REQUEST FOR PROPOSAL FOR SUPPLY, INSTALLATION, TESTING, COMMISSIONING & COMPREHENSIVE MAINTENANCE OF 75 kW_P HYBRID ROOFTOP GRID CONNECTED SOLAR PV SYSTEM WITH BATTERY ENERGY STORAGE (BESS) SYSTEM ON NET METERING BASIS

AND

HEAT PUMP BASED HOT WATER SYSTEMS

SHRI BHIMESHWAR SADGURU NITYANAND SANSTHA,GANESHPURI,

At. Post Ganeshpuri , Tal - Bhiwandi, Dist- Thane , Pin 401206

Website: https://www.nityanand.org

August 2026

Tender Reference No- SBSNS/SOLAR/45/2026

Dated: AUGUST 2026

NOTICE INVITING TENDERS

Name of Work : REQUEST FOR PROPOSAL FOR SUPPLY, INSTALLATION, TESTING, COMMISSIONING & COMPREHENSIVE MAINTENANCE OF 75 kWp HYBRID ROOFTOP GRID CONNECTED SOLAR PV SYSTEM WITH BATTERY ENERGY STORAGE SYSTEM (BESS) ON NET METERING BASIS AND HEAT PUMP BASED HOT WATER SYSTEMS

Sealed tenders are invited in two envelope system from the reputed agencies having relevant experience for the work of "supply, installation, testing, commissioning & comprehensive maintenance of 75 kWp hybrid rooftop grid connected solar PV system with battery energy storage system (BESS) on net metering basis and heat pump based hot water systems" at Shri Bhimeshwar Sadguru Nityanand Sanstha (SBSNS Trust), Ganeshpuri, Tal. Bhiwandi Thane District of Maharashtra under the jurisdiction of SBSNS Trust.

Scope of Work:

1. Design, engineering, procurement, erection, installation, commissioning and testing at site and comprehensive maintenance of 75 kwp hybrid rooftop grid connected solar PV system with battery energy storage (BESS) system on net metering basis complete with accessories as may be required for erection, commissioning and successful continuous operation of up to 75 kWp capacity Net metering-based rooftop Power Plants interconnected with the DISCOM's grid.

2. Supply, installation, testing, and commissioning and comprehensive maintenance of 2 Air Supply Heat Pumps (ASHP) units with proper mounting and alignment as per following requirement:

    - 175 LPH ASHP, with 1000 Liters MS tank with Epoxy coating
    - 1100 LPH ASHP, with 5000 Liters MS tank with Epoxy coating

    - Complete with hot water piping network: PPR/GI/CPVC pipes, insulation, supports, clamps (approximate lengths 1¼": 160 m; 1": 40 m; ¾": 728 m).
    - All electrical works: power cabling, control wiring, panel connections, earthing, MCBs.
    - Supply and installation of water softner plant of adequate capacity and quality, all valves: NRV, PRV, isolation and safety valves as per required quantity. The above quantities are tentative. Bidders are required to refer tender document for more details.

Work completion period :- 3 months

Penalty Clause - Penalty will be charged for work delayed beyond the prescribed work completion period at 0.5% of the contract value, per week of delay.

Submission Requirements

1. **COVERING LETTER (in prescribed format)**
2. **ENVELOPE 1- Technical Bid Envelope**
   - Bidder Profile
   - Proof of PAN Registration
   - Proof of GST Registration Certificate
   - Past Work Experience for similar works
   - Two Demand Drafts in Favour of "Shri Bhimeshwar Sadguru Nityanand Sanstha" amounting to
     - Rs.. 10,000/- (Rupees Ten Thousand Only) as Tender Fees (non-refundable) and
     - Rs. 70,000/- (Rs. Seventy Thousand Only) as Earnest Money Deposit (refundable)

Note :

Bidders should submit self-attested documents/certificate copies in support of above in technical bid envelope.

EMD amount of Rs. 70,000/- (Rs. Seventy Thousand Only) will be retained as security deposit from the successful bidder and will be returned to remaining bidders

The security deposit will be returned to the successful bidder after satisfactory completion of work.

3. **ENVELOPE 2- Financial Bid Envelope**
   - Financial offer in prescribed format
   - Signed and sealed copy of tender document and replies to pre-bid queries.

Note : Among the bids received on and before due date & time :-

- First Technical bid will be opened for confirmation of eligibility of technical qualification as mentioned Notice Inviting tender.
- Thereafter, Financial bid of Technically Qualified Bidders will only be opened.
- Decision of SBSNS trust in selection of bidder will be final & binding on all bidders.

Submission Details

Start of sale of tender document: 17 August 2026

Pre-bid Meeting: 26 August 2026

Last Date for Submission: 8 September 2026

The sealed tenders should be submitted to:

Chairman / Trustees

Shri Bhimeshwar Sadguru Nityanand Sanstha, Ganeshpuri Tal-Bhiwandi, Dist- Thane, Pin : 401206

Encl.: - Detailed RFP Including Scope for the Work

ANNNEXURE A- COVERING LETTER

Date:

To,

The Board of Trustees,

Shri Bhimeshwar Sadguru Nityanand Sanstha,
Ganeshpuri Tal- Bhiwandi,

District - Thane, 401206

Subject: Submission of bids for "SUPPLY, INSTALLATION, TESTING, COMMISSIONING & COMPREHENSIVE MAINTENANCE OF 75 kWP HYBRID ROOFTOP GRID CONNECTED SOLAR PV SYSTEM WITH BATTERY ENERGY STORAGE (BESS) SYSTEM ON NET METERING BASIS AND HEAT PUMP BASED HOT WATER SYSTEMS"

Reference: Your Advertisement on the Website of Shri Bhimeshwar Sadguru Nityanand Sanstha. Ref. No.:- SBSNS/SOLAR/45/2026 dated August 2026

Respected Sir/Madam,

With reference to your Notice on your website Inviting Tender for "SUPPLY, INSTALLATION, TESTING, COMMISSIONING & COMPREHENSIVE MAINTENANCE OF 75 kWp HYBRID ROOFTOP GRID CONNECTED SOLAR PV SYSTEM WITH BATTERY ENERGY STORAGE (BESS) SYSTEM ON NET METERING BASIS AND HEAT PUMP BASED HOT WATER SYSTEMS", we hereby submit our proposal for your kind consideration.

We enclose the following documents in two envelopes as per your system requirement:

Envelope I:

Technical Bid Envelope

Company Profile

Company Registration Documents

Proof of GST Registration Certificate

Past Work Experience for similar works

Demand Draft in Favour of "Shri Bhimeshwar Sadguru Nityanand Sanstha" amounting to Rs.10,000/- (Rupees Ten Thousand Only) and E.M.D. of Rs. 70,000/- (Rs. Seventy Thousand Only) (refundable).

Note : All documents/certificate copies in support of above are self-attested and enclosed in technical bid envelope.

Envelope: II

Financial Bid Envelope

Financial offer in prescribed format

Signed and Sealed Copy of tender and replies to pre-bid queries

We hereby undertake -

We shall comply with all terms and conditions in letter and spirit mentioned in the Notice Inviting Tender.

Carry out the entire work as per the scope of work and submit test reports.

Ensure timely submission of the work completion report.

Maintain professional standards and comply with all applicable IS codes, regulations and guidelines.

We look forward to your favorable consideration of our Tender.

Thanking you,

Yours faithfully,

For [Name of Firm]

(Signature & Seal)

Name:

Designation:

Contact No.:

Email:

TENDER FOR

SUPPLY, INSTALLATION, TESTING, COMMISSIONING & COMPREHENSIVE MAINTENANCE OF 75 kWP HYBRID ROOFTOP GRID CONNECTED SOLAR PV SYSTEM WITH BATTERY ENERGY STORAGE (BESS) SYSTEM ON NET METERING BASIS

AND

HEAT PUMP BASED HOT WATER SYSTEMS

CONTENTS

REQUEST FOR PROPOSAL (RFP) FOR

SUPPLY, INSTALLATION, TESTING, COMMISSIONING & COMPREHENSIVE MAINTENANCE OF 75 kWP HYBRID ROOFTOP GRID CONNECTED SOLAR PV SYSTEM WITH BATTERY ENERGY STORAGE (BESS) SYSTEM ON NET METERING BASIS AND HEAT PUMP BASED HOT WATER SYSTEMS

Sealed tenders in Two Envelope System are invited from the reputed agencies having relevant experience for the work of "Supply, installation, testing, commissioning & comprehensive maintenance of 75 kWp hybrid rooftop grid connected solar PV system with battery energy storage (BESS) system on net metering basis and heat pump based hot water systems" at Shri Bhimeshwar Sadguru Nityanand Sanstha (SBSNS Trust), Ganeshpuri, Tal. Bhiwandi Thane District of Maharashtra.

