

SNDT Women's University

Shreemati Nathibai Damodar Thackersey Women's University



AQAR 2020-21

Criterion VII

Supporting documents

For

7.1.2- The Institution has facilities for alternate sources of energy and energy conservation measures during the year 2020-21

INDEX 7.1.2

The Institution has facilities for alternate sources of energy and energy conservation

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7.1.2 The Institution has facilities for alternate sources of energy and energy conservation

1. Solar energy:

USE OF SOLAR POWER AS BEST PRACTICES OF SNDTWU

World's energy demand is growing fast because of population explosion and technological advancements. Therefore demand for reliable, cost effective and everlasting renewable energy sources for energy is arising. Solar energy, among other renewable sources of energy, is a promising and freely available energy source for managing long term issues in energy crisis. Solar industry is developing steadily all over the world because of the high demand for energy while major energy source, fossil fuel, is limited and other sources are expensive.

About Solar Energy-

- 1) **Solar** technologies convert sunlight into electrical **energy** either through photovoltaic (PV) panels or through mirrors that concentrate **solar** radiation. These **solar panels**, mounted on a rooftop, harvest **solar energy** and convert it to electricity This **energy** can be **used** to generate **electricity** or be stored in batteries or thermal storage.
- 2) **Solar energypower** from the sun is a vast, inexhaustible, and clean resource. Sunlight, or **solar energy**, can be used directly for heating, lighting homes and businesses, for generating electricity, for hot water heating, **solar** cooling, and many other commercial and industrial uses.
- 3) **Solar energy** is the heat and light we get from the Sun, it is renewable, widely available and clean providing enough **energy** to meet the world's annual consumption needs.

There are three most useful types of solar energy:

- **Solar Thermal Energy.**
- **Concentrating Solar Power.**
- **Photovoltaic Solar Power.**

National Solar Mission

The National Solar Mission is an initiative of the Indian and State Governments to promote solar power. The mission is one of the several policies of the National Action Plan on Climate Change. The program was inaugurated as the Jawaharlal Nehru National Solar Mission by former Prime Minister Manmohan Singh on 11-01-2010 with a target of 20 GW by 2022. This was later increased to 100 GW by the Narendra Modi government in the 2015 Union budget of India. The solar power generation capacity of India has been increased by nearly 5 times from 2,650 MW on 26-05-2014 to 12,288.83 MW on 31-03-2017. The country added 9,362.65 MW in 2017–18, the highest of any year. The original target of 20 GW was surpassed in 2018, four years ahead of the 2022 deadline.

Importance and relevance of solar energy for India

1. *Cost:* Solar power is currently high on absolute costs compared to other sources of power such as coal. The objective of the Solar Mission is to create conditions, through rapid scale-

up of capacity and technological innovation to drive down costs towards grid parity. The Mission anticipates achieving grid parity by 2022 and parity with coal-based thermal power by 2030.

2. *Scalability*: India is endowed with vast solar energy potential. About 5,000 trillion kWh per year energy is incident over India's land area with most parts receiving 4-7 kWh per sq. m per day. Hence both technology routes for conversion of solar radiation into heat and electricity, namely, solar thermal and solar photovoltaics, can effectively be harnessed providing huge scalability for solar in India. Solar also provides the ability to generate power on a distributed basis and enables rapid capacity addition with short lead times.
3. *Environmental impact*: Solar energy is environmentally friendly as it has zero emissions while generating electricity or heat.
4. *Security of source*: From an energy security perspective, solar is the most secure of all sources, since it is abundantly available.

Solar Power for Academic Institutions:

Solar panels for academic institutions decrease an institution's carbon footprint and generate a great deal of power. The following are the most significant benefits of solar panels for academic institutions:

1. Solar Panels Work Well on Most University Roofs

Most residential homes have pitched roofs, which can make adding solar panels difficult. Universities and schools, on the other hand, typically have flat, expansive roofs made of materials that are ideal for solar panel installation. In addition to providing plenty of open, unshaded space for solar panels to work to their highest potential, these roofs are also unlikely to feature sensitive materials, like wood shingles, which can make solar installation more challenging. Since roof angle and material have a major impact on the effectiveness of solar arrays, this is excellent news for any college or university that wants to install panels.

