs/power efficient equipment's

University has taken initiative to replace the conventional light with LED Lights. LED Lights have a lot of advantages in terms of its long lifespan, energy efficient. The data have been furnished below:

Sr. No	Type of fitting	No of LED Purchase	Wattage of Each LED fitting	Wattage of Each Conventional Tube Light	Power saving by LED fitting (In Watt)	Number of Running Hours	Total Power saving (In watt)
1	LED Tube Light fitting	1000	20	40	20	12	2,40,000
2	LED Street Light	150	70	150	80	10	1,20,000
3	LED Panel Light	30	36	3×36=108	72	12	25,920
4	LED Bulb	100	9	100	91	12	1,09,200
				Total Energy Saving (in Watt Hour / Day)			4,95,120

Based on the above data, annual monetary savings achieved is as per below mentioned calculations:

- Total Energy Saving per Year - 495120.00 Watt Hour / Day
- Energy Saving per Year – 495120.00 X 365 = 180718800 Watt Hour = 180719.00 Units (Approx.)
- Annual Monetary Savings - 180719.00 Units X Rs. 10 / Unit = Rs. 1807190.00 per Annum (Approx.)

Water Conservation facilities available in the Institution:

1. Rainwater Harvesting

The area of the University is 10,15,586.94 m2 (251 acre) with a built-up area of 34973.15 m2(8.64 acre) excluding the area of roads and footpaths. Rich green vegetation and large open land provide good infiltration of the rainwater on the university campus. In the University, three rooftop rainwater harvesting systems have also been installed. All these systems are helping in groundwater recharge in the university.
Three rooftop rainwater harvesting systems (RWH) installed in university
1. Behind SES building
2. SBBT phase 2 building
3. Behind Ambedkar Bhawan

Amount of total annual rainfall: 896 mm/year Total area: 1015586.94 m2 (251 acre)

Built-up area of buildings: 34973.15 m2 Built-up area of roads: 88083.96 m2

Built up Area with roads and pavements: 34973.15 m2 + 88083.96 m2 = 123057.11 m2 Total Catchment Area of Built up Area with roads and pavements: 123057.11 m2

Run off from Built up area including roads and pavements = 110259 m3

Total volume of water in the catchment: 1015586.94 m2 × 896 mm = 909966 m3 Volume of water that joins the run-off drain: 110259 m3

Volume of water available for recharge through unpaved surface: (909966 m3 – 110259 m3) = 799707 m3 per year

2. Maintenance of water bodies and distribution system in the campus.

The water requirements in the BBAU are met by the groundwater sources, abstracted through deep wells located within the campus. The groundwater is stored in underground reservoir of capacity 19.80 lakh litres and further lifted to the overhead tank (OHT) of capacity 10 lakh litres. This water is being supplied to all the other administrative and residential buildings. Many academic buildings have their own OHT. In the University campus, small pumps are also installed during the initial phase of development of University. A list of all the OHTs and current status of the installed pumps is given below table 1.
Table 1: List of OHTs in BBAU campus along with their capacity

Location of OHT	No. of Tank	Capacity	Total Capacity in Liters
MainOHT	1	1000000 Ltr	1000000
SES	2	5000 Ltr.	10000
SAS	1	1000 Ltr.	1000
	1	500 Ltr.	500
	1	2000 Ltr.	2000