Tender documents can be downloaded from 17 August 2026 to 08 September 2026 from the SBSNS Trust website https://www.nityanand.org/

The bidders are also required to pay Tender Fee of Rs. 10,000/- (Rupees Ten Thousand Only) (non-refundable) and E.M.D. of Rs. 70,000/- (Rs. Seventy Thousand Only) (refundable) in the form of Demand Draft and attach the same along with the bids submitted.

The tender fees and EMD shall be paid only through DD at the time of bid sub mission in Technical Bid Envelop.

The duly filled tender document along with proof of payment of tender fees and EMD should reach SBSNS Trust office on or before 08 September 2026 before 5 pm.

Sealed tenders will be opened in the presence of SBSNS Trustees. Bidders may join the tender opening process if they opt to.

The SBSNS Trust reserves the right to award a modified capacity contract to the selected bidder and the right to reject one or all tenders without assigning any reasons whatsoever.

The Board of Trustees of SBSNS Trust reserves right to accept or reject any or all the bids.

The Board of Trustees, SBSNS Trust, Ganeshpuri reserves the right to annul the tendering process without any clarification to any bidding entities.

1 Profile of the Bidder:

(to be printed on the Bidder letter head and submitted in the technical Bid)

Sr. No.	Particulars	Please fill in the details and enclose documents wherever required
1.	Name of the Organization/Bidder/Firm	
2.	Year of Registration / Establishment	
3.	PAN Number	
4.	Type of Organization/Bidder/Firm: (i.e., Proprietorship, Partnership, Ltd, etc.)	
5.	Name of the Proprietor/Director/ Head/Manager/Contact Persons of the organization (Biodata with full details of address and contact numbers of key top Officials including owners/partners / Directors/ Managers need to be attached separately)	
6.	Phone No.	
7.	Mobile No.	
8.	Email address	
9.	PAN No.	
10.	MEDA Registration Number if available	
11.	Details of Tender Fee payment – Receipt No. or Bank Draft No.	
12.	Details of EMD / Bank Draft No.:	
13.	Website	
14.	Address for Communication (with pin code).	
15.	Any other details need to be specified.	

(Note: Please attach documentary proof of the relevant information in technical bid document)

2 Background:

A growing worldwide concern for the conservation of energy has reawakened interest in ecologically sustainable materials, processes and sources of energy.

Solar photovoltaic is one such system that is highly consistent and reliable throughout the year and is ideally suited for supplying power at remote locations in countries like India, which is blessed by sunlight for most of the year.

In continuation of the promotional activities for the use of Solar Energy, the Ministry of New &

Renewable Energy, Government of Maharashtra introduced a scheme of solar rooftop.

Shri Bhimeshwar Sadguru Nityanand Sanstha, Ganeshpuri at post Ganeshpuri, Tal. Bhiwandi (hereinafter referred to as 'SBSNS Trust') is not just a spiritual destination but also a source of social cause imparting various services to the needy people through its various social activities.

In continuing its commitment to social causes and sustainability, the SBSNS Trust has embarked on a mission to reduce its carbon footprint through utilization of rooftop solar PV systems and energy efficient heat pump systems to cater to its energy and hot water requirement.

3 Existing System Details

The SBSNS Trust is being supplied electricity by the MSEDCL as per following details

Supply DISCOM	*MSEDCL*
Supply Voltage	*415 V*
Consumer No.	*013060002333*
Sanctioned Demand	*75 kW*
Connection Type	*LT- I A, Residential*
Spare Feeder if available for solar	*1600 A*

4 GENERAL TERMS AND CONDITIONS:

Tender documents shall be submitted through Registered Post/Courier/Hand delivery on or before 08 September 2026 by 5.00 p.m. by enclosing in a sealed cover superscripted with the name of the work and addressed to “Chairman/ Trustees, Shri Bhimeshwar Sadguru Nityanand Sanstha, Ganeshpuri, At Post Ganeshpuri, Tal. Bhiwandi, Dist. Thane- 401206. Delayed offers and ordinary post offers shall not be opened and considered.

1. The Technical and Price Bids are to be sealed in separate covers superscribed appropriately as ENVELOPE 1- Technical Envelope and ENVELOPE 2- Financial Envelope and both the covers shall be enclosed in a single outer cover as mentioned above. The Technical Bid should contain no reference to the Price quoted. The Technical bid Envelope shall also include two separate DDs towards Tender Fees and EMD amount along with a covering letter as per Annexure A. Any bid observed to be in deviation with this Clause shall be outrightly rejected.

2. **Pre-bid Meeting:**

The pre-bid meeting shall be held on 26 August 2026 at 3 pm at SBSNS Trust office (address mentioned above).

The pre-bid queries shall be submitted via email at bhagwan@nityanand.org up to 2 days prior to pre-bid meeting date to be considered for replies.

The minutes of the pre-bid meeting shall be uploaded on SBSNS Trust website within 2 days from the pre-bid meeting.

3. Earnest Money Deposit will be refunded to unsuccessful agencies without interest after finalization of successful Bidder/s by SBSNS Trust.
4. Tender received without Earnest Money Deposit (EMD) and with incomplete details shall be rejected.
5. The Bidder is required to mandatorily visit the site to understand the nature and type of works prior to submitting the tender.
6. The bidder shall submit a signed copy of tender document as well as replies to pre-bid queries as a part of ENVELOPE-2 financial bid with each page signed by the authorized signatory of the bidder and stamped with company stamp.
7. The Bidder should have valid License / Registrations whichever are applicable by law and required for providing services mentioned in this tender.
8. The tender is not transferable.
9. The EMD of the successful bidder will be converted and retained as Performance Security (inclusive of EMD amount) with SBSNS Trust. This security deposit shall be refundable at the end of the defect liability period of 1 year from the date of commissioning without interest after deducting the dues from the Bidder if any.
10. The Bidder must bid for whole quantity and both items. Partial bidding will not be accepted and will not be considered for further process.
11. Assigning or subletting full or any portion of the contract shall not be allowed under any circumstances.
12. The financial bid shall contain only Financial Bid as per format Annexure A. and signed copy of tender document as mentioned in Point 6 above.
13. The bidder must quote the prices strictly in the manner as indicated in the document, failing which tender is liable for rejection. The rate/ cost shall be entered in words as well as in figures.
14. Tender with incomplete details / false details / with omissions & errors etc. shall be rejected. Conditional tender will be rejected.
15. The Prices quoted should be having inclusive of all applicable taxes and all other applicable charges related with providing services mentioned in tender. The Bidder should provide a detailed breakup of the costs of various systems, material as per BOQ and the applicable taxes.
16. Tenders offer shall be valid for a period of 90 days from the date of submission of tender.

17. SBSNS Trust does not bind to accept the lowest or any tender and reserves the right to accept or reject any or all the tenders, either in whole or in part, without assigning any reasons thereof. the SBSNS Trust may finalise the Bidder based on the criteria which deemed to be fit as per the SBSNS Trust requirements.
18. Direct or indirect canvassing in any form is strictly prohibited.

5 PRE-QUALIFYING CRITERIA:

Following qualifying criteria shall be applied for analysing the bidder capabilities and to consider eligible bidders for price Bid Opening

5.1 General Eligibility Criteria:

- The Bidder should be a body incorporated in India under the Companies Act, 1956 or 2013, or a Partnership Firm registered under the Partnership Act, 1932, or a Limited Liability Partnership (LLP) registered under the LLP Act, 2008, or a registered Sole Proprietor, and engaged in the Business of Solar Power.

  The bidder should:
  (i) Have valid Income Tax and GST registration
  (ii) Be in Business of Solar Project Implementation for not less than 3 years
  (iii) Not have been Blacklisted or barred from continuing the work by any Government Authority or any Client in the Past 3 years
  (iv) The Bidder should not have been declared insolvent. Bankrupt or incapacitated to undertake business

  A copy of certificate of incorporation, business entailed company profile and an undertaking regarding blacklisting shall be furnished along with the Bid in support of above.

5.2 Technical Eligibility Criteria:

The bidder should have designed, procured, supplied, erected/supervised erection and commissioning of Rooftop Solar Project of cumulative capacity of 1000 kWp in last 3 years of which:
(i) At least 1 project should be of size 100 kWp or
(ii) At least 2 projects should be of size not less than 80 kWp each

In addition to this, the bidder shall be required to provide a letter of affiliation/ association with a Heat Pump Supplier cum Installer with which it intends to undertake the intended work. The affiliation/ association shall remain valid for the entire period of the project execution up to handover of the project to SBSNS Trust.

The affiliate / associate company should be able to fulfil following eligibility criteria:

(i) Have valid Income Tax and GST registration

(Ii) Be in Business of Heat Pump Implementation for not less than 3 years

(Iii) Not have been Blacklisted or barred from continuing the work by any Government Authority or any Client in the Past 3 years

(Iv) Should have installed Heat Pumps of capacity at least 5000 LPD in a single project or two projects of minimum capacity 3000 LPD.