2. Solar Power Can Reduce Operating Costs for the Institution

Electric prices have risen over the years. Fortunately, solar power is a free source of energy, found in abundance throughout the world, and advanced technology and skilled installers have made it even more accessible for institutions.

In fact, colleges and universities have access to some of the least expensive systems available. As systems get larger, their cost per watt price falls. This means colleges and universities can enjoy affordable power without the guessing game of the grid.

3. Solar Power Can Help Boost Enrolment

Solar power is cutting-edge and attractive to eco-minded students, teachers, and supporters. A college/ university that install a solar panel system could easily see an increase in enrolment. This is especially true in competitive areas, where having solar panels on a building could be the factor that distinguishes one university from its competitors in the eyes of potential enrolment.

When modern students choose schools, many of them look for options that offer environmentally-conscious practices, renewable power, and eco-friendly facilities. As such,

some colleges and universities have even established Sustainability Offices designed to drive the institution's green initiatives forward. The institution can also gain a reputation for innovativeness and creativity. Thus, they also stand out as a unique social and cultural symbol.

4. Solar Power Provides Unlimited and Reliable Energy

For academic institutions, solar power systems offer a dependable source of unlimited energy. While fossil fuels are a finite source of energy, solar power is not. Designed to work on cloudy days, in part sun, and even in wintery environments, solar panels can generate significant amount of power for installing institutions.

5. Solar Arrays at Colleges Helps Drive Solar Power Forward

To invest in solar panels, people need to see them at work, first. Since universities are busy public places, campuses that install solar panels do the important work of driving the solar industry forward by providing greater exposure for solar arrays. This is especially true for universities that install large, campus-powering systems.

Advantages of Solar Energy:

- **Renewable Energy Source.** Solar energy is a truly **renewable energy source** and Renewable clean power that is available every day of the year.
- Reduces Electricity Bills.
- Diverse Applications.
- Virtually no maintenance as solar panels last over 30 years
- Weather dependent
- Solar Energy Storage Is Expensive.
- **Environmental friendly** - Solar power is pollution free, causes no emission of greenhouse gases after installation, reduce water usage, dependence on non-renewable energy sources, helps fight climatic change
- Reduced dependence on foreign oil and fossil fuels
- Return on investment unlike paying for utility bills
- Creates jobs by employing solar panel manufacturers, solar installers and thus helps the economy
- Ability to live grid free if all power generated provides enough for the home/building
- Can be installed virtually anywhere
- Use batteries to store extra power for use at night
- Can be used to heat water, power homes and building, even power cars
- Safer than traditional electric current
- Efficiency is always improving so the same size solar that is available today will become more efficient tomorrow
- Aesthetics are improving making the solar more versatile compared to older models
- Federal grants, tax incentives, rebate programs available to help with initial costs
- No trenching is needed since the solar can be close to or at the place of installation.

