

ACEI(O)/ /2015-16
11226-31 (Electrical Inspectorate)

SPP No: BN-07/15-16

Office of the
Additional Chief Electrical Inspector,
Bangalore North,
No: 2/4 "Aragini Bhavana"
Dr. Rajkumar Road, Rajajinagar,
Bangalore-560 010

Date: 24-3-2016

OFFICIAL MEMORANDAM

- Sub: Approval to commission the electrical installation of 50kWP roof top solar plant at (Existing R.R. No: N5HT-399) at Pharmacy Block of M/s. PKM Education Trust, Chikkabanavara, Bangalore
- Ref: 1. BESCOM permission ltr No: AEE (EI)/N5/15-16/68 dated: 22.05.2016
2. Drawing approval letter No: ACEI/BN/AEI (O)/SD-04/3074-78/15-16, Dt.01.07.2015
3. Work Completion Report vide Ltr. No: nil, dated: 22.12.2015
4. T.O. Defect Ltr No: ACEI/BN/AEI (O)/8615-16/15-16 Dt. 30.12.2015.

Approval as required under regulation 32 of the CEA regulations 2010 is hereby accorded to commission electrical installation of 50kWP roof top solar plant of at Pharmacy Block of M/s. PKM Education Trust, No:39/1, Rajareddy Layout, Chikkabanavara, Bangalore, as the electrical installation is found to be in general conformity with the CEA regulations 2010.

This approval is issued subject to the conditions mentioned overleaf.

DETAILS OF EQUIPMENTS:

Sl. No	Name of Details	Details
1	BESCOM RR No.	N5HT-399
2	Solar Panel/Module	Make: BOSCH, 250Wp, Qty: 200.
3	Inverter	Make: Refusol, 25kw, SI. No: 1) 120001178, 2) 120001176
4	AC DB Panel	Make: ABB, 180A, MCCB.
5	Solar Energy Meter	Make: Techno, Type: Analog, SI.No:208573
6	AC Cable	4CX35sqmm → copper Cable, Length -10 Meters
7	DC Cable	1RX6C sqmm, Copper 1.6 KV, Length-200Meters.
8	Bidirectional Energy Meter in HT metering Cubical	Metering Cubical Panel, Make: Vyoma Switchgear, SI.No:150918k417 Current Transformer: Make: Vyoma, CI:0.2, Burden:2.5VA, 5/1-1A, SI.No:1) VYC-K-3313,2) VYC-K-3314, 3) VYC-K-3315 Potential Transformer, Make: Vyoma, 11kV/√3/110/√3, CI:0.2, Burden:25VA, SI.No:1) VYP-K-2111,2) VYP-K-2112, 3) VYP-K-2113 Bidirectional Energy Meter, Make: L&T, 3P4W, cl: 0.2, 50000impulse/kWh, Model: PRS400.3, SI. No: 1) 15193664 (Main meter) 2) 15193614 (Check meter)



PKM Educational Trust (R)

Solar file

Date: 30/12/2015

To,

The Executive Engineer,
NS Division,
BESCOM,
Bangalore.

Dear Sir,

Ref:- Approval letter for NSHT 492
Sub:- Completion of Solar Roof-Top installation

With reference to the above, we would like to bring your kind notice that we have completed the solar PV plant installation and find below the confirmation of the points.

1. Net metering panel has been installed with due calibration and certification from BESCOM
2. A Separate LT meter has been fixed at the output of Inverter for measuring solar generation.
3. As per your advice the following has been completed and we are submitting required document along with this letter.
 - a. Facilitation fee of Rs. 5,000/- has already been remitted
 - b. Test Certificate of Bi-directional meter from BESCOM is attached
 - c. The drawing approval from CEI, GOK has been received for the installation vide letter No:
 - d. Power purchase agreement on a Rs. 200/- stamp paper is enclosed herewith
 - e. Work completion report from the system installer is attached
 - f. We have enclosed a cancelled cheque for the account bank details.

You are hereby requested to arrange for the inspection and grid synchronization so that the plant can be commissioned at the earliest.

Looking forward to your support for in this regard so that we can complete this at the earliest.

Thanking you,

[Signature]

Secretary

PKM Educational Trust

Chikkabanavara, Bangalore - 560 090.