The Bidder should Submit Copies of Work Orders & Completion Certificates in support of the technical qualifications stipulated above.

The Bidder should possess demonstrated capability of:

(i) Obtaining necessary Permits and Approvals from the local utilities and authorities through liaising

The Bidder should submit documentary evidence to substantiate the above.

5.3 Financial Criteria:

The Company Should have:

(i) Minimum Average Annual Turnover of 1 crore in last 3 Financial Years

(ii) Should have a Positive Net Worth as on bid date

The Bidder should submit requisite certificates from Chartered Accountant certifying the fulfilment of the financial eligibility criteria.

6 SPECIAL TERMS AND CONDITIONS:

1. The Bidder shall be responsible for complete design, engineering, procurement, erection, testing and commissioning of the Rooftop Solar PV System and heat pump systems. This would also include site arrangement & provisions of suitable power evacuation facility and connection of the Solar Plant with DISCOM's HT/ LT connection as applicable.
2. The Bidder shall have to be obtained the necessary approvals from DISCOM and complete the required formalities. SBSNS Trust will assist administratively in case required. Bidder shall have to arrange for all equipment/ meters etc (with testing certificate from govt. approved laboratory) required for the connection of Solar Power system to DISCOM's distribution network/ system.
3. The successful Bidder shall have to undertake all the needful to avail tariff benefits given by MERC/ Scheme launched by the MNRE - Government of India. Necessary formalities to sign all kind of agreements with DISCOM shall be done by the contractor as per MERC tariff and prevailing regulations. SBSNS Trust shall assist in providing necessary administrative documents required in support of all necessary agreements to be signed.
4. The successful bidder shall do the needful to avail benefit of exemption of custom and excise duty on the materials from Central/ State Government if applicable.
5. After successful commissioning of the project, the bidder is expected to maintain the system during the 1 year defect liability period.

6. Post Defect Liability Period, the Contractor shall undertake Comprehensive Maintenance of the project for a period of 5 years from the end of Defect Liability Period of 1 year. The rate quoted by the bidder shall be inclusive of the charges payable for providing such services.
7. Any Liquidated Damages or penalties applicable during DLP and Comprehensive maintenance period shall be recovered from the Performance Guaranty to be submitted by the selected bidder at the time of signing the contract.
8. The Bidder shall not display the photograph of the work and shall not take advantage through publicity of the work without written permission of the SBSNS Trust.
9. In the event of breach of any of the conditions of the contract at any time on the part of the Contractor the contract may be terminated summarily by the SBSNS Trust, without compensation to the contractor.
10. While making the risk purchases, the SBSNS Trust may exercise its own discretion. In all cases where orders are cancelled due to non-supply of stores, it will be treated as breach of contract and the SBSNS Trust shall act accordingly. It is clarified that the SBSNS Trust may resort to risk purchase without granting any extension.
11. The contract for the supply of various items can be repudiated at any time by the SBSNS Trust if the supplies are not made to its satisfaction. In case of non-performance in any form and shape of the terms & conditions of the agreement the SBSNS Trust has power to cancel the contract pertaining to the supply.
12. The SBSNS Trust shall reserve the right to visit site(s) of the bidders to verify the work completion undertaken by the bidder and submitted in the bid document.
13. Any dispute between the parties will be referred to the Board of Trustees, SBSNS Trust. The outcome will be binding on both the parties and shall be final.
14. In case of any disputes related with this tender process and tender work the decisions of The Board of Trustees of the SBSNS Trust shall be final and binding to the Bidder.
15. The jurisdiction for all litigations shall be civil courts of Thane district.

7 Special Conditions for Supply, Erection, Testing & Commissioning

7.1 GENERAL

1. SBSNS Trust reserves the right to reduce the scope of work and split the tender in two parts or more without assigning any reason, even after award of contract, if necessary for any site or all sites and thus variations in contract value shall be applicable. The quoted rates shall remain firm for the above said variation.
2. The materials, design and workmanship shall satisfy the applicable standards, specifications contained herein, and codes referred to. Where the Technical Specifications stipulate requirements in addition to those contained in the standard codes and specifications, those additional

requirements shall be satisfied.

In case of contradiction between Indian Standards, General Conditions of Contract, Special Conditions of Contract, specifications, drawings, instructions of Engineer-in charge, the following shall prevail in order of precedence:

(i) Detailed Letter of Intent along with Statement of Agreed variations and its enclosures.

(ii) Special Conditions of Contract

(iii) Job specifications

(iv) Drawings

(v) General Conditions of Contract

7.2 RESPONSIBILITY OF THE BIDDER

1. All expenses towards mobilization at site and demobilization including bringing in equipment, work force, materials, dismantling the equipment, clearing the site after completion of work and liaising for interconnection of Power Plant with the Grid with concerned departments/ agencies etc. shall be deemed to be included in the prices quoted and no separate payments on account of such expenses shall be entertained.
2. Contractor may have to work in energized or partly energized conditions. In such cases, it shall be responsibility of the contractor to arrange for necessary permits or shuts downs and provide skilled and responsible persons for the execution of works. Contractor shall organize his works during the shutdown periods properly and complete the programmed works within the time given.

   Contractor shall not be paid any extra payments for working under the above said circumstances.
3. It shall be entirely the contractor's responsibility to provide, operate and maintain all necessary construction equipment, scaffoldings and safety gadgets, cranes and other lifting tackles, tools and appliances to perform the work in a workman like and efficient manner and complete all the jobs as per time schedules. However, if any equipment/ facility is provided by the SBSNS Trust, the same shall be on chargeable basis.
4. The procurement and supply, in sequence and at the appropriate time, of all materials and consumables shall be entirely the contractor's responsibility and his rates for execution of work will be inclusive of supply of all these items.
5. The Contractor shall carry out work in the premises in a manner as to cause minimum disturbance to the residents of the SBSNS Trust in terms of material handling, vehicular movements, operation noises and workmen movement.
6. In case any material is issued by the SBSNS Trust, then it will be properly used and maintained. After completion of its use, it will be returned to SBSNS Trust in good condition. In case of damage or misuse of such stores, SBSNS Trust will recover the cost from the contractor from the payments due to the Bidder.

7.3 COMPLETION TIME

1. The completion time is deemed to be essence of the Contract and shall be firm and binding. The Bidder shall complete the design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning within a period of **Three months** from the date of award of contract.
2. The Bidder shall indicate the duration of all the activities in activity chart in conformity with the overall schedule of the completion of project. Bidder shall submit the activity chart which shall be discussed and finalized and shall form an integral part of the Contract.

7.4 Liquidated Damages

In case the Contractor fails to achieve the completion time-frame for reasons attributable to his performance of the contract Liquidated Damages shall be leviable at the rate of 0.5% of the Contract value per week or part thereof delay in achieving the completion timelines. Such LDs shall be cumulatively limited to 5% of the Contract Value.

In case the delay is beyond Limitation of Liability period stated above, SBSNS Trust may consider terminating the Contract and all the further payments shall be settled until the delayed activity is cured or the termination proceedings are concluded.

In case the Contractor fails to address the issues raised during comprehensive period, the Contractor will be liable to pay LDs at the rate of 0.5% per week of delay limited to 5% of the contract value.

7.5 CONTRACTOR/ REPRESENTATIVES AT THE SITE

During the execution of the contract the Bidder shall ensure responsible person with authority to take decisions to be available at site all the time. Such person deputed by the Bidder shall report to the engineer in-charge for smooth execution and timely completion of the work. The contractor available at all reasonable hours to receive instructions, notices or other communications. The contractor shall be responsible for any misconduct/ indiscipline by his employees or subcontractor & its workmen. The contractor shall abide by the instructions of the engineer in charge, if given in this regard.

7.6 SUB-LETTING OF WORK

In the eventuality sub-letting of work, the Contractor shall obtain prior written consent from the SBSNS Trust and will ensure that the party to whom work is being sublet is adequately equipped to deliver the Work as per specified standards. Further, the contractor's liability or obligations will not get altered/ delegated to sub-contractor. If any subcontractor engaged upon the work at the site executes any work which in the opinion of the engineer in-charge is not in accordance with the

contract documents, the SBSNS Trust may give written notice to the contractor requesting him to terminate such sub-contracts and the contractor on the receipt of such notice shall terminate such contracts.

7.7 USE OF COMPLETED PORTIONS:

1. Whenever in the opinion of the SBSNS Trust, the work or any part thereof is in a condition suitable for use and in the best interest of the SBSNS Trust requires use, the SBSNS Trust may take possession of the same. The contractor shall, however, be not relieved of his pending obligations.
2. Prior to the date of final acceptance of the work by the SBSNS Trust, all necessary repairs or renewals in the work or part thereof so used on account of defective materials or workmanship or due to the operations failure except normal wear & tear shall be at the expenses of the contractor. Such use shall neither relieve the contractor or any of his responsibilities under the contract, nor act as waiver by the SBSNS Trust of the conditions thereof. However, if in the opinion of the SBSNS Trust the use of the work or the part thereof delays the completion of the remainder of the work, the SBSNS Trust may grant such extensions of time as it may consider reasonable. The decision of the SBSNS Trust in the matter shall be final. The contractor shall not be entitled to claim any compensation on account of such use by the SBSNS Trust.