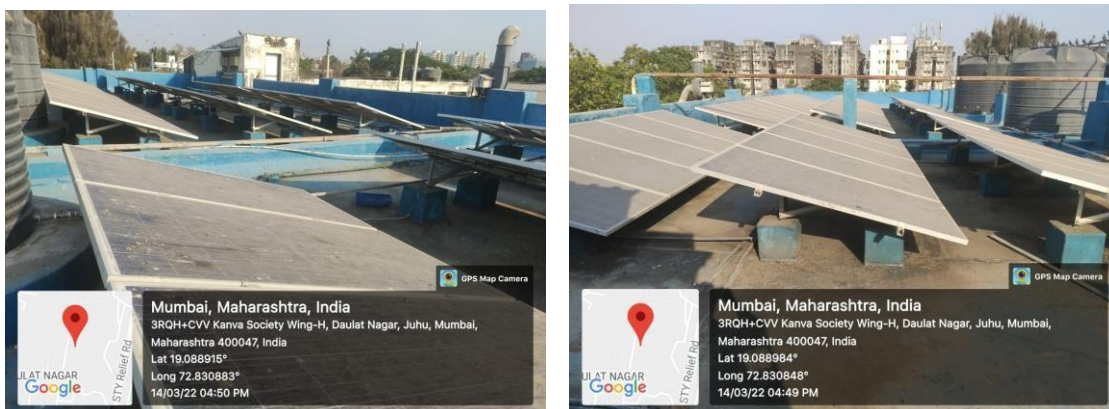
SOLAR POWER AT SNTWU

SNDTWU has identified state-run educational institutes or government offices that can adopt solar power. SNDTWU was the first university in Maharashtra to be selected under the scheme, while Aditya Green Energy Private Ltd. Mumbai was chosen as the project proponent.

SNDTWU installed the solar setup under the Centre's Solar Energy Corporation of India (SECI), New Delhi, which has allocated 3 megawatt (MW) rooftop solar amenities for every state in 2017. The solar energy plant at Juhu campus of S.N.D.T. Women's University was inaugurated on 30-01-2019 by honourable VC madam, Respected Pro-VC Sir and Guest of honour, Mr. Adinath Sangvae, Secretary, Aditya Green Energy Pvt. Ltd. The plant has 500 kilowatt-power (kWp) solar project and is considered as one of the largest rooftop renewable energy projects in the city. There was 60% reduction in the Juhu campus' electricity bill.

The solar plant has also been installed in SNDTWU Pune campus.

Based on a study by the Indian Institute of Science, Bengaluru, this project is estimated to mitigate 15,375 tonnes of carbon dioxide emissions during its lifetime, which is equivalent to planting 24,600 teak trees. Solar energy is a free source of renewable energy which does not cause pollution and reduces carbon emissions from burning coal, gas and oil for electricity generation. With 1,540 panels, the setup will generate an average of 1,917 kilowatt-hour (kWh) units per day and 7,00,000 kilowatt-hour (kWh) units in a year.

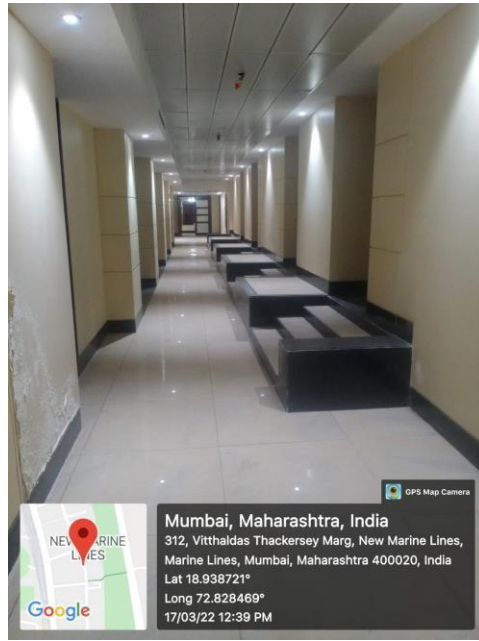


Solar Panel at SNDTWU Juhu Campus

2. Biogas plant: Not Available

3. Wheeling to the Grid: Not Available

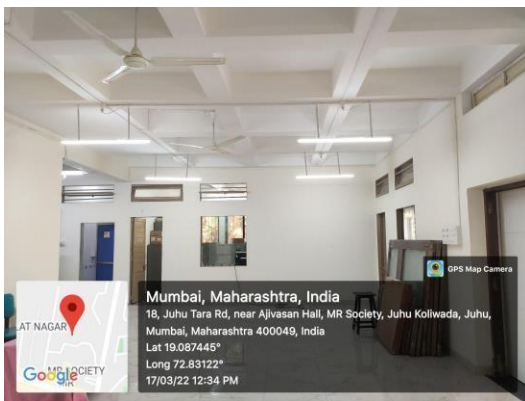
4. Sensor-based energy conservation: Sensor based lights are used in Churchgate Campus to add to already existing energy conservation methods. Sensor based lights save energy by automatically putting off the lights when not in use. Sensor based LED lights are available at Toilets of Maharshi Karve seminar complex in Churchgate campus.