Raja Reddy Layout, Near Chikkabanavara Railway Station, Chikkabanavara, Hesaraghatta Road, Bangalore - 560 090

Phone : +91-80-65326100 / 28391553-4-5 Fax : +91-80-28396210 Helpline : 98451 72776

E-mail : contact@minstitutions.com www.minstitutions.com

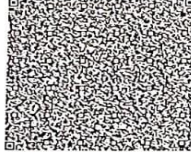


सत्यमेव जयते

INDIA NON JUDICIAL Government of Karnataka

e-Stamp

Certificate No.	: IN-KA34065057095628N
Certificate Issued Date	: 26-Mar-2015 10:46 AM
Account Reference	: NONACC (FI)/ kaksfcl08/ KALYANNAGAR/ KA-BA
Unique Doc. Reference	: SUBIN-KAKAKSFCL0818326645831007N
Purchased by	: BESCOM AEE N5 SUB DIVISION
Description of Document	: Article 41 Power of Attorney
Description	: POWER PURCHASE AGREEMENT
Consideration Price (Rs.)	: 0 (Zero)
First Party	: BESCOM AEE N5 SUB DIVISION
Second Party	: RAJA REDDY P K M TRUST
Stamp Duty Paid By	: BESCOM AEE N5 SUB DIVISION
Stamp Duty Amount(Rs.)	: 200 (Two Hundred only)



MANISHA SUNDAR
CO-OPERATIVE LIMITED
HRSR Layout, 5th, 6th & 7th Floor, Office
Rajmangalapuram, Mysore, KARNATAKA 570011

-----Please write or type below this line-----

POWER PURCHASE AGREEMENT FOR ROOFTOP SOLAR PV PLANTS WITH NET METERING ARRANGEMENT

This Power Purchase agreement is entered into at Bangalore on this ____ day of April 2015 between Bangalore Electricity Supply Company Limited (BESCOM), a Government of Karnataka undertaking, a Company formed and incorporated in India under the Companies Act-1956, with its registered office located at K R Circle, Bangalore, Karnataka State, hereinafter referred to as the "BESCOM" (which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns) as part of the first part represented by EE, C, O & M, N5 Sub-division.

Secretary
PKM Educational Trust
Chikkabanavara, Bangalore - 560 080

Statutory Alert:

1 The authenticity of this Stamp Certificate should be verified at "www.shclstamp.com". Any discrepancy in the details on this Certificate and as available on the website renders it invalid.
2 The onus of authentication is on the user.



AND

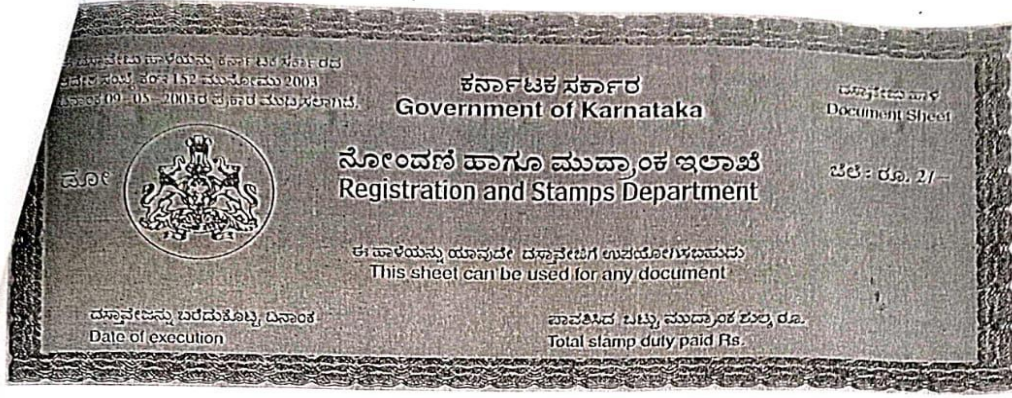
V. Raja Reddy Papamma Kalayana Mantapa Education Trust, # 39\1 Near Railway Station, Chickabannavara, Bangalore- 560090, hereinafter referred to as the "Seller" (which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns) as part of the second part.

Whereas,

- The Settler intends to connect and operate the Solar Roof Top Photo Voltaic (SRTPV) system with BESCOM's HT/LT Distribution system for sale of Solar Power to BESCOM in terms of the Karnataka Electricity Regulatory Commission (KERC) Order No's/03/01/2013 dated 10.10.2013 or as amended from time to time.
- The Seller intends to install/has installed a SRTPV system of 50 kWp capacity on the roof top of the premises situated at V. Raja Reddy Papamma Kalayana Mantapa Education Trust, # 39\1 Near Railway Station, Chickabannavara, Bangalore- 560090, and connected to electricity service connection bearing number (RR.No. N5 H.T 492 in the same premises under N5 Sub Division of BESCOM.
- The Seller intends to sell net energy exported from the SRTPV system to BESCOM as recorded in the bi-directional meter installed in the seller's premises, from the date of commissioning of the SRTPV system.
- BESCOM intends to purchase net energy exported by such SRTPV system at the tariff determined by the KERC.