7.8 PAYMENT TERMS

- 10 % of the Work Order Value shall be paid as an interest free advance upon signing of the Contract on submission of Advance Bank Guarantee
- 40 % of the Work Order Value shall be paid after receipt of duly tested major materials on site i.e. modules, inverters, module mounting structure, heat pump and heat pump tank, and accepted by SBSNS Trust. Submission of Factory Test Reports, Acceptance Tests and Quality Assurance Test is mandatory to be submitted prior to dispatch of material.
- 25% of the Work Order Value shall be paid after completion of the erection of the material at the site.
- 20 % of the Work Order Value shall be paid after successfully flowing of the electrons in the system & getting all the necessary clearances from the Utility in case of rooftop solar PV system and on successful demonstration of generation of hot water from the all the Heat Pump Systems.
- Last 5% amount will be paid after receipt of Performance Bank Guarantee of amount equivalent to 5% of Order Value, which shall be Unconditional and Irrevocable issued from a Nationalized bank valid for 6 years (1 year DLP+ 5 years comprehensive maintenance), issue the acceptance certificate after having utilize the system for 15 days & after having resolved all the teething problems in the system.

- The Earnest Money Deposit, submitted at the time of bid submission and converted to Security Deposit at the time of signing of the Contract will be refunded after submission of 12 months report of defect free operation of the solar PV systems and heat pump systems
- The Performance Bank Guarantee submitted at the time of commissioning will be returned after 1+5 years from the date of commissioning after assessing satisfactory performance of the system.
- The Advance bank guarantee of 10% value (submitted at the time of release of advance), shall be returned at the time of issuance of Work Completion Report by SBSNS Trust within 15 days of commissioning of plant.

7.9 RATES TO BE INCLUSIVE

1. The rates quoted by the Bidder shall remain firm and fixed and binding till the issue of Acceptance certificate and shall not be subject to escalation. Rates shall be deemed to include and cover all costs, expenses, taxes, construction cess, any kind of cess, duties, levies, royalties, foreign exchange variation, etc. and liabilities of every description and all risk of every kind to be taken in execution, completing and handing over the work to the SBSNS Trust by the Bidder.

   The SBSNS Trust shall deduct income tax, Sales tax or Works Contract as applicable on the indivisible works contract & other applicable taxes as per the prevailing rates from the bills of the contractor. The SBSNS Trust shall not be responsible for any such liability on the contractor in respect of this contract and exclusion of any applicable taxes at prescribed rates due to ignorance or otherwise shall not form a reason for claiming anything extra later.
2. The contractor shall guarantee the solar power plant & installation work for a period of 12 (twelve) months from the date of completion stabilization period. Any damage or defect that may arise or lie undiscovered at the time of issue of completion certificate, connected in any way with the equipment or materials supplied by him or in the workmanship shall be rectified or replaced by the contractor at his own expenses as deemed necessary by the SBSNS Trust or in default, the SBSNS Trust may cause the same to be made good by other workman and deduct expenses of which the certificate of SBSNS Trust shall be final from any sums that may be then or at any time thereafter, become due to the Bidder or from his security deposit.

7.10 DEFECTS PRIOR TO TAKING OVER:

1. If at any time before the work is taken over, the SBSNS Trust shall:
   (i) Decide that any work done or materials used by the contractor or any subcontractor is defective or not in accordance with the contract, or that the works or any portion thereof are defective, or do not fulfil the requirements of contract (all such matters being hereinafter,

called 'Defects' in this clause) and

(ii) As soon as reasonably practicable notice given to the contractor in writing of the said decision specifying particulars of the defects alleged to exist or to have occurred then the contractor shall at his own expense and with all efforts would make good the defects so specified.

2. In case the contractor fails to do so after 2 written notices of the SBSNS Trust, the Trust may take, at the cost and risk of the contractor, such steps as may in all circumstances be reasonable to make good such defects. The expenditure so incurred by the SBSNS Trust will be recovered from the amount due to the contractor. The decision of the Engineer-in charge regarding the amount to be recovered from the contractor will be final and binding on the contractor. As soon as the works have been completed in accordance with the contract and have passed the tests on completion, the SBSNS Trust shall issue a certificate in which it shall certify the date on which the works have been so completed and have passed the said tests and the SBSNS Trust shall be deemed to have taken over the works on the date so certified.

7.11 DEFECTS AFTER TAKING OVER

1. In order that the contractor could obtain a completion certificate, he shall rectify any defect arising from the defective materials supplied by the contractor or workmanship or any act or omission of the contract or that may have been noticed or developed after the works or group of the works has been taken over, the period allowed for carrying out such works will be normally 15 days. If any defect be not remedied within a reasonable time the SBSNS Trust may proceed to do the work at contractors' risk and expense and deduct from the final bill such amount as may be decided by the SBSNS Trust.
2. If by reason of any default on the part of the contractor a completion certificate has not been issued in respect of every portion of the works within one month after the date fixed by the contract for the completion of the work, the SBSNS Trust shall be at liberty to use the works or any portion thereof in respect of which a completion certificate has not been issued , provided that the works or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completion of these works for the issue of completion certificate.
3. All the aforesaid safeguards/ rights provided for the SBSNS Trust shall not prejudice its other rights/ remedies elsewhere provided herein and/ or under law.

7.12 ACCEPTANCE / COMPLETION CERTIFICATE

1. On satisfactory completion of work the contractor shall apply to the State/ local Power Utility/CEIG, as the case may be, for the issue of commissioning certificate and the same shall be arranged within 15 days of the commissioning of work in all respects (if required), after verifying from the completion documents and satisfying himself that the work has been completed in accordance with details set out in the construction and erection drawings, and the contract documents. No

completion certificate shall be given, nor shall the work be deemed to have been executed until the export of generated solar power commenced, statutory requirements are completed, and all scaffolding, surplus materials and rubbish is cleaned off the site completely.

2. The following documents will form the completion certificate documents:
   a) The technical documents as per scope of work & technical specifications according to which the work was carried out.
   b) Two sets of as built drawings showing therein the modification and corrections made during execution signed by the Engineer in charge. One digitized soft copy of as built drawings shall also be submitted.
   c) Certificates of type/ routine tests performed for various equipment at works along with O&M manuals
   d) Statutory clearances/ permissions.
   e) Payment of all statutory duties, taxes, labour wages & others. (The document (s) having evidence of paying statutory duties, taxes etc. as per requirement of concerned statutory authorities).
   f) The copy of certified initial meter reading of main meter and back up meter signed by power utility, etc.
   g) Certificate regarding completion of the facility in all respect by the PMC Consultant
   h) Approval of the Central Financial Assistance available for the rooftop solar project under MNRE, Government of India
   i) Guarantee/warranty card of the equipment installed**.**

7.13 ESTIMATED ANNUAL ENERGY GENERATION

Bidder is required to furnish estimated annual energy generation for the first year as per attached Annexure –B.

No change in data supplied by the Bidder at the time of submission of the bid related to estimation of the generation like Module type, module size, Location of site etc. shall be permitted. However, during the execution, in case it becomes inevitable for the Bidder then minor changes may be accepted by the SBSNS Trust, but this should not affect the annual energy estimation.

Note: - The Solar Energy generation shall be calculated based on meter reading of Bidirectional Energy Meter installed at each site on A.C. side.

7.14 TESTS/ INSPECTION

1. All the standard tests in accordance with the standards adopted shall be carried out at the manufacturer's works on all the major equipment and accessories covered by this specification to ensure efficient operation and satisfactory performance of all the component/ parts. The Bidder

shall furnish a complete list and details of all such tests to be conducted on different equipment. The contractor will furnish a schedule of testing so that the SBSNS Trust may associate his representative to witness the tests on any one set of major components. The contractor shall also furnish copies of all test/ inspection reports for reference to the SBSNS Trust.

2. Any special test to be performed shall be mutually agreed upon between the Bidder and the SBSNS Trust.
3. All equipment shall be further tested at site, as recommended, before commissioning.
4. The work is always subject to inspection and at all places by the Engineer In charge. The contractor shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the relevant codes of practice during the performance of the work.
5. The decision of the Engineer-in-charge regarding the quality of work and materials and performance to the specifications and drawings shall be final.
6. If any item is rejected during test/ inspection, the same shall be replaced/ rectified by contractor without any cost
7. Third party inspection of all major items shall be done by Bidder appointed/ authorised by the SBSNS Trust, if required. All expenses incurred for third party inspection shall be borne by the SBSNS Trust.