Sensor Based Lights at Toilets of Maharshi Karve seminar complex in Churchgate campus

5. Use of LED bulbs/ power efficient equipment: Yes.

LED Lights are energy efficient and they have long life span. They offer improved environment performance. They work at low voltages. LED provides instant light and they can withstand frequent switching. Apart from sensor-based LED lights, various colleges, departments at SNTDWU, where renovation and repair work is carried out, the old tube lights are replaced by LED lights.



LED Lights at Bharatratna Maharshi Karve Knowledge Resource Centre



LED lights at Special Education Department, Juhu Campus

Tax Invoice

GE RCC Energy Pvt Ltd 2019 - 2020

Block No.1, Kapil Plaza,
Near Udyog Bhavan, Signal Camp
Latur

GSTIN/UIN: 27AAQCA1709D1ZU
State Name : Maharashtra, Code : 27
CIN: U74999MH2017PTC301162

Buyer
Juhu Administration Dept.SNDT
Womens University Juhu Campus Juhu
Near Haji Vasnt Hall
Mumbai
PAN/T No :
State Name : Maharashtra, Code : 27

Invoice No. RCC/SNDT/70	Dated 1-Oct-2020
Delivery Note	Mode/Terms of Payment
Supplier's Ref. 70	Other Reference(s) SECCLP/MHRC/1000/W/ET/IND/12316
Buyer's Order No.	Dated
Despatch Document No.	Delivery Note Date
Despatched through	Destination

Terms of Delivery
As Per PPA Clause 7.6 Late Payment Surcharge
This Invoice, If Paid Beyond the Due Date Will
Attract A Late Payment Surcharge at the
Rate of 1.25% Per Month. (If Payment Will
Not Received Within 15 Days We Will Charge
Interest As Per PPA)

Sl No	Description of Goods	HSN/SAC	Quantity	Rate	per	Amount
1	Solar Electricity Units Delivered Meter Reading Details Are As Per Attached Sheet. From March 20 To Sept 2020	27160000	3,30,735.000 kWh	3.62	kWh	12,69,736.00
Total			3,30,735.000 kWh			₹ 12,69,736.00

Amount Chargeable (in words) E. & O.E
INR Twelve Lakh Sixty Nine Thousand Seven Hundred Thirty Six Only

HSN/SAC	Taxable Value
27160000	12,69,736.00
Total	12,69,736.00

Tax Amount (in words) : NIL

Company's PAN : AAQCA1709D

Company's Bank Details
Bank Name : State Bank Of India (ESCRO)
A/c No. : 37865223974
Branch & IFS Code : D N ROAD, MUMBAI & SBIN0008599

Declaration
We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct.