Now therefore, in consideration of the foregoing premises the parties hereto, intending to be legally bound hereby agree as under:

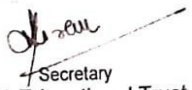

Secretary
PKM Educational Trust
Chikkabannavara, Bangalore - 560 090.



1. Technical and Interconnection Requirements:

Seller shall ensure his SRTPV system complies with the following technical and Interconnection Requirement and shall:

- 1.1 Comply with the standards and conditions in respect of integrating the SRTPV system with the grid/distribution system.
- 1.2 Connect the SRTPV system to BESCOM's distribution system and shall be bound by requirement of State Grid and distribution Code as amended from time to time.
- 1.3 Install, prior to connection of SRTPV system to BESCOM's distribution system, an inverter with an automatic inbuilt isolation devise.
- 1.4 Provide external manual isolation mechanism with suitable locking facility so that SRTPV system will not back-feed into the BESCOM's network in case of power outage of the BESCOM's system, and it shall be accessible for BESCOM to operate, if required, during maintenance/emergency conditions.
- 1.5 Install all the equipment of SRTPV system compliant with relevant International (IEEE/IEC) and Indian standards (BIS)
- 1.6 SRTPV system shall be designed, engineered and constructed and operated by the seller or on his behalf with reasonable diligence subject to all applicable Indian laws, rules, Regulations as amended from time to time and orders having the force of law.
- 1.7 Adhere to the following power quality measures as per the International and Indian standards and/or such other measures stipulated by KERC/BESCOM.
 - a. Harmonic current: Harmonic current injections from a generation unit shall not exceed the limits specified in IEEE 519.
 - b. Voltage at the injection point should be in the operating range of 80% to 110% of the nominal connected voltage.


Secretary
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Chikkabanavara, Bangalore - 560 090.

ಕರ್ನಾಟಕ ಸರ್ಕಾರ
Government of Karnataka

ನೋಂದಣಿ ಹಾಗೂ ಮುದ್ರಾಂಕ ಇಲಾಖೆ
Registration and Stamps Department

ಈ ಹಾಳೆಯನ್ನು ಯಾವುದೇ ದಸ್ತಾವೇಜಿಗೆ ಉಪಯೋಗಿಸಬಹುದು
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ಮೊ: 

ದಸ್ತಾವೇಜನ್ನು ಬರೆದುಕೊಟ್ಟ ದಿನಾಂಕ
Date of execution

ಜಮಾ ಮಾಡಿದ ಒಟ್ಟು ಮುದ್ರಾಂಕ ಶುಲ್ಕ ರೂ.
Total stamp duty paid Rs.

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Document Sheet

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- c. Flicker: Operation of Photovoltaic system should not cause voltage flicker in excess of the limits stated in the relevant sections of IEC standards or other equivalent Indian standards, if any.
 - d. Frequency: When the Distribution system frequency deviates outside the specified conditions (50.05 Hz on upper side and 47.5 Hz on lower side), the SRTPV system shall shift to island mode
 - e. DC Injection: Photovoltaic system should not inject DC power more than 0.5% of all rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.
 - f. Power Factor: While the output of the inverter is greater than 50% a lagging power factor of greater than 0.9 shall be maintained.
- 1.8 The SRTPV system in the event of voltage or frequency variations must island/disconnect itself as per IEC standards within the stipulated period.

2. Safety:

The seller shall comply with the following safety measures:

- 2.1 The seller shall comply with the Central Electricity Authority (Measures Relating to Safety And Electricity Supply) Regulations 2010.
- 2.2 The Seller shall ensure that, the design, installation, maintenance and operation of the SRTPV system is in a manner conducive to the safety of the SRTPV system as well as the ESCOM's distribution system.


Secretary
PKM Educational Trust

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Government of Karnataka

ದಸ್ತಾವೇಜು ಹಾಳೆ
Document Sheet

ನೋಂದಣಿ ಹಾಗೂ ಮುದ್ರಾಂಕ ಇಲಾಖೆ
Registration and Stamps Department

ಈ ಹಾಳೆಯನ್ನು ಯಾವುದೇ ದಸ್ತಾವೇಜಿಗೆ ಉಪಯೋಗಿಸಬಹುದು
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ದಸ್ತಾವೇಜನ್ನು ಬರೆದುಕೊಳ್ಳುವ ದಿನಾಂಕ
Date of execution

ಪಾವತಿಸಿದ ಒಟ್ಟು ಮುದ್ರಾಂಕ ಶುಲ್ಕ ರೂ.
Total stamp duty paid Rs.

ಬೆಲೆ : ರೂ. 2/-

2.3 If the seller's SRTPV system either causes damage to and/or produces adverse effects on the other consumers or BESCOM's assets, Seller will disconnect SRTPV system immediately from the distribution system by himself or upon directions from the BESCOM and rectify the same at his own cost before reconnection.