7.15 GUARANTEE

1. The manufacturer's guarantee for all bought out items shall be made available to the SBSNS Trust and shall be valid at least for the entire defect liability period. If manufacturer's guarantee is not so available to the the SBSNS Trust, the contractor himself shall guarantee the items supplied for the entire defect liability period. However, in case the manufacturer's guarantee period is more than the defect liability period, such guarantees for such excess period shall be passed on by the contractor to the SBSNS Trust.
2. Any material and/ or equipment and/ or accessories which shall prove defective or which shall fail to meet the desired design guarantee or performance guarantee during the defects liability period, the contractor shall replace/ rectified at his own cost that material and/ or equipment and/ or accessories with another of make approved by the SBSNS Trust. Manufacturer's/ contractor's guarantee for such replaced equipment shall also be made available to the SBSNS Trust and should be kept valid at least for one year from the date of last replacement
3. The contractor shall guarantee the satisfactory performance of the SPV based power plant for a period of 12 months from the date of completion of stabilization period of 15 days. Any damage or defect, that may arise after or remain undiscovered at the time of issue of commissioning certificate, same shall be rectified or replaced by the contractor at his own expenses as deemed necessary by the engineer-in-charge. This guarantee shall be applicable for the quality of works executed as well as for the equipment/ fittings supplied by the contractor.

7.16 STATUTORY APPROVAL FOR WORKS

1. All statutory approvals for the works (from power utility/ Electrical Inspector or any other approval required as per applicable law, rules thereof shall be obtained by the Bidder. The statutory fees applicable till warranty period shall be included in the offered price.
2. The Inspection and acceptance of the work as above shall not absolve the contractor from any of his responsibility under this contract.
3. If any penalty/ levy becomes payable to the State Electricity Utility on account of low power factor of the SPV based power plant, the same must be borne by the contractor only.
4. The contractor shall be responsible for interconnection of photovoltaic based power plant with the grid, to export power from photovoltaic based power plant. The date of commissioning will not be considered prior to inter connection of photovoltaic based power plant with the grid. Therefore, the contractor should make all efforts for installation of metering equipment, etc., and carry out the inter connection prior to the final commissioning of the photovoltaic based power plant.

*7.17 **Confidentiality:***

Both parties agree to safeguard and hold in confidence by information provided by the other party in connection with the assignment and to use such information solely for the purpose of carrying out the assignment as outlined in the enclosed offer. None of the foregoing shall, however, prevent either Party from complying with law and regulations prevailing from time to time and to provide any information to the Government / Statutory / Supervisory authorities in compliance with any request or requirement based upon such law.

The Bidder may prepare and furnish Client with analyses, presentations or other such materials or information in connection with this assignment (whether written or oral, the “materials”). The Bidder understands and agrees that any such Materials will be prepared, furnished or presented solely for Client’s use and may not be furnished or conveyed by the Bidder in whole or in part to any other person or entity without Client’s prior written consent, or used by the Bidder for any purpose other than that contemplated by this proposal.

8 SCOPE OF WORK :

The Scope of Work covered under this specification shall be but not limited to the followings: -

8.1 SUPPLY, INSTALLATION, TESTING, COMMISSIONING & COMPREHENSIVE MAINTENANCE OF 75 kW_P HYBRID ROOFTOP GRID CONNECTED SOLAR PV SYSTEM WITH BATTERY ENERGY STORAGE (BESS) SYSTEM ON NET METERING BASIS

1. Design, engineering, procurement, erection, installation, commissioning and testing at sites of suitable 75 kWp hybrid rooftop grid connected solar PV system with battery energy storage

(BESS) system on net metering basis may be required for successful continuous operation of up to 75 kWp capacity.

2. The said power plant shall be installed on the metal roof structures of the SBSNS Trust's Bal Bhojan Building while the main AC Cable from Bal Bhojan building shall be laid up to the main sub-station which is approximately 150 m from the Balbhojan building.
3. Design & manufacture of Module mounting structure for SPV module(s) along with design of Module mounting structure foundation, erection, testing & commissioning of all the Solar PV module(s).
4. Design, Supply, Installation, Testing and Commissioning of 100 kWh BESS system with DC Coupled Inverter.
5. Design, manufacturing, testing at works, transportation, supply, erection, testing at sites and commissioning of SPV based Power Plants' Internal electrical system.
6. Grid interfacing, panels, kiosks, protection equipment, metering equipment, LT lines for the evacuation point of the Solar PV based Power Plant up to sub-station.
7. Energy meter(s) for the export of power to the Local grid substation and recording import of the power from the grid, provided by DISCOM and installed by the supplier.
8. Undertake comprehensive maintenance during the defined OnM period including addressing any fault in the system within 48 hours.
9. Delay in addressing the fault beyond 48 hours shall attract a penalty of Rs. 2000 per day.

8.2 DESIGN, ENGINEERING, PROCUREMENT, INSTALLATION, COMMISSIONING & TESTING OF 2 NOS. OF HEAT PUMP SOLAR WATER HEATING SYSTEMS:

1. Supply, installation, testing, and commissioning of 2 Air Source Heat Pump (ASHP) units with proper mounting and alignment (including unloading, lifting, fabrication) as per following details:
2. ASHP 1100 LPH with 5000 Liters MS Tank with Epoxy coating Presurized tank at Nityananda Pratibha Building
3. ASHP 175 LPH with 1000 Liters MS Tank with Epoxy coating Pressurized tank at Bal Bhojan Building
4. Complete hot water piping network: PPR/GI/CPVC pipes, insulation, supports, clamps (1¼": 160 m; 1": 40 m; ¾": 728 m approx.)
5. All electrical works: power cabling, control wiring, panel connections, earthing, MCBs.
6. Supply and installation of all valves: NRV (2 nos.), PRV (2 nos.), isolation and safety valves (2 nos.).
7. The above piping and accessories are minimum required quantities for successful and safe operation of the heat pump systems. The bidder is expected to consider quantities as deemed fit based on the site visit and all safety related assessment made during site visit and standard industrial practices.

8. Installation of hot water taps at designated outlets across all buildings (50 nos. At Nityanand Pratibha and 5 nos. At Bal Bhojan).
9. System calibration, performance testing, and final commissioning.
10. Thermal insulation of all pipelines and tanks to minimize heat loss.
11. Submission of operation manuals, test reports, system drawings, and final handover documentation
12. The above dimensions are only indicative. Bidder are required to assess the dimensions and quantity including accessories such as taps, joints etc. as per site conditions and requirement so as to ensure delivery of hot water to the end user.

8.3 SAFETY EQUIPMENTS/ CHARTS, MISC. ITEMS ETC. PROVIDED AT SITES

1. Rubber mats of appropriate size, electrical shock treatment chart, fire extinguisher, fire buckets, danger notice board/ stickers etc. confirming relevant shall be provided at sites.
2. Suitable arrangement of ladder of sufficient strength and made of MS material with hot dip galvanized shall be provided at site(s).
3. It is contractor's responsibility to observe & implement safety rules & practices as per prevailing acts. the SBSNS Trust will not be responsible for any kind of accident/ damage done person(s) or property(ies) during the entire contract period. No compensation of any kind shall be given to contractor on breaching of any kind of safe working practice during the contract period.

8.4 STATUTORY APPROVALS

Obtaining statutory approvals/ clearances wherever applicable from Government departments but not limited to the following: -

- Pollution Control Board Clearance, if required
- Fire Department Clearance, if required
- Maharashtra Energy Development Agency (MEDA)
- Urban Local Body's permission, if required
- Power Utility – MSEDCL
- Chief Electrical Inspector (CEI), Government of Maharashtra
- Any other concerned authority

8.5 MANPOWER & UTILITIES

1. Deployment of manpower, required consumables, testing equipment during erection till commissioning, arrangement of power & water (in case of inability of SBSNS Trust to provide the

same) as required for this contract shall be arranged by the bidder.

2. DOCUMENTS – Submission of following documents

(i) drawings data design and engineering information to the SBSNS Trust for review and approval in four copies.

(ii) Detailed technical specification.

(iii) Design criteria.

(iv) General arrangement

(v) Schematic diagram for entire evacuation system up to interfacing with LT/ HT distribution at site

(vi) GA drawings for all types of structures, PCU & Interfacing, metering with LT/ HT distribution panels at site.

(vii) Quality assurance plans & Test report (for type, acceptance, and routine tests) for major items.

(viii) Two sets of all the drawings shall be fully corrected to agree with the actual "as built" site conditions and submitted to the SBSNS Trust after commissioning of the project for record purpose. One digitized soft copy of as built drawings shall also be submitted.

(ix) O & M Manuals of all the important equipment (in 02 sets).

8.6 TRAINING

Providing a detailed training to the SBSNS Trust technicians for all operations, maintenance procedures.