	2	5000	Ltr.	10000
Legal Studies	19	1000	Ltr.	19000
	6	500	Ltr.	3000
RCA	2	500	Ltr.	1000
	10	1000	Ltr.	10000
KanishkaHostel	2	2500	Ltr.	5000
	5	1000	Ltr.	5000
	8	3000	Ltr.	24000
Canteen	3	500	Ltr.	1500
Library	2	5000	Ltr.	10000
Ashoka Hostel	8	3000	Ltr.	24000
	4	1000	Ltr.	4000
	2	2500	Ltr.	5000
Ashoka Extension	20	2000	Ltr.	40000
	1	1000	Ltr.	1000
Siddhartha Hostel	13	1000	Ltr.	13000
	2	500	Ltr.	1000
Health Centre	8	500	Ltr.	4000
	2	1000	Ltr.	2000
UIET	3	1000	Ltr.	3000
	1	500	Ltr.	500
	3	2000	Ltr.	6000
SBBT-I	5	5000	Ltr.	25000
	4	2000	Ltr.	8000
SBBT-II	12	2000	Ltr.	24000
SBBT-III	1	2500	Ltr.	2500
	1	1000	Ltr.	1000
	12	2000	Ltr.	24000
Auditorium	1	1000	Ltr.	1000
	4	2000	Ltr.	8000
Old Adminblock	1	1000	Ltr.	1000
Old Adminblock (Bank)	1	500	Ltr.	500
RCAHostel	13	1000	Ltr.	13000
	2	500	Ltr.	1000
Chitralekha Girls Hostel	6	500	Ltr.	3000
	8	1000	Ltr.	8000
Yashodhara Girls Hostel	5	5000	Ltr.	25000
	2	1000	Ltr.	2000
	3	2000	Ltr.	6000
	1	200	Ltr.	200
Sanghmitra Girls Hostel	4	5000	Ltr.	20000
	1	1000	Ltr.	1000
	2	3000	Ltr.	6000
	1	2000	Ltr.	2000
Rearing House	2	500	Ltr.	1000

	1	1000	Ltr.	1000
VC House	4	200	Ltr.	800
	1	2000	Ltr.	2000
TypeA-1	6	200	Ltr.	1200
	6	1000	Ltr.	6000
TypeA-2	6	200	Ltr.	1200
	6	1000	Ltr.	6000
Guest House	5	500	Ltr.	2500
	3	150	Ltr.	450
	1	1000	Ltr.	1000
Statistics	4	500	Ltr.	2000
TypeC-1	16	500	Ltr.	8000
TypeC-2	16	500	Ltr.	8000
TypeB-1	16	1000	Ltr.	16000
TypeB-2	16	1000	Ltr.	16000
GBS	1	200	Ltr.	200
Engineering Section	1	500	Ltr.	500
Total				**1461550 Ltr.**

Details of Installed Transformers in University Campus:

Sl. No.	Substation Name	Nos.
1.	Substation No. 1 - 1250 KVA	01
2.	Substation No. 2 - 1250 KVA	01
3.	Substation No. 3 - 1250 KVA	02
Total Installed Capacity: 5 MVA		

Details of D.G. Sets in the University Campus:

Sl. No.	Rating	Installed location
1.	5 KVA	SAS Building Portable Generator
2.	5 KVA	SES Building Portable Generator
3.	20 KVA	University Guest House
4.	20 KVA	V.C. Residence
5.	62.5 KVA	Old Administrative block
6.	200 KVA	Atal Bihari Vajpayee Auditorium
7.	250 KVA	Gautam Budh Central Library
8.	20 KVA	SES Conference hall
9.	61.5 KVA	SBBT Phase-1
10.	320 KVA	Ambedkar Bhawan

Details of Pump Sets in the University Campus:

Sl. No.	Type of Pump Set	Installed location	Nos.
1.	50 hp (3 phase submersible pump)	Underground reservoir	03
2.	20 hp (3 phase submersible pump)	Near C.W.R, Near Type-B Residence, Near Type-C Residence & University Health Centre	04
3.	10 hp (3 phase submersible booster pump)	Underground reservoir and Ambedkar Bhawan	02

4.	03 hp (3 phase submersible pump)	Yashodhara Hostel	01
5.	02 hp (1 phase submersible pump)	Type-B Residence and Type-B Residence	02
6.	02 hp (1 phase Monoblock booster pump)	University Central Library	01
7.	02/1.5 hp (1 phase submersible pump)	Sanghmitra Hostel-1, VC Camp Office, Guest House, Mango garden (Horticulture) and USIC	05
Total Installed Capacity : 303 HP (Approx.)			

Details of Lifts at and their Locations

Sl. No.	Nos.	Installed location
1.	06 (Johnson lift)	Ambedkar Bhawan
2.	01 (Johnson lift)	SBBT Phase-2
3.	02 (OTIS)	Gautam Budh Central Library

Details of RO Plant in the University Campus

Sl.No.	Location	Purification Capacity (LPH)
1	Ashoka Boys Hostel	500
2	Kanishka Boys Hostel	500
3	Siddhartha Boys Hostel	500
4	Yashodhara Girls Hostel	500
5	Sanghmitra Girls Hostel	500
6	Chitralekha Girls Hostel	500
	Total Capacity (LPH)	**3000**