3. Clearances and Approvals:

The Seller shall obtain BESCOM's and other statutory approvals and clearances before connecting the SRTPV system to the distribution system.

4. Access and Disconnection

4.1 BESCOM shall have access to metering equipment and disconnecting device of SRTPV system, both automatic and manual, at all times.

4.2 In emergency or outage situation, where there is no access to a disconnecting device either automatic or manual, the BESCOM shall have the right to disconnect power supply to the premises.

5. Liabilities

The Seller shall be solely responsible for availing any fiscal or other incentive provided by the State/Central Government, at his own expenses.

6. Commercial Settlement

6.1 Tariff

- The BESCOM shall pay for the net metered energy at Rs.9.56per KWh as determined by the KERC for the term of the agreement.

[Signature]

Secretary

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Chikkabanavara, Bangalore - 560 090.



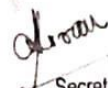
- b. The Seller shall pay the Electricity tax and other statutory levies, pertaining to SRTPV generation, as may be levied from time to time.
- c. The seller shall not have any claim for compensation, if the Solar power generated by his SRTPV system could not be absorbed by the distribution system due to failure of power supply in the grid/distribution system for the reasons, such as line clear, load shedding and line faults, whatsoever.

7. Metering:

7.1 The parties shall arrange to shift the existing meter to the generation side of SRTPV to measure solar power generation and install Bi-directional meter (whole current/CT operated) for recording export and import of energy at the point of interconnection to the distribution system. The bi directional meter shall comply with the Central Electricity Authority (Installation and operation of meters) Regulations, 2006 and shall have the following features:

- Separate registers for recording export and import energy with facility to download by Meter Reading instrument (MRI).
- kVA, kW and kVAR measuring registers for both import and export.
- Meter shall have RS232 (or higher) communication optical port/Radio Frequency (RF) port to support Automatic Meter Reading (AMR).

7.2 The seller shall install the meter of SRTPV system and bi directional meter in separate meter boxes in the same proximity or at a suitable place in the premises accessible for recording the reading whenever necessary.


Secretary
PKM Educational Trust
201/1, 2nd Floor, Bangalore - 560 002




8. BILLING AND PAYMENT:

- 8.1 BESCOM shall issue monthly electricity bill for the net metered energy on the scheduled date of meter reading.
- 8.2 In case, the exported energy is more than the imported energy, BESCOM shall pay for the net energy exported as per Tariff agreed in this agreement within 30 days of issue of bills duly adjusting the fixed charges and electricity duty if any.
- 8.3 In case, the exported energy is less than the imported energy, the seller shall pay BESCOM for the net imported energy as per the prevailing retail supply tariff determined by the commission from time to time.
- 8.4 BESCOM shall pay interest at the same rates as is being levied on the consumers for late payment charges in case of any delay in payment for the net energy exported beyond 30(thirty) days period from the date of issue of bill.

Explanation: Net metered energy means the difference of meter readings of energy injected by the SRTPV system into the grid (export) and the energy drawn from the grid for use by the seller (import) recorded in the bi-directional meter.

9. Terms and Termination of the Agreement:

- 9.1 This agreement shall be in force for a period of 25 years from the date of commissioning of the SRTPV system unless terminated otherwise as provided here under.


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9.2 The Seller shall have the right to terminate this agreement at any time by serving a written notice 60 (Sixty) days in advance to BESCOM.

9.3 If the Seller commits any breach of the terms of the Agreement, BESCOM shall serve a written notice specifying the breach and calling upon the seller to remedy/rectify the same within 30 (thirty) days or at such other period from the delivery of the notice, ESCOM may terminate the agreement by delivering the termination notice, if the seller fails to remedy/rectify.

9.4 Upon termination of this Agreement, seller shall disconnection the SRTPV system from the distribution system and intimate the same to BESCOM.

10. Dispute Resolution:

All the disputes between the parties arising out of or in connection with this agreement shall be first tried to be settled through mutual negotiation. The parties shall resolve the dispute in good faith and in equitable manner. In case of failure to resolve the dispute, either of the parties may approach appropriate Forum of law.

IN WITNESS WHEREOF, the Seller and the BESCOM have entered into this Agreement executed on the date and year first set forth above.

For AND ON BEHALF OF Bangalore Electricity Supply Company Limited	For AND ON BEHALF OF SELLER
By: (Name) Designation: Address:	By: (Name) Designation: Address:
WITNESS: In Presence of Name & Designation:	WITNESS: In Presence of Name:
WITNESS: In Presence of Name & Designation:	WITNESS: In Presence of Name:

[Signature]
Secretary

Evidences



Solar panels at the terrace of RRCOP



Wheeling to the grid