8.7 Maintenance

The Successful Bidder will undertake Comprehensive Maintenance of the system as per following activities

Plant online monitoring services and their maintenance. a. Remote monitoring helps to detect any issues in plant performance and to plan the necessary action. b. Upgrade online device firmware/OS. c. Inspect all communication device connections that are intact.	Quarterly
Earth resistance testing a. Poor earthing/ grounding not only contributes to unnecessary downtime, but a lack of good grounding is also dangerous and increases the risk of equipment failure, to avoid any sudden grounding issue, we test measure earth resistance once a year and share detailed reports to the client.	Once in AMC

Site inspection. a. Note any safety concerns including fire hazards. b. Inspect the site for generation-affecting points. c. Visual inspection of the roof's physical condition.	Quarterly
Array inspection. a. Visual observation of module cleaning. b. Inspect the array's overall condition. c. Check the array's tilts. d. A12 Check visible module defects/ broken PV modules. **e.** Check wire management condition & MC4 connector condition.	Quarterly
BESS: a. Thermal imaging (IR scan) of battery racks, DC disconnects, and busbar joints under load to catch developing hot spots b. Functional test of BMS protection trip points (over-voltage, under-voltage, over-current, over-temperature) — simulate/verify where OEM procedure allows c. Cell balancing check — confirm active balancing is functioning and cell voltage deltas are within OEM spec d. Insulation resistance (megger) test on DC battery circuit e. Inspect and test emergency shutdown / disconnect switches f. Verify EMS charge/discharge scheduling logic matches the intended dispatch strategy (peak shaving, backup reserve, etc.) and hasn't drifted **g.** Check ventilation/exhaust fans (if forced-air cooled) for bearing noise, vibration, dust buildup	Quarterly
Structure inspection. a. Check module clamps through sampling for tightness. b. Check torque on bolted connections. c. Check for rusting and apply silver paint on it.	Quarterly
AC inspection. a. Inspect AC breaker connection tightness & any heating mark on it. b. Inspect AC conductor routing. c. Inspect breaker labelling.	Quarterly
Combiner box and DC disconnect inspection. a. Inspect DC fuses and SPD. b. Inspect string terminations are tight and properly seated. c. Test string open circuit voltage. d. Check CB to ground continuity. e. Inspect cable entry and check potential causes for ground faults.	Quarterly

lightning arrestor. a. Inspect earth strip insulators and any possibility of grounding. b. Inspect the physical condition of the arrestor.	Yearly
BESS a. Full capacity test / discharge test to verify actual usable capacity against the ≥90 kWh (90% DoD) contracted spec, and log SOH trend against the 15-year ≥80% SOH warranty curve b. Round-trip efficiency verification test against the ≥92% DC-to-DC spec c. Comprehensive fire safety system inspection — aerosol suppression canister pressure/charge, smoke/heat detector calibration, alarm panel test d. Earth resistance test of BESS enclosure/rack earthing (separate from PV array earthing, since this is a distinct system) e. Cooling system deep service — refrigerant/coolant check if liquid-cooled, full filter replacement if air-cooled f. BMS firmware/software version check and update if OEM has released safety-relevant patches g. Cable and connector inspection — full removal/torque-recheck of high-current connections (not just spot-check) h. Review OEM warranty compliance documentation — confirm continued coverage and any exclusions triggered by maintenance history i. Third-party or OEM-certified inspection report submission to SBSNS Trust, tied to the annual generation/performance report already required under Sec. 7.13	Yearly

The comprehensive maintenance period shall be a period of 5 years from the end of Defect Liability Period of 1 year.

9 TECHNICAL SPECIFICATIONS

9.1 DEFINITION

The Grid Connect Solar Power Generating System consists of mainly three components viz. the Solar PV (SPV) array, module mounting structure and the power conditioning unit (PCU)/ inverter. The SPV array converts the solar energy into DC electrical energy. The module mounting structure holds the modules in required position and the DC electrical energy is converted to AC power by the PCU, which is connected to the power grid. The AC power output of the inverter is fed to the AC distribution board through metering panel and isolation panel. The 415 V AC output-3Ø of the system can be utilized or as

an option it could be stepped up to the required voltage level and after synchronizing with the grid, can be exported to the grid.

i	Location / Site Details for the SPV Power Project: -	Shri Bhimeshwar Sadguru Nityanand Sanstha, at post Ganeshpuri Tal. Bhiwandi, Dist. Thane
ii	Available Roof space	Available on “as is where is” basis
iii	Ambient Temp.	Site specific
iv	Lat. / Long.	Site specific
v	Elevation	Site specific
vi	Tilt Angle	Suggested as per the Latitude, however best fit as per the roof orientation.
vii	Feeding Point	-
NOTE: BIDDERS MUST VISIT THE SITE BEFORE QUOTING THE RATES.		

Heat Pump Site Details:

Sr.	Building	Rooms	System Details
1	Nityanand Pratibha including cooking area in Annapurna Kitchen (steam generating machineries)	44 Rooms + Kitchen	1 Heat Pump 1100 LPH + 1 Tank 5000 L + Plumbing + 50 taps with all required bends, joints, accessories
2	Bal Bhojan (Kitchen)		1 Heat Pump 175 LPH + 1 Tank 1000 LPH + plumbing 5 Taps with all required bends, joints, accessories
		TOTAL	2 Nos.

9.2 Technical Requirements for Rooftop PV Systems::

- Each solar PV plant array capacity should not be less than the capacity of the same SPV Plant capacity and total aggregate SPV array capacity should not be less than the respective peak capacity of sites as mentioned above, on max. radiation day and should comprise of solar bi-facial mono crystalline modules of optimum wattage. The Photovoltaic modules must be tested & approved by

one of the IEC authorized test centres, Test Certificates can be from any of the NABL / BIS accredited testing / calibration laboratories the module type must be qualified as per IEC 61215 (Second Edition). In-addition, PV modules must qualify to IEC 61730 Part I to II for safety qualification testing, IEC 61701-Salt Mist Corrosion

- Testing of Photovoltaic (PV) Modules, IEC 62716-Photovoltaic (PV) Modules –

  Ammonia (NH3) Corrosion Testing, IEC 62804 (Technical Specifications) Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation, and IEC 62759-1-Photovoltaic (PV) modules – Transportation testing, Part 1: Transportation and shipping of module package units. SPV module conversion efficiency should not be less than 15.0% under STC. The SPV Modules to be supplied should be tested from MNRE.

- The PV module used in Grid Connected Solar Power system should have the latest addition of following BIS-PV Module qualification test or, equivalent IEC Standards:
- Photo/ electrical conversion efficiency of SPV module shall be greater than 21% under STC.
- All materials used shall have a proven history of reliable and stable operation in external applications. It shall perform satisfactorily in relative humidity up to 100% with temperatures between 0° C and +85° C and with stand gust up to 150 km/h from back side of the panel. The terminal box on the module should have a provision for opening for replacing the cable, if required.
- Aluminium extruded frame structures with adequate strength and in accordance with relevant BIS standards can also be used with proof that the design of the structure can withstand the wind speed of 150 km per hour as per BIS Standards.

9.3 IDENTIFICATION AND TRACEBILITY

- A strip containing the following details should be laminated inside the module to be clearly visible from the front side. The PV modules supplied shall be from MNRE Approved Tier-1 makes only. Each PV module used in any solar power project must contain the following Information:
  a. Name of the Supplier or distinctive Logo
  b. Model or Type No.
  c. Serial No.
  d. Year of make.
  e. Name of the manufacturer of PV Module
  f. Name of the manufacturer of solar cells
  g. Month and year of the manufacturer (separately for solar cells and modules.
  h. I-V Curve for the module
  i. Peak wattage, Im, Vm and FF for the module
  j. Unique Serial No and Model No of the Module
  k. Date and year of obtaining IEC PV module qualification certificate

l. Name of the test lab issuing IEC certificate

- The rated output power of any supplied module shall not vary more than 35% from the average power rating of all modules.
- The module frame is made of corrosion resistant materials, which is electrolytically compatible with the structural material used for mounting the module.
- Protective devices against surges at the PV module shall be provided, if required. Low voltage drop bypass and / or blocking diode(s) may also be provided, if required.
- Module Junction box (weather resistant) shall be designed for long life outdoor operation in harsh environment.
- The module shall have warranty of 25 years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period.
- The solar modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with the thermal expansion properties of the Silicon cells and the module framing arrangement/material. The encapsulation arrangement shall ensure complete moisture proofing for the entire life of the solar modules.
- Each module shall have low iron tempered glass front for strength and superior light transmission. It shall also have tough multi layered polymer back sheet for environment protection against moisture and provide high voltage electrical insulation.
- Data sheet of the offered module along with their IEC certificate and third-party test results must be submitted along with the offer giving details of peak power, peak current, short circuit current, fill factor, open circuit voltage, peak power voltage etc.

9.4 Orientation and Tilt of PV Module(s)

Modules alignment and tilt angle shall be calculated to provide the maximum annual energy output. This shall be decided based on the location of array installation.