for AGE RCC Energy Pvt Ltd 2019 - 2020
Authorised Signatory

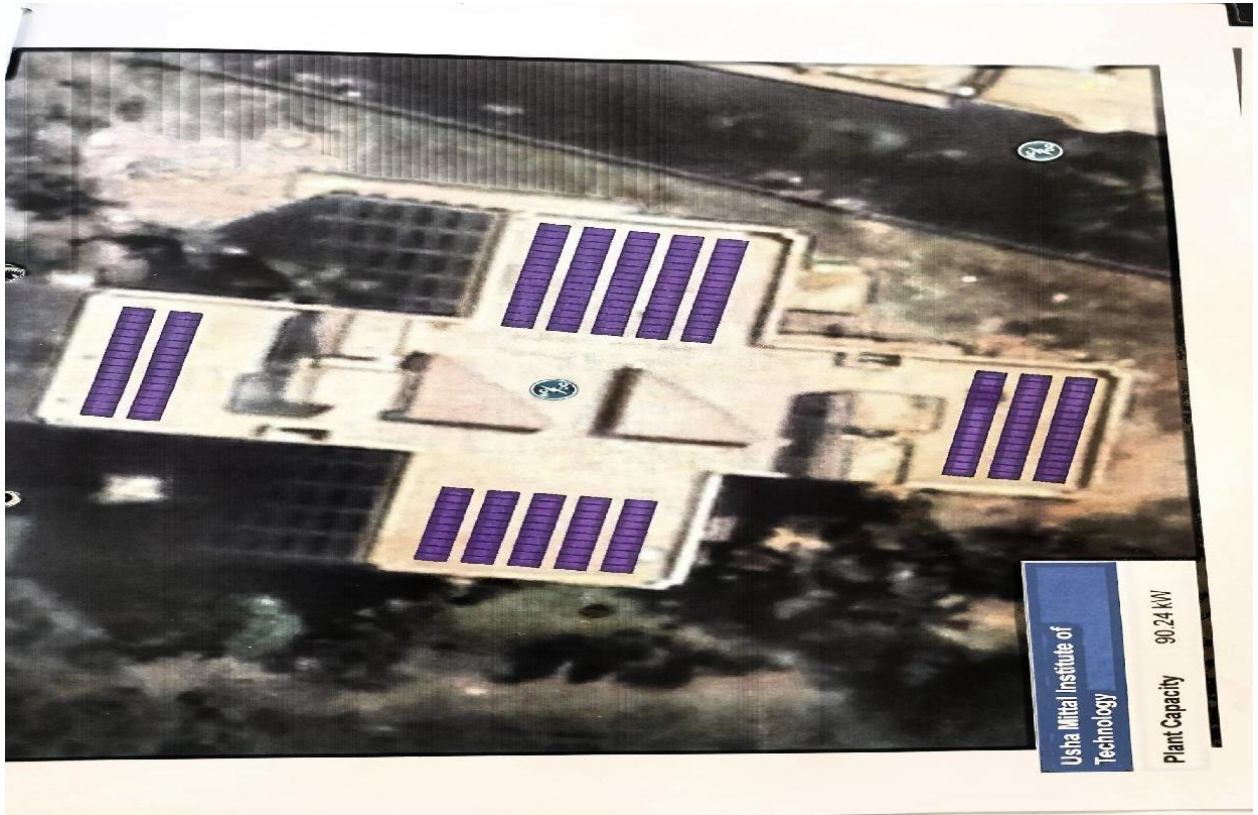
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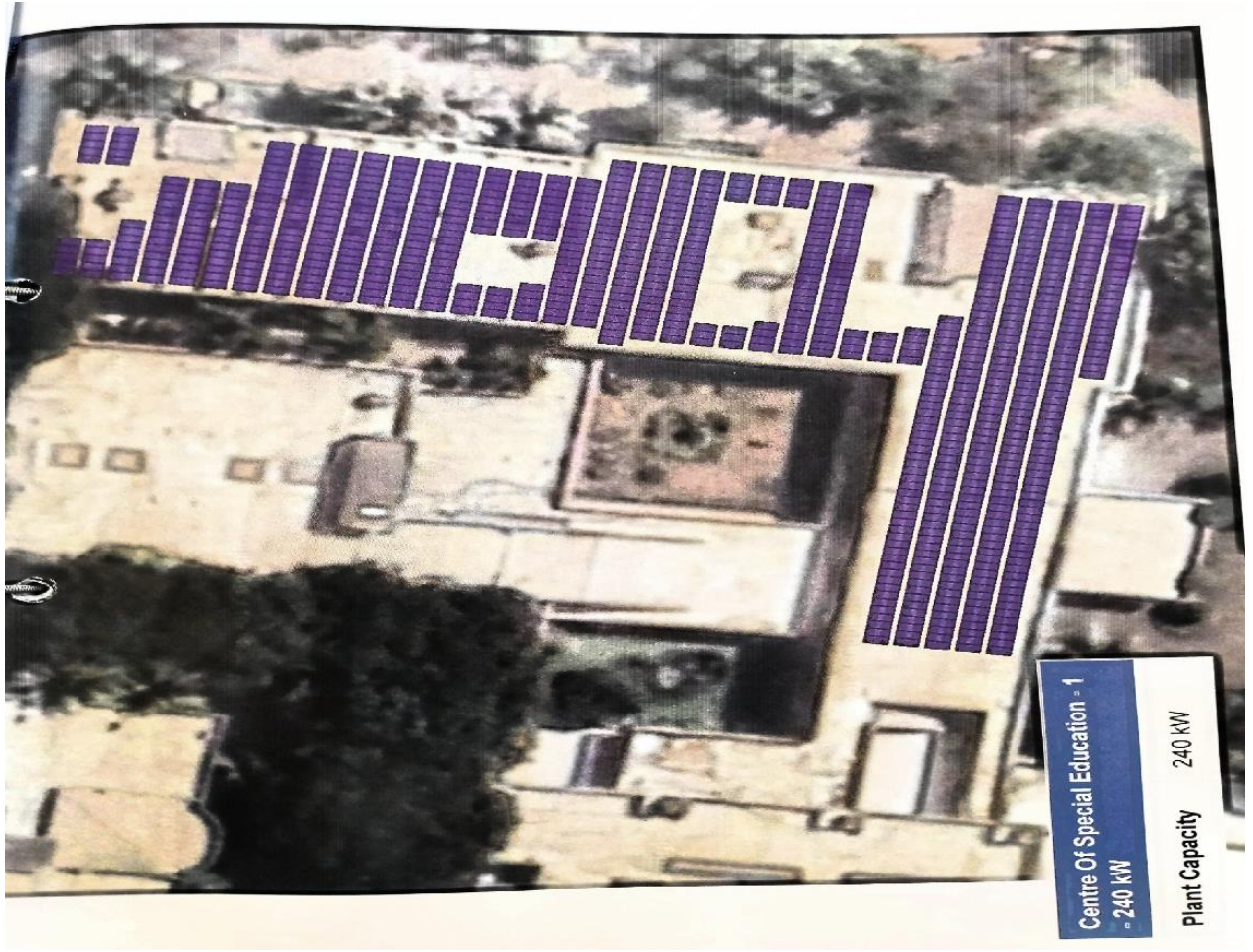
AGE RCC Energy Pvt Ltd
G-29, Meghal Industrial Estate,
Devi Dayal Road, Mulund West

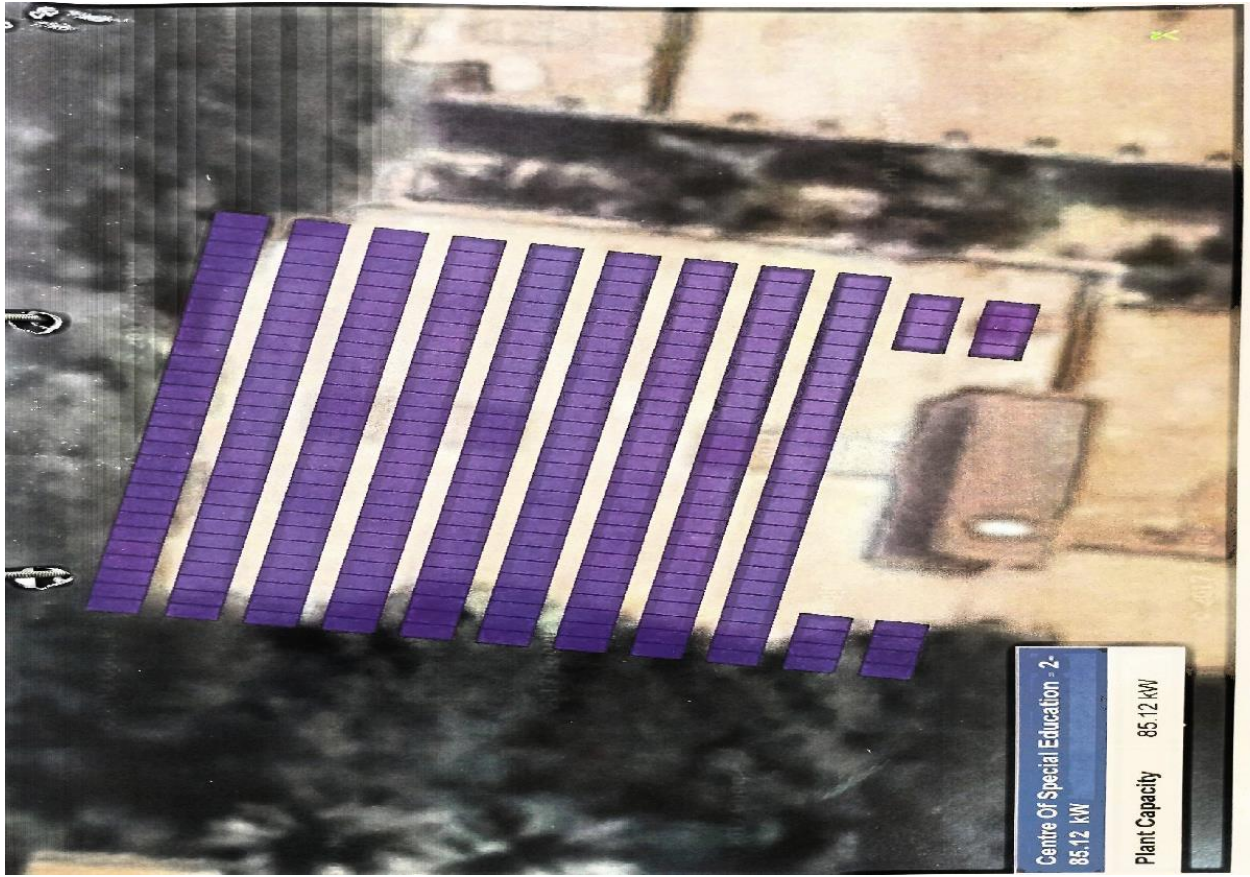
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Usha Mittal Institute of
Technology

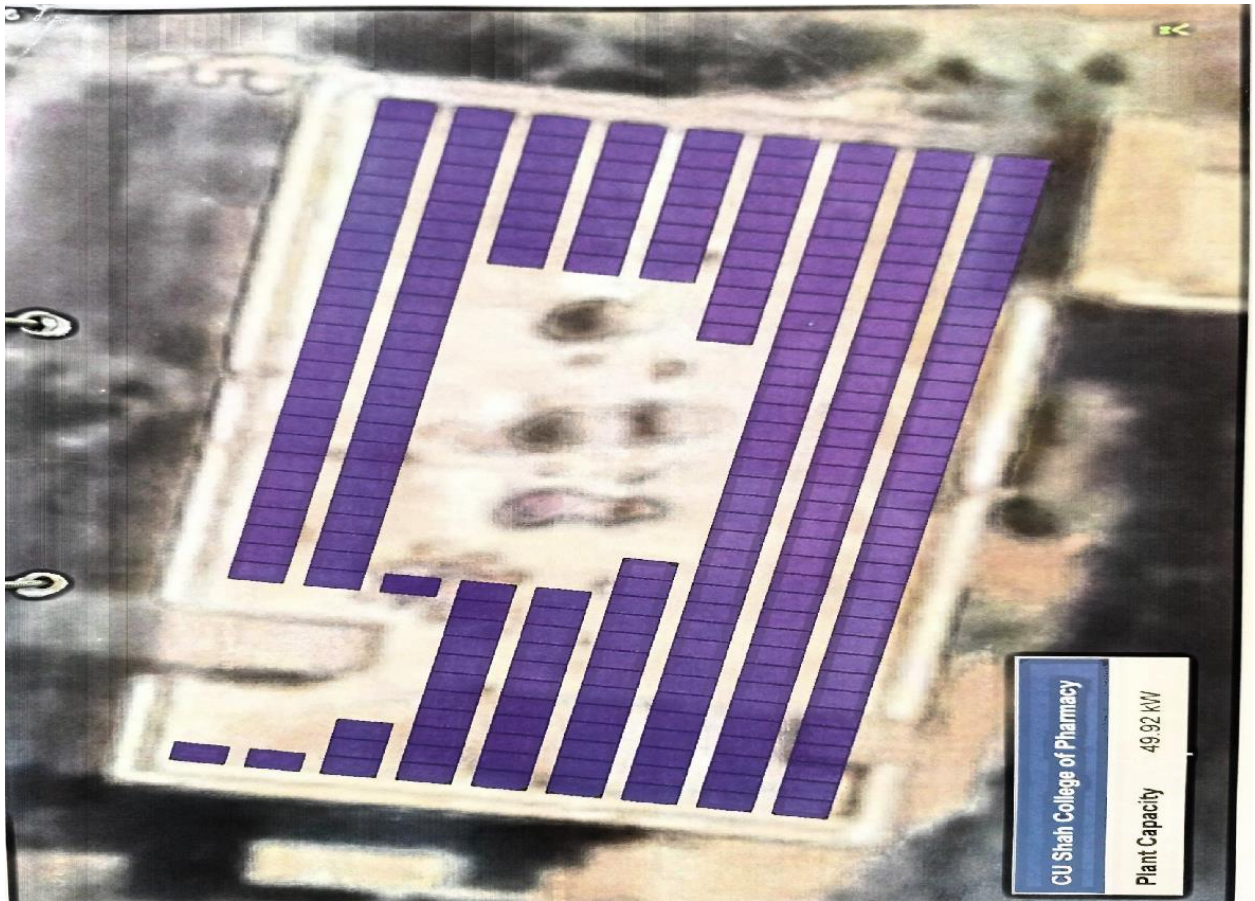
Plant Capacity 90.24 MW





Centre Of Special Education - 2-
85.12 kW

Plant Capacity 85.12 kW





820
8/11/17

सोलर एनर्जी कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उपक्रम)
Solar Energy Corporation of India Ltd.
(A Government of India Enterprise)

स्वच्छ भारत - स्वच्छ ऊर्जा

No: SECI/PS/ 109 /2016/ 16783

Dated: 08-11-2017

To,
Vice Chancellor
SNDT Women's University,
1, Nathibai, Thackersey Road,
Mumbai, Maharashtra - 400020

Subject: Installation of Grid-connected Rooftop Solar Plants

Sir,

Solar Energy Corporation of India Ltd. (SECI) is a company dedicated to the development of Solar Energy sector, under the administrative control of the Ministry of New and Renewable Energy (MNRE), Government of India.

We would like to inform that presently SECI is operating a scheme for "Design, Manufacture, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance of Rooftop Solar PV System", vide RfS No.: SECI/C&P/MNRE/1000MW RT/TND/122016 dated 09/12/2016.

M/s Aditya Green Energy is one of the successful bidders in the tender and has been allocated 3000 kWp capacity in RESCO mode in Maharashtra. Bidder details are as follows:

Bidder	Tariff (Rs./kWh)	Contact Person	Mobile No/ email
Aditya Green Energy	3.620	Jayesh G. Bajaj	9890048748 adityagreenenergy@rediffmail.com

As per the procedures of our scheme, your institute will have to sign a 25-year PPA with SECI's vendor. The standard PPA has been made available with the tender and is also available at MNRE website.

The L1 traffic stream details for 25-year is enclosed herewith.

The bidder is required to submit the copy of signed PPA and the DPR of the project to SECI for sanction under the scheme.

You are requested to direct your officers to follow the above-mentioned procedure at the earliest so that the sanction can be granted by SECI and execution work can be commenced.

Thanking you,

Yours faithfully,

(R. K. Jain)
AGM (Solar)

Request for further action
8/11/17

Regd. Office : 1st floor, Prius Platinum, D-3, District Center, Saket, New Delhi - 110017
Phone : (011) 71989200, Email : corporate@seci.gov.in, Website : www.seci.gov.in
CIN : U40106DL2011GOI225263

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