9.5 Slanted Roof Mounted Fixed Type PV Panel Structures

The supplier shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to the following:

- Array tilt angle to the horizontal, with permitted tolerance
- Details with drawings for fixing the modules
- Details with drawings of fixing the junction/terminal boxes
- Interconnection details inside the junction/terminal boxes
- Structure installation details and drawings

- Electrical grounding (earthing)
- Inter-panel/Inter-row distances with allowed tolerances and
- Safety precautions to be taken.

The array structure shall support SPV modules at a given orientation to absorb and transfer the mechanical loads to the roof of porta cabin properly. The portion of array structure if any lying within the column shall be of aluminium extruded section of superior quality. All nuts and bolts shall be of very good quality stainless steel. Detailed design and Drawing of the module mounting structures shall have to be submitted to SBSNS Trust for acceptance before execution of work. Self-drilling fasteners with SS and rubber washers should be provided to fix SPV panels. Silicon sealant around the fasteners should also be provided. Strict care should be taken during execution to avoid any damage to the roof surface of the porta cabins and to ensure no leakage should occur.

i. Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site.
ii. The Structure shall be made from Aluminium member as per design to be submitted by firm. The structures shall be designed to allow easy replacement of any module.
iii. Each structure should have angle of inclination as per the site conditions to take maximum insolation.
iv. Each panel frame structure be so fabricated as to be fixed on the rooftop, column/wall structures. The structure should be capable of withstanding a wind load of 150 KM/hr after installation. The certificate about structure capable to withstand 150 KM per Hour wind speed should be provided from Chartered Structural Engineer on his letter pad with his registration No.
v. The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is essential to install the structures, the supplier shall clearly and unambiguously communicate such requirements along with their specifications in the bid. Detailed engineering drawings and instructions for such prior civil work shall be carried out prior to the supply of Goods. All self-drilling fasteners, nuts and bolts shall be of very good quality stainless steel.
vi. No damage in any way should be caused to the porta cabins slanting rooftops, terrace while installation of SPV Power Plant. If any damage done it will wholly be the responsibility of the bidder and cost shall be recovered from the bidder.

9.6 EARTHING AND SURGE PROTECTIONS: -

- The array structure of the PV modules shall be grounded properly using adequate numbers of earthing pits suggested by government authority. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the power plant. All the power conditioning unit and electricity metering unit having any exposed metal part must be grounded.

- Two separate earthing must be provided for safer & reliable operations.
- The SPV power plant shall be provided with lightning & over voltage protection. The source of over voltage can be lightning, atmosphere disturbance etc.

9.7 Earthing and lightning protection:

- The array structure of the PV yard shall be grounded properly using adequate number of earthing kits. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.
- The SPV Power Plant shall be provided with lightning & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc.
- Metal oxide varistor shall be provided inside the Array Junction Boxes. In addition, suitable MOV's also shall be provided in the Inverter to protect the inverter from over voltage.

9.8 MECHANICAL COMPONENTS:

Metallic frame structure of galvanized steel with stands to be fixed on the roof of the building to hold the SPV module (s) one-foot above roof level. The inclination angle should be best suitable to get the maximum output. All hardware, nuts, bolts should be cadmium passivated/ plated.

9.9 MODULE MOUNTING STRUCTURE:

- The array structure shall be made of hot dip galvanized MS angles of suitable size. The minimum thickness of galvanization shall be at least 80 (eighty) microns. All nuts & bolts shall be made of very good quality ISI grade stainless steel. The minimum clearance of the lowest part of the module structure and the terrace level shall not be less than 500 mm or as per site situation(s).
- Leg assembly of module mounting structure made of different diameter galvanized tubes may be accepted. The work should be completed with supply, fitting fixing of clamps, saddles, nut & bolts etc. While quoting the rate, the bidder may mention the design & type of structure offered. All nuts & bolts shall be made of very good quality stainless steel.
- The structure shall be designed to allow easy replacement of any module and shall be in line with site requirements. The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site.
- The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time it will withstand wind speed up to maximum 150 km/h.
- The supplier/ manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings.

- After taking into consideration all aspects of the site, roof top strength etc., the bidder shall quote for civil works. The foundation design of module structure design shall be submitted to the SBSNS Trust for approval. The work will have to be carried out as per designs approved by the SBSNS Trust.

9.10 JUNCTION BOXES

- The Junction boxes shall be dust, vermin and waterproof and made of FRP. The terminals shall be connected to copper bus bar arrangement of proper sizes. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. Suitable markings shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. The junction boxes shall have suitable arrangement for the following:
- Combine groups of modules into independent charging sub-arrays that shall be wired to the PCU.
- Provide a test point for each sub-group for quick fault location.
- To provide group array isolation.
- The rating of the JB's shall be suitable with adequate safety factor to interconnect the Solar PV array.

9.11 DC DISTRIBUTION BOARD (DCDB):

Solar array side breaker shall be housed in enclosure. These can also be housed within the PCU to save space.

9.12 OTHER FEATURES:

- An Operation, Instruction and Maintenance Manual in English should be provided with the system.
- The following minimum details must be provided in the Manual:
  a) About Photovoltaic
  b) About solar PV system– its components and expected performance.
  c) About PV module(s)
  d) Clear instructions about mounting of PV module(s)
  e) About electronics
  f) DO's and DON'T's
  g) Clear instructions on regular maintenance and troubleshooting of solar power plant.
  h) Name and address of the person or service centre to be contacted in case of failure or complaint.

9.13 Power Conditioning Units

- The details of the Power Conditioning Unit are as given below:

1.	Type/Topology	Three-phase, transformerless, DC-coupled hybrid inverter
2.	Rated AC output power	75 kW at 40°C ambient
3.	Max. PV input (DC)	90–112.5 kWp (DC/AC ratio 1.2–1.5)
4.	Max. DC input voltage	1000 V
5.	MPPT voltage range	200–850 V (or as per OEM's MPPT window at rated power)
6.	Number of MPP trackers	Minimum 2
7.	Max. efficiency	≥ 98%
8.	Euro efficiency	≥ 97.5%
9.	Rated AC grid voltage	415 V ± 10%, 3-Phase + N, 50 Hz ± 5%
10.	Power factor	Adjustable 0.8 leading to 0.8 lagging (unity default)
11.	Total harmonic distortion (THD)	< 3% at rated power
12.	Battery voltage window	To match BESS chemistry/architecture (LFP, 100 kWh) — typically 500–800 V DC
13.	Battery charge/discharge control	Bi-directional, automatic, EMS-controlled
14.	Protection class	IP65 (outdoor) / IP54 (indoor) — already specified
15.	Cooling	Natural convection or smart forced-air cooling
16.	Operating temperature range	−25°C to 60°C, with derating above 45°C
17.	Protections	Anti-islanding, reverse polarity, DC/AC over-voltage & over-current, short-circuit, ground fault, integrated Type II SPD (DC & AC side)
18.	Communication	RS485/Modbus RTU + Ethernet/Wi-Fi; CAN/RS485 for battery communication; remote monitoring capable
19.	Display	Local LCD/LED display with fault/event logging
20.	Warranty	Minimum 5 years standard, extendable to 10 years (as OEM-offered)

21. The inverter must comply with the following standards: -
    - A multi-function power conditioning system combining the functionality of a grid interactive solar inverter with a highly efficient conversion unit complying with:
    - IEC 62109-1, IEC 62109-2: Safety of power converters for use in photovoltaic power systems - Part 1: General requirements, and Safety of power converters for use in photovoltaic power systems - Part 2: Requirements for inverters. Safety compliance (Protection degree IP 65 for outdoor mounting, IP 54 for indoor mounting)
    - IEC/IS 61683: Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
    - IEC 62116 or, IEEE 1547: Utility-interconnected Photovoltaic Inverters - Test Procedure of Islanding Prevention Measures

- In-addition, “IEC 61727:2004 Photovoltaic (PV) systems - Characteristics of the utility interface” is being added, along-with “Technical Standards for Connectivity of the Distributed Generation Resources” as published by Central Electricity Authority (CEA), Ministry of Power, Govt. of India.
- IEC 60068-2 (1, 2, 14, 30 & 64): Environmental Testing of PV System – Power Conditioners and Inverters
- **IEC 62477-1** safety of power electronic converter systems

a. Inverter must have SPP feature with provision of disconnection of entire power injection system in case of failure of any phase from both ends i.e. Power generation & discom’s grid.
b. Inverter must have provision/ feature to disconnect power injection
c. System during non- generation period i.e. When energy injection is zero then power injection system must be isolated so that power couldn’t be drawn by the power injection system/ transformer (if any).
d. Appropriate power correction facility/ capacitors should be provided to limits the kVAh export/ import to 5% of total net energy injection by the SPV based power plant(s).

9.14 Battery Energy Storage System (BESS)

The BESS specifications should be as follows:

- Chemistry Lithium Iron Phosphate (LFP/$LiFePO_4$)
- Installed capacity 100 kWh
- Usable capacity ≥ 90 kWh (at 90% DoD)
- System voltage (DC bus) 500–800 V DC (to match inverter's battery input window)
- Depth of Discharge (DoD) 90%
- Cycle life Minimum 8000 cycles @ 90% DoD to 80% SOH
- C-Rate (charge/discharge) 0.5C continuous
- State of Health (SOH) ≥ 80% at end of 15th year
- Round-trip efficiency ≥ 92% (DC-to-DC, at BMS/pack level)
- BMS (Battery Management System) Integrated multi-level BMS with cell-level voltage/temperature monitoring, active cell balancing, over/under-voltage, over-current, over-temperature, and short-circuit protection
- Communication Modbus RTU/TCP, CAN bus (for inverter/EMS handshake), cloud dashboard, EMS integration, alarm/event logging, cybersecurity-compliant (as already specified)
- Enclosure protection IP54 (indoor) / IP55 (outdoor, if applicable)
- Cooling Forced air or liquid cooling (OEM standard for this capacity range)
- Operating temperature range 0°C to 50°C (with thermal management to limit degradation above 40°C)
- Fire safety Cell-level thermal runaway propagation resistance; rack/container-level fire

detection & suppression (aerosol-based) recommended

- Safety certifications IEC 62619 (secondary lithium cells/batteries — safety requirements), UN 38.3 (transport safety), IEC 63056 or UL 1973 (stationary battery system safety), UL 9540 (energy storage system safety) — at least IEC 62619 + UN 38.3 should be mandatory
- Cabinet/rack type Modular rack-mounted or containerized, scalable in capacity blocks
- Warranty Minimum 5 years standard (10-year performance warranty on capacity retention desirable, OEM-dependent)

9.15 ***MCCB, ISOLATOR & CABLES FOR GRID CONNECTION: -***

- 4 Pole, 440 V, 50 Hz AC MCCB of suitable current & protection rating with spreader terminals, extendable rotary handle, thermal & electro-magnetic protection along with appropriate quality & size steel enclosure must be provided for grid connection.
- Array Junction Box with Surge Protection Device (SPD) & Fuses:
- There should be a separate Array Junction Box with Metal Oxide Varistors (MOV) based Surge Protection Device to be provided for each string inverter on D.C. Side. Further, on A.C. Side, the Surge Protection Device should be provided in ACDB, besides the existing SPD device of PCU.
- 1.1 kV grade, 4 Core, XLPE insulated, aluminium conductor armoured cables confirming IS: 7098 (Part- I) of appropriate rating/ size shall be provided for interconnection of Inverter with MCCB & DISCOM‟s grid.
- Cable termination shall be done using appropriate size lugs & cable glands.

9.16 CABLES & ACCESSORIES

All the cables which shall be supplied shall be conforming to relevant & shall be of 1.1 kV grade as per requirement. The cables used in the system should be ISI marked anti rodent, XLPE insulated FRLS unarmoured/ armoured copper conductor as per requirements.

The size of the cables between array interconnections, array to junction boxes, junction boxes to PCU etc. shall be so selected to keep the voltage drop and losses to the minimum.

9.17 ENERGY METERING

Energy meters shall be provided by DISCOMS as per prevailing MERC's tariff orders & regulations.

An independent data logging system for plant control and monitoring shall be provided for the Power Plant. appropriate nos. class (0.5s), 3 phase 4 wire, LT (440V) Bi-directional Energy Meter along with necessary CTs & PTs approved by the utility will be provided to measure the Energy produced by the SPV Power Plant and check meter also. The expenditure on testing and calibrating of Energy Meter shall be borne by the bidder.

All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current

values, previous values for up to a month and the average values. The parameters should be accessible via the operating interface display.

9.18 COMMON AC DISTRIBUTION PANEL BOARD (ACDPB)

a) Common AC Distribution Panel Board (DPB) shall control the AC power from inverter. AC Distribution panel (ACDP) should consist of appropriate size of MCCB with appropriate breaking capacity as incomer and suitable numbers of MCCB with appropriate size breaking capacity out going switches. The panel should be provided 3 Phase copper bus bar of suitable capacity.

b) Common AC DPB shall have the arrangement for measuring all electrical quantities such as Voltage, Current, Frequency, of different feeder line & energy supplied to the main or different feeder. Common ACDPB shall have sheet iron enclosure of dust & vermin proof & shall have adequate cooling arrangement. The busbars are to be made of copper of desired size. Design & Drawing is to be submitted before manufacturer assembly on installation for obtaining necessary approval from the SBSNS Trust.

9.19 Fuses, Lightning Protection, Surge Arrester, Junction boxes & Cables

All the other equipment like Fuses, Lightning Protection, Surge Arrester, Junction boxes & Cables should be of standard brands as per preference mentioned above and should meet the applicable quality and safety standards.

Annexure – B - TECHNICAL PARTICULARS OF 75 kWp SPV BASED POWER PLANTS FOR QUOTED MODEL ONLY

Solar PV System Proposed: _____ kWp

Estimated 1st Year Generation_____ kWh

Please attach a technical specification for the following Items (Please make a tick mark)

Sr. No.	Component	Make proposed by bidder
1.	SPV Cell/ modules	
2.	Hybrid Inverter/PCU	
3.	BESS	
4.	Structure	
5	DC DB.	
6.	AC DB.	
7	Earthing & LA	
8.	Cables	
9.	Others	

- DRAWINGS TO BE ENCLOSED BY THE BIDDER

The Bidder should enclose the following drawings with the bid:

(a) Layout of SPV based power plant project including BESS

(b) Elevated Super Structure Design

(c) SPV module structure Foundation

(d) Single line schematic diagram of electrical system for grid interfacing and grid interconnection from SPV based power plant with BESS to LT/HT distribution board.

Signature and Stamp of the Bidder

Annexure C - List of Preferred suppliers for Bought out Items

	Item	Preferred Make	Make Proposed by Bidder
1	ENERGY METER	L&T/ SIEMENS/ SECURE, DISCOM Approved	
2	MCCB	L&T, Siemens, Schnider, ABB, Control & Switch Gear	
3	Cables (LT)	CCI, Unistar, Finolex, Incab, Torrent, Havells, Bharat cab, Gloster, RR Kabel, KEI, Avocab, Tropodure	
4	Light Fittings	Philips/ CGL/ GE Lighting/ Wipro	
5	PVC Cable	FINOLEX, Torrent, Havells, RR Kabel, KEI	
6	Instrumentation Transformers	Vol tamp / Kryffs /LAMCO/ Vidyut Control/ AREVA/ Mehru/ CGL	
7	Solar Module	MNRE approved, Tier-1 bi-facial modules	
8	Hybrid Inverter / PCU	ABB, Mitsubishi, Goodwee, Schneider, Sungrow, Solis, Growatt, Deye, KSolare or equivalent with – minimum 5 Year Warranty.	
9	Sensor Box with Temperature Sensors and Pyranometer	MNRE Approved	Not required
10	Web Box with RS485, Communication Cable	MNRE Approved	In-built in Inverter
11	Vertical Air Terminal	MNRE Approved/ Normally Used for SPP for Plants	Not Required
12	Installation Kit	MNRE Approved/ Normally Used for SPP for Plants	
13	Cable Termination Kit (Lugs & Glands)	DOVELLS, JENSON, HEX, 3D, HMI	

Signature and Stamp of the Bidder

Financial Offer

Name of Work: SUPPLY, INSTALLATION, TESTING, COMMISSIONING & COMPREHENSIVE MAINTENANCE OF 75 kWP HYBRID ROOFTOP GRID CONNECTED SOLAR PV SYSTEM WITH BATTERY ENERGY STORAGE (BESS) SYSTEM ON NET METERING BASIS AND HEAT PUMP BASED HOT WATER SYSTEMS

Sr. No.	Work	Quantity	Rate per System	Total Cost Rs.	Applicable GST %	Applicable GST in Rs.	Total Cost in Rs. (including GST)
1	Supply, Installation, Testing, Commissioning & Comprehensive Maintenance Of 75 kWp Hybrid Rooftop Grid Connected Solar Pv System With Battery Energy Storage (BESS) System of capacity 100 kWh On Net Metering Basis	75 kWp					
2	Supply, Installation, Testing, Commissioning of Heat Pump Solar Water Heating Systems with comprehensive OnM as per scope of work	1100 LPH					
3	Supply, Installation, Testing, Commissioning of Heat Pump Solar Water Heating Systems with comprehensive OnM as per scope of work	175 LPH					
		TOTAL					

Declaration by the Bidder:

I/We shall carry out the entire electrical safety work as per tender conditions and submit the work completion report.

I/We shall adhere to the scope of work and timelines specified in the Notice Inviting Tenders

Yours faithfully,

For [Name of Firm] (Signature & Seal)

Name: Designation:

Contact No.:

Email: Place: Date: