Tender for

Design, Supply, installation, testing, commissioning and maintenance of 40KWP Grid connected SPV based Roof Top Solar Power Plant with net metering facility at NABARD, Telangana Regional Office, Hyderabad.

NABARD

PART I-TECHNICAL BID
Department of Premises, Security and Procurement, NABARD, Telangana Regional Office
1-1-61, RTC ‘x’ Roads, Musheerabad, Hyderabad – 500020
hyderabad@nabard.org Website : www.nabard.org

<table>
<thead>
<tr>
<th>Date of issue of tender document</th>
<th>06 February 2017</th>
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<tbody>
<tr>
<td>Date and time for Pre Bid Meeting with bidders</td>
<td>3.00 PM, 15 February 2017</td>
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<tr>
<td>Due date and time for submission of tender</td>
<td>3.00 PM, 27 February 2017</td>
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<tr>
<td>Date and time of opening technical bids</td>
<td>3.30 PM, 27 February 2017</td>
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NOTICE INVITING TENDER

Ref. No. NB.TS/DPSP/ 3552 / Solar Tender /2016 – 17

Date : 06 February 2017

M/s

Dear Sir


National Bank for Agriculture and Rural Development invites you to tender for the aforesaid work. National Bank for Agriculture and Rural Development intends to install a 40KWp Grid connected Roof Top SPV based Solar Power Plant with net metering facility (SPDCOTL) on the terrace of its existing Office Building at 1-1-61, RTC ‘X’ Roads, Musheerabad, Hyderabad – 500020.

1. You are requested to submit your offer in sealed envelope for the aforesaid work as per the details specifications and other requirements as mentioned more specifically elsewhere in this tender document.

2. The pre-bid meeting will be held on 15 February 2017 at 03.00 PM at our office address. The bidder should have already conducted a site survey and should have satisfied himself about the overall feasibility of the work before the pre – bid meeting.

3. Sealed offers in 02 separate envelopes indicating clearly “Technical bid” and “Price bid” should be addressed to the Chief General Manager, NABARD Regional Office, 1-1-61, RTC ‘X’ Roads, Musheerabad, Hyderabad-500020 and superscribed “Tender for Design, Supply, installation, testing,
commissioning, and, maintenance of 40KWp Grid connected SPV based Roof Top Solar Power Plant with net metering facility at NABARD, Telangana Regional Office, Hyderabad. The tender should not be submitted later than 15.00 Hrs on 27 February 2017.

4. **Technical bid should contain:**
   a. Part – 1 of the tender, every page of which should be duly signed and stamped.
   b. Bar chart indicating the programme for the execution of the work.
   c. Earnest Money Deposit (EMD) of Rs.72,000/- (Rs. Seventy Two Thousand Only) by the way of a Demand draft from Nationalised /Scheduled Bank payable at Hyderabad in favour of “NABARD”. Tender without EMD shall be rejected. **Exemption from submission of EMD as per MSME act, 2006 / NSIC registered parties will not be considered.**
   d. Technical aspects of the offer.
   e. Drawings.

5. **Price bid should contain:**
   a. Price bid complete in all respects duly sealed and addressed by Name of The Chief General Manager, Telangana Regional Office, Hyderabad.
   b. Price bid should not contain any conditions whatsoever and any conditional bids shall be rejected.

6. Technical bid will be opened on 15.30 Hrs 27 February 2017 at our office address in the presence of bidders representative, should they choose to be present.
   Price bid will be opened on suitable date, which will be communicated to the eligible bidders later.

7. Before filling up the tenders, the bidders may note the following:
a. The bid shall remain valid and open for acceptance for 06 month from date of opening of technical bid.

b. The work shall be completed within the 04 months from the date of issuance of Work order.

c. All documents that comprise the offer should be signed and sealed by the firm.

d. NABARD reserves the right to accept or reject any/all tenders in part or whole of any firm /firms without assigning the reasons for doing so.

8. The successful bidder shall execute an agreement with NABARD in accordance with the standard format enclosed within 14 days from the date of acceptance of the offer failing which the bidder’s EMD may stand forfeited.

(U S Shevde)
Deputy General Manager
Form of Tender  

Date:

The Chief General Manager,
National Bank for Agriculture and Rural Development  
Telangana Regional Office  
1-1-61, RTC ‘X’ Roads, Musheerabad, Hyderabad -500020

Dear Sir,

Tender for Design, Supply, installation, testing, commissioning, and, maintenance of 40KWP Grid connected SPV based Roof Top Solar Power Plant with net metering facility at NABARD, Telangana Regional Office, 1-1-61, RTC ‘X’ Roads, Musheerabad, Hyderabad-500020.

Having examined the scope of work, technical specification and guidelines relating to the contract for Design, Supply, installation, testing, commissioning, and, maintenance of 40KWP Grid connected SPV based Roof Top Solar Power Plant with net metering facility at NABARD Telangana Regional Office, 1-1-61, RTC ‘X’ Roads, Musheerabad, Hyderabad-500020 as specified in the Tender hereinafter set out and visited and examined the site of the work specified in the Tender and having acquired the requisite information relating to the tender.

I/We hereby offer to execute the work/s specified in the said Tender at the rates mentioned in the annexure and in accordance in all respects with the specifications and instructions in writing referred to in the conditions of the tender, the articles of the agreement, special terms and conditions and in all other respects in accordance with such conditions so far as they may be applicable.
**Memorandum:**

<table>
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<tr>
<th></th>
<th>Description of the works</th>
<th>Design, Supply, installation, testing, commissioning, and, maintenance of 40KWP Grid connected SPV based Roof Top Solar Power Plant with net metering facility at NABARD Regional Office at NABARD, Telangana Regional Office, 1-1-61, RTC ‘X’ Roads, Musheerabad, Hyderabad-500020.</th>
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<tbody>
<tr>
<td>2</td>
<td>Estimated cost</td>
<td>Rs. 36.00 lakh</td>
</tr>
<tr>
<td>3</td>
<td>Earnest money</td>
<td>The agency shall pay as earnest money a sum of ₹ 72000/- by way of demand draft.</td>
</tr>
<tr>
<td>4</td>
<td>Period of contract</td>
<td>The completion period of the work is 04 months from the date of issuance of work order.</td>
</tr>
<tr>
<td>5</td>
<td>Retention Money Deposit</td>
<td>10% from every Running Account Bill, maximum 10% of actual value of work</td>
</tr>
<tr>
<td>6</td>
<td>Initial Security Deposit</td>
<td>5% of value of accepted tender</td>
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I/we hereby agree to abide by the terms and provisions of the said conditions of the contract annexed hereto so far as they may be applicable or in default thereof to forfeit and pay to National Bank for Agriculture and Rural Development amount mentioned in the said conditions.

I/We have submitted a sum of ₹ 72000/- as earnest money with the National Bank for Agriculture and Rural Development, which is not to bear any interest. Should I/We fail to execute the contract when called upon to do so, I/We hereby agree that this sum shall be fortified by me/us to the National Bank for Agriculture and Rural Development.
I/We further agree to complete the work within 04 months from the date of issuance of the work order by Bank.

I/We agree not to employ Sub-Contractors other than those that may be approved by the bank.

I/We agree to pay Sales Tax, Change in tax if any, Work Contract Tax, Octroi duties, levied by the government, as prevailing from time to time, on the Design, Supply of items as laid out in Bill of Quantities including items of additional fitments as per requirement, for which the same are leviable and the rates quoted by me/us are inclusive of the same.

Our PAN No. is ____________________ (Copy of PAN to be attached)

The Names of partners of our firm are:

(i)

(ii)

(iii)

Name of the partner of the firm authorised to sign

Or

Name of person having Power of Attorney too sign the contract (certified true copy of the Power of Attorney should be attached)

Your Faithfully,

Signature of Authorised signatory

(Signature and address of witnesses)

(i) (ii) (iii)
ARTICLES OF AGREEMENT

Articles of agreement made on this .....day of .... Between National Bank for Agriculture and Rural Development [NABARD] having its Regional Office at 1-1-61, RTC ‘X’ Roads, Musheerabad, Hyderabad-500020 hereinafter referred to as "The Employer " of the one part and Ms/s  -----------------------(hereinafter called “The Tenderer”) of the other part .

Whereas the Employer is desirous of getting executed “Design, Supply, installation, testing, commissioning, and, maintenance of 40KWp Grid connected Roof Top SPV based Solar Power Plant with net metering facility at NABARD Telangana Regional Office , 1-1-61, RTC ‘X’ Roads, Musheerabad, Hyderabad-500020 .

AND Whereas the Tenderer has agree to execute upon and its subject to the conditions set forth in the Price bid and terms & conditions of the contract (all of which are collectively hereinafter referred to as “the said conditions”) the work shown upon the said technical specifications , and included in the Price bid at the respective rates therein set forth amounting the sum as therein arrived or such other sum as shall become payable there under (herein after referred as “the said contact amount’’).

‘NOW IT IS HEREBY AGREED AS FOLLOWS:-

1. In consideration hereinafter mentioned, the tenderer will upon and subject to the conditions annexed, carry out and complete the work shown in the contract, described by or referred to the schedule of quantities and in the said conditions.

2. The Employer shall pay the Tenderer the said contract amount or such sum as shall become payable at the times and in the manner specified in the said conditions.

3. The said Conditions and Appendix thereto and the documents attached hereto shall be read and construed as forming part of this agreement and the parties hereto
shall be respectively abide by, submit themselves to the said Conditions and the correspondence and perform the agreements on their part respectively in the said conditions and the documents contained herein.

4. This agreement and documents mentioned herein shall form the basis of this contract.

5. This contract is fixed lump – sum contract for the complete work to be paid for according to necessary installation carried out at site, at the rate contained in the Schedule of Rates or as provided in the said conditions.

6. The Tenderer shall afford every reasonable facility for carrying out of all works of other Contractors employed by the Employer and shall make good any damage done to walls, floors etc. after completion of such works.

7. The Employer reserves to itself the right of altering the nature of work by adding to or omitting any items of works or having portions of the same carried out without prejudice to this contract.

8. Time shall be considered as the essence of this contract, and the tenderer hereby agrees to commence the work/ job within the 10\textsuperscript{th} day of the receipt of the work order as provided for in the said conditions and to complete the entire work within the time period prescribed below reckoned from date of receipt of such work order subject nevertheless to the provision for extension of time.

9. All payments by the Employer under this contract will be made only at Hyderabad.

10. All dispute arising out of or in any way connected with this agreement shall be deemed to have arisen at Hyderabad and only courts in Hyderabad shall have jurisdiction to determine the same to the exclusion of all other courts.

11. That the several parts of this contract have been read by the tenderer and fully understood by the tenderer.

IN WITNESS WHEREOF the Employer has set its hands to these presents through its
duly authorised officials and the Tenderer has caused its common seal to be affixed hereunto and the said two duplicates / has caused these presents and the said two duplicates here of to be executed on its behalf, the day and year first herein above written (if the Tenderer is a company).

Signed and delivered by the within named
National Bank for Agriculture and Rural Development by the hand of its authorised official

[Name and Designation]

in presence of

[i]

[ii]

[iii]

Signed and Delivered by Shri-----------------------------

In presence of [i]

[ii]

Place:

Date:
GENERAL TERMS AND CONDITIONS / INSTRUCTIONS TO THE TENDERERS


2. Only firms registered with Ministry of New and Renewable Energy (MNRE), Government of India, as a channel partner for Solar Photovoltaic System Integrator having 5 years of experience in carrying out solar power system installation works for large office buildings/commercial premises and have executed successfully similar works, during last five years ending December 2016.

3. Minimum yearly turnover of 100% of the estimated cost during last 3 financial years supported by audited financial statements.

   (a) Three works each costing not less than the amount equal to 40% of the estimated cost.

   OR

   (b) Two works each costing not less than the amount equal to 50% of the estimated cost

   OR

   (c) One work costing not less than the amount equal to 80% of the estimated cost.

Above works should be done during the last 5 years ending December 2016.

5. Tenderer should have service setup at the place of proposed work in Hyderabad for rendering after sales services.

6. Tenderers should submit the following documents in respect of their eligibility:

   □ Copies of detailed work order indicating scope and value of works.

   □ Completion certificate for the qualifying works.

   □ List of completed works with all the details.

   □ Financial statement for turnover for last 3 years.

   □ Duly filled with details (STATEMENT- I to IV & Annexures).

A Tender submitted by a firm who is found to be not satisfying the above criteria
will be rejected

7. The tenderer must use only the price bid format issued by the bank, to fill in the rates. Any additional /alteration in the text of the tender made by the tenderer shall not be considered. Such tender /s may be considered invalid by the bank at its discretion.

8. All entries must be made by hand and written in ink. If any of the documents is missing or unsigned, the tender may be considered invalid by the bank in its discretion.

9. Rates and amounts should be quoted both in figures and in words, in columns specified. All erasures and alterations made while filling the tender must be attested by the initials of the tenderer. Overwriting of the figures is not permitted.

10. Failure to comply with either of these conditions will render the tender void at the banks option. No advice whatsoever especially on any change in rate, specifications or conditions after opening of the tender will be entertained. If on check there are difference between the rates given by the contractor in the words and figures or in amount worked out by him, the following procedure shall be followed:

   a. When there is a difference between the rates in figures and in words, the rates that correspond with the rate written either in the figures or in words, then rate quoted by the contractor in words shall be taken as correct.

   b. When the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figures or in words, then the amount corresponding to the rate quoted by the contractors in the words shall be taken as correct.

   c. When the rates quoted by the contractor in figures and in words tallies but the amount is not worked out correctly, the rate quoted by the contractor shall be taken as correct and not the amount.

11. Each page of the tender document should be signed by the authorized person or
persons submitting the tender in token of his/their having acquainted himself /themselves with the general conditions of contract. General specifications, special conditions etc. as laid down. Any tender with any of the documents not so signed will be liable to be rejected.

12. The tender submitted on the behalf of a firm shall be signed by all the partners of the firm or by a partner who has the necessary authority on the behalf of the firm to enter into the proposed contract. Otherwise the tender may be rejected by the bank.

13. A tender that is not accompanied by EMD shall be rejected. The EMD will be returned to the tenderer if his tender is not accepted by the bank but without any interest thereon. The EMD paid by the successful tenderer shall be retained by NABARD as a part of security for execution of fulfilment of the contract. The EMD of successful tenderer will be forfeited if he fails to comply with any of the conditions of the contract/tender documents.

14. NABARD does not bind itself to accept the lowest or any quotation and reserves to itself the right to accept or reject any or all the quotations, without assigning any reasons for doing so. NABARD also reserves the right to divide the work and award separately amongst the tenderers, without assigning any reason for doing so.

15. On receipt of intimation from the Employer of the acceptance of his/their tender, by way of Work Order, the successful tenderer shall sign an agreement in accordance with the agreement in the format prescribed herein and the price bid. A work order by NABARD will constitute a binding contract between NABARD and the bidder so tendering, whether such formal agreement is or is not subsequently executed. The cost of the necessary stamp paper for execution of the agreement shall be borne by the successful tenderer.

16. The tenderer shall not assign the contract and shall not sublet any portion of the contract except with the written consent of the employer. In the case of breach of these conditions, the employer may serve a notice in writing on the tenderer rescinding the contract where upon the security deposit shall stand forfeited to the employer, without prejudice to his other remedies against the tenderer.
17. The tenderer shall carry out all the work strictly in accordance with the details and Engineer / Officials. If in the opinion of the bank, changes have to be made in the design and with the prior approval in writing they desire the Tenderer to carry out the same, the tenderer shall carry out the same. The bank’s engineer/officials decision in such case shall be final.

18. A schedule of probable quantities in respect of each work and specifications accompany their general and special conditions. The price bid should contain not only the rates but also the value of each item of work entered in a separate column and all amount quoted against various items entered in a septate column and all amounts quoted against various items should be totalled in order to show the aggregate value of entire tender.

19. The tenderer must obtain for himself on his own responsibility and at his own expenses all the information which may be necessary for the purpose of making tender and for entering in to a contract and inspect site of the work, acquaint himself with all local conditions, means of access to the work, nature of the work and all matters pertaining thereto.

20. The rates quoted in the tender/ offer shall be for the complete item including design, supply, installation, testing and commissioning of plant at site. The rate shall also include all charges for storing, watch and ward, reinstating and making good damaged work if any to its original finish etc. The rates quoted shall be deemed to be finished work to the measured at site. The rate quoted in the tender shall include all charges for packing, transporting, loading, unloading and for delivery at site. The rates shall also be firm during the period of the contract including extended period if any and rates shall not be subject to exchange variation, labour conditions and fluctuations in railway freights, taxes or any conditions whatsoever. Tenderers must include in their rates, sales tax, excise duty, octroi, entry tax or any other tax and duty or other levy as existing, levied by the central government or any state government or local authority, if applicable. No claim in respect of increase in sales tax, work contract tax, excise duty, octroi or
other tax, duty or levy during the duration of the contract shall be entertained by
the employer. The same will remain firm during the contract period.

21. Rate should include: (a) charges for removal of debris out of premises, removing
stains, cleaning the site thoroughly and restoring it to original condition where
work is undertaken, (b) all Taxes, Duties, Octroi, Levies, Payment of wages as per
Act, VAT, (c) Freight & Insurance, and, (d) all overheads & profits etc.

22. Quoted rate should be workable, and should be firm for the entire contract period.
No variation of rates will be allowed.

23. The Bidder is required under the contract to deliver the goods to the site. (The
storage/handling etc shall be sole responsibility of the Bidder till the
commissioning/ handover of the system). No ‘C’ forms will be issued from
NABARD.

24. The price shall be inclusive of all taxes and duties, custom duty, excise duty, service
tax, sales tax, C.S.T., local taxes, Trade Tax/VAT, Income Tax, Surcharge on income
tax etc. if any. An Applicant firm shall be entirely responsible for all taxes, duties,
license fees, etc. All taxes payable as per Government income tax & service tax
norms will be payable by the contractor. If any new tax/duty is levied during the
contract period the same will be borne by the firm exclusively. TDS will be
deducted from the payment of the Bidder as per the prevalent laws and rules of
Government of India and Government of Telangana in this regard.

25. The Bidder in consultation with concerned official/officials of NABARD will
conduct training program for users, focusing on main features, operation and
maintenance of the systems.

26. The Bidder shall continue to provide spare parts after the expiry of warranty period
at the users cost if desired by the user. If the Bidder fails to continue to supply spare
parts and services to users NABARD shall take appropriate action against the firm.

27. The Bidder shall provide one copy of instruction manual and routine maintenance
manual with each system supplied or installed, this shall be in English/Hindi. The
following minimum details must be provided with manual for Grid connected
Solar PV Power Plant:

28. (a) About the complete photovoltaic system including PV modules, PCU and electronics etc.

29. (b) Do's and Don'ts

30. (c) Clear instructions on regular maintenance and troubleshooting of the system

31. (d) Name & address of the contact person in case of non-functioning of the system.

32. The Bidder shall indemnify the NABARD against all third party claims of Infringement of patent, royalties' trademark or industrial design rights arising from use to the goods or any part thereof.

33. Contractors, wherever applicable, shall after proper painting, pack and crate all the equipment in such manner as to protect them from deterioration and damage during rail and road transportation to the site and storage at the site till time of installation. Bidder shall be held responsible for all damage due to improper packing.

34. The Bidder shall inform NABARD of the date of each shipment from his works, and the expected date of arrival at the site for the information of the NABARD project offices at least 7 days in advance.

35. All demurrage, wharfage and other expenses incurred due to delayed clearance of the material or any other reason shall be to the account of the contractor.

36. The goods supplied under the contract shall be fully insured against loss or damage incidental to manufacture or acquisition, transportation; natural calamities shall be included in the bid price.

37. All the equipment and materials including spares, if any, being supplied by the Bidder shall be completely insured at his own cost from the time of dispatch till installation & commissioning of the project and taking over by beneficiary/User in accordance with the Bidding Documents.

38. It will be the responsibility of the Bidder to lodge, pursue and settle all claims with the Insurance Company for all equipment / materials in case of any damage, loss,
theft, pilferage or fire during execution of Contract and NABARD shall be kept informed about it. The Bidder shall be responsible for replacement of the lost/damaged materials promptly irrespective of the settlement of the claims by the underwriters and the Bidder shall ensure that the work progress is as per the agreed schedule without cost over-run/time overrun. The losses, if any, for such replacement shall be borne by the contractor.

40. The tenderer shall note that unless otherwise stated the tender is strictly on lump sum basis and his attention is drawn to the fact that rate should be correct, workable and self-supporting. This tender shall carry out all works necessary for completion of the work and for delivering the desired results. No claim shall be entertained on this account.

41. The Bidder should not employ any person who is prohibited by law from being employed for fulfilling obligations under this contract.

42. Any act of indiscipline/misconduct/theft/pilferage on the part of any employee engaged by the Bidder resulting in any loss to NABARD in kind or in cash will be viewed seriously and NABARD will have the right to levy damages or fine and/or even terminate the contract forthwith.

43. In case of any default or failure on part of the Bidder to comply with all/any one of the terms/conditions, NABARD reserves to itself the right to take necessary steps to remedy the situation including, inter-alia, the deduction of appropriate amount/s from dues otherwise payable to the Bidder and/or by taking recourse to appropriate recovery proceedings.

44. Time allowed for carrying out the work shall be strictly observed by the renderer. The work shall through put the stipulated period of the contract be proceeded with all due diligence.

45. The Bidder must submit a certificate from the manufacturers that the supplier is an authorized dealer for the sales and service of the products used in the Solar power plant System.

46. The tenderer shall not be entitled to any compensation for any loss suffered by him
on the account of delays in commencing or executing the work, whatever the cause of delays may be including delays arising out of the modification to the work entrusted to him or in any subcontract connected therewith or delays in awarding contracts for other trades of the project or in commencement or of the works or in procuring government controlled or other building materials or in obtaining water and power connections for the construction purpose or for any other reason whatsoever and the employer shall not be liable for any claim in respect thereof. The employer does not accept the liability for any sum besides the tender amount, subject to such variations as are provided for herein.

47. The successful tenderer is bound to carry out any or all items of work necessary for the completion of the job even though such items are not included in the quantities and rates.

48. The successful tenderer must cooperate with the other contractor appointed by the employer so that the work shall proceed smoothly with the least possible delay and to the satisfaction of the bank.

49. The tender shall guarantee that the work shall be free from any defects whatsoever for a period of 05 year Defect Liability period(Warranty) from the date of completion/commissioning of the work.

50. The work allotted to the bidder is to be complete within 04 months reckoned from the date of issue of the work order. Bidders are advised to visit the site and get themselves fully acquainted with the general and local site conditions, particularly those bearing upon transportation, handling, storage and the like, prior to quoting for the work.

51. Any defect or shortcomings found during the completion of the work and during the defects liability period from the completion of the entire work shall be attended/rectified by the tenderer without any extra cost to the employer. In case of failure to do so within 10 days from such notice from the bank, the employer may get such rectifications works carried out through any other firm and expenditure incurred by the bank shall be recovered from any money due to the contractor.
52. A sum equivalent to 5% of the contract sum is required to be deposited by the firm within 07 (Seven) days from the date of issue of the work order. Earnest money deposit will form a part of total security deposit. The entire security deposit will be refunded after three months from the expiry of defect liability period.

53. No escalation shall be allowed on the rates of the contract.

54. No mobilisation advance shall be paid to the contractor.

55. On site, lockable storage space will be given as per availability, the security of which will be the responsibility of the contractor/s. NABARD will not be responsible for contractor’s materials. The Bidder may be required to vacate the storage space as per exigency without any extra cost.

56. The contractor has to make his own arrangement of stay for his employees.

57. The contractor shall be entitled to receive payment on the basis of installation and commissioning, approved and certified by Bank engineer. Officials regarding compliance with the specification and acceptability subject to deductions herein after mentioned in Annexure – 1.

58. The contractor will be governed by the local labour laws / acts in force.

59. If in the opinion of Bank engineer/ officials, works be delayed by force majeure such as war/hostilities, riots or civil commotion, earthquakes , fire, tempest, lightening or other natural disasters etc., restriction imposed by the Government which prevent or delay execution of the order or by any other reasons, a suitable extension of time will be given and no extra claim will be paid by the employer whatsoever.

60. The contractor shall use all materials conforming to the relevant BIS/MNRE/relevant code and will use the best material of approved manufacture.

61. Contractor shall maintain at site responsible, efficient, qualified and well experienced in charge during the whole contract period. Any clarification, explanation, instruction or notices given by the employer to such in charge shall be deemed to be given to the contractor and shall be binding on the contractor.

62. Contractor shall on request of the employer, immediately dismiss from the work any person in the opinion of employer be unsuitable or incompetent or who may be
guilty of misconduct.

63. The contractor shall at the instructions of the employer within such time as notified, open up for inspection any work and should the contractor refuse or neglect to comply with such instructions, the employer may employ other workman to open of the same. Such work if it is found not in accordance with approved specifications, or the instructions, expenses of opening up and redoing if required shall be borne by and recoverable from the contractor from any money due or which may due to the contractor.

64. Notices of the employer, to the contractor may be served personally or by being left at or sent by registered post to the last known place of the business of the party to whom the same is given or in the case of the contractor by being left on the works. Notices may be served at or sent by registered post to the registered office of the contractor. Any notice sent by registered post shall be deemed to be served at the time when in the ordinary course of post, it would be delivered.

65. The Warranty period shall be 25 Years for the PV modules and 5 years for complete system from the date of commissioning and handing over of the system. The Bidder shall rectify defects developed in the system within Warranty period promptly. In case the defects are not rectified within 10 days of the receipt of the complaint by the Bidder, NABARD shall have full liberty to restore the system in working condition. The expenditure so incurred by NABARD shall be deducted from the Bidder pending claims, security deposit or in other lawful manner.

66. Termination of the contract by the employer:

If the contractor being an individual or a firm, commit any “Act of insolvency” or shall be adjudged an insolvent or being an incorporated company shall have an order for compulsory winding up or applies for voluntary winding up or subject to the supervision of the court and of the official assignee or the liquidator, in such acts of insolvency or winding up shall be unable within seven days after notice to him requiring him to do so, to show to the reasonable satisfaction of the employer that they are able to carry out an fulfil the contract, and to give security, therefor,
if required by the employer.

Or

If the contractor (whether an individual firm or incorporated company) shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor, or shall assign or sublet the contract without the consent in writing of the employer first obtained.

Or

Shall charge or encumber this contract or any payments due or which may become due to the contractor there under.

Or

If the contractor:

a. Has abandoned the contract, or

b. Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for seven days after receiving from the employer written notice to proceed, or

c. Has failed to proceed with the works with such diligence as failed to make such progress as would enable the works to be completed within the time agree upon, or

d. Has failed to remove materials from the site or to pull down an replace work for seven days after receiving from the employer written notice that the said material of work were condemned and rejected by the employer under these conditions, or

e. Has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contractor to be observed and performed by the contractor for seven days after written notice shall have been given to the contractor requiring the contractor to observe or perform the same, or

f. Has to the detriment of good workmanship or in defiance of the employer instructions to the contrary sublet any part of the contractor then and in event of
any of the aforesaid cases, the employer may, notwithstanding any previous waiver, after giving seven days’ notice in writing to the contractor, determine the contract but without thereby affecting the powers of the employer or the obligation and liabilities of the contractor, the whole of which shall continue in force as fully as if the contract has not been so determined and as if the works subsequently executed has been executed by or on behalf of the contractor.

And further, the employer may enter upon and take possession of the work and all plants, tools, scaffolding, sheds, machinery and material lying upon the premises or the adjoin lands or roads and use the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works, and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractor or other persons employed for completing and finishing or using the materials and plant for the works. When work shall be completed or as soon thereafter as convenient, the employer shall give a notice in writing to the contractor to remove his surplus material and plant, and should the contractor fail to do within period of 14 days after the receipt thereof by him, the employer shall sell the same by public auction, and shall give credit to the contractor for the amount realised on deducting therefrom the costs of removal and sales.

If any sum shall be due or payable to or by the employer for the values of the said plant and materials so taken possession of by the employer and the expenses of loss which employer shall have been put to in requiring the works to be completed, and the amount, if any, owing to the contractor and the amount which shall be so certified shall thereupon be paid by the employer to the contractor or by the contractor to the employer, as the case may be, and the employer’s certificate shall be final and conclusive between parties.

On termination of the contract, the contractor shall forth will remove himself and his workmen from the work site.

67. Termination of the contract by the Contractor:
If the payment of the amount payable by the employer shall be in arrears and unpaid for 30 (Thirty ) days after it has become due as per payment terms and after notice in writing requiring payment of the amount shall have been given by the contractor to the employer and if the employer unreasonably withholds any such payment then contractor shall be entitled to give a termination notice and terminate the contract and recover from the employer payment for all works executed for the purpose of the contract.

In arriving at the amount of such payment, the net rates contained in the contractor’s original tender shall be followed.

68. Matters to be finally determined by the employer

The employers’ decision, opinion, direction with respect to all or any of the matter such as scope of work, contractor to provide everything necessary materials and workmanship to conform the description, assignment of subletting, defects after completion, delay and extension of time, opened up works and schedule of rates as contained in the price bid hereof and as to the exercise by them the right to have any works opened up shall be final and conclusive and binding on the contractor. Employer’s instructions if any, in this regard in case of any urgency, shall also be complied immediately.

69. Arbitration:

If any dispute, difference or question shall at any time arise between the parties as to the construction of this agreement or concerning anything or as to the rights, liabilities and duties of the parties hereunder, expect in respect of matters for which it is provided hereunder that the decision of the employer or representative of the employer is final and binding, the same shall be referred to conciliation or arbitration after giving at least 30 days’ notice in writing to the other (herein after referred to as “Notice for conciliation / Arbitration”) clearly setting out the items of dispute to a conciliator or sole arbitrator who shall be appointed as herein after provided for the purpose of appointing the conciliator or the sole Arbitrator who shall be appointing the Conciliator or the Sole Arbitrator referred above, the
Employer shall send to the contractors, within thirty days of the Notice of Conciliation/Arbitration, a panel of three names of the persons who shall be presently unconnected with the organisation of the employer or the contractors.

The Contractor shall, on receipt of the names as aforesaid, select any one of the persons so named to be appointed as the Conciliator or Sole Arbitrator, as the case may be, and communicate his name to the employer within fifteen days of receipt of names. The employer shall thereupon without any delay, appoint the said person as the Conciliator or Sole Arbitrator.

If the employer fails to send to the contractors, the panel or three names as aforesaid within the period specified, the contractor shall send to the employer, a panel of three names of persons who shall be unconnected with either party. The employer shall, on receipt of the names as aforesaid, select any one of the persons name and appoint him as the Conciliator or Sole Arbitrator. If the employer fails to select the person and appoint him as the Conciliator or Sole Arbitrator within thirty days of receipt of the panel and inform the contractor accordingly, the contractor shall be entitles to appoint one of the persons from the panel as the Conciliator or Sole Arbitrator and communicate his name to the employer.

If the person so appointed is unable or unwilling to act or refuses his appointment or vacates his office due to any reason whatsoever, another person shall be appointed as aforesaid.

The Conciliation/Arbitration shall be governed by the conciliation and Arbitration act, 1996 as in force from time to time. Where the parties do not agree with the Conciliator and appoint an Arbitrator(s) the award of the Arbitrator (s) shall be final and binding on the parties. It is hereby agreed that in all disputes referred to arbitration, the Arbitrator shall give a separate award in respect of each dispute or difference in accordance with the terms of the reference and the award shall be a reasoned award.

The fees, if any, of the conciliator or the arbitrator shall, initially are aid in equal proportion by each of the parties. The cost of the conciliation / arbitration including
the fees, if any, of the conciliator or the arbitrator, shall be directed to be finally borne by such party or parties to the dispute, in such manner or proportion as may be directed by the Conciliator or the Arbitrator, as the case may be in the award.

The employer and the contractor also hereby agree that the arbitration under this clause shall be a condition precedent to any right to the action under the contract with regard to the matters hereby expressly agreed to be so referred to arbitration.

70. Insurance contract conditions, contractor’s liability and insurance

a. From the commencement to the completion of the works, the contractor shall take full responsibility for the care of the work and for taking precautions to prevent loss or damage to the works an to minimize the loss or damage to the greatest extent possible and shall be liable for any damages or loss that may happened to the works or any part thereof from any cause whatsoever, inherent defects and failure due to poor workmanship and causes such as fire, lightening, explosion, earthquake, storm, hurricane, floods inundation, subsidence, landslides, rock slides, riots (excluding civil war, rebellion, revolution and insurrection) and shall at his own cost repair and make good the same so that at all times the work shall be in good order and condition and conformity in every respect within the requirement of the contract.

Explanation:

For the purpose of this condition, the expression “from the commencement to completion work” shall mean the time commencing from the issue of the work order to the contractor and ending with the successful commission of the plant.

b. Without limiting the obligation and responsibilities under this condition, the contractor shall insure and keep insured the works from the commencement to completion, as aforesaid, for their full value provided under this contract, increased by 25% against the risk if loss or damage from any cause whatsoever including the causes enumerated in the clause (a) above. In the event of there being a variation in the nature and extent of the work, the contractor shall from time to time increase or decrease the value of the insurance correspondingly. The entire
premium shall be borne and paid by the contractor. The said insurance shall also provide for the removal of debris of the lost or damaged works.

c. The contractor shall at all times indemnify the employer against all losses, claim or damages or compensation under the provision of the payment of wages at 1936, minimum wages act 1948, employer liability act, 1961, Industrial dispute act 1947, employer state insurance act 1948 or any modification thereof or any other law relating thereto and rules made there under from time to time or as a consequence of any accident or injury to any workman or other persons in or about the work whether in the employment of the employer, or contractor or not and also against all costs, charges and expenses of any suit, action or proceeding whatsoever out of such accident or injury or combination of any such claims.

d. Before commencing the work, the contractor shall without limiting his obligation and responsibilities under this condition insure against any loss of life or injury to any personal in the employment of the contractor/sub-contractor/nominated contractor. For this purpose insurance shall be taken by the contractor/sub-contractor/nominated contractor. Such insurance shall be taken to include both employees/workmen covered by workmen’s compensation act 1923, as well those employees/workmen not covered by the said act. Separate insurance policies may be taken for employees/workmen covered under workmen’s compensation act 1923, and employees/workmen not covered by the said act. All premiums shall be paid by the contractor.

e. The contractor shall at all times indemnify and keep indemnified the employer against all loses and claim for injuries or damage to any person or any property whatsoever which may arise out of or in consequence of the construction and maintenance of the work and against all claims, demands, proceeding, damages, costs, charges and expenses whatsoever in respect of or on relation thereto. Before commencing the execution of the works, the contractor shall without in any way limiting his obligation and liabilities under this condition, insure at his cost and expenses against any damage or loss or injury which may be caused to any person
or property including the employee or servant of the employer and the consultant
and their property by or in the course of execution of works. Such insurance to be
known as the third party insurance shall be in a sum equivalent to two percent of
the value of the accepted tender subject to the minimum sum of rupees five lakh.
The insurance policy to be so obtained by the contractor shall be deposited by the
contractor with the employer within the seven days of its issue by the insurer.

f. The contractor shall ensure that similar insurance policies are taken out by his sub-
contractors or nominated contractors, if any, and shall be responsible for any claim
or loss resulting from their failure to obtain adequate protection in connection
thereof. While taking the insurance policies, contractor should indicate clearly to
the insurance companies that the policies issued cover their sub-contractor and
nominated contractor also.

g. No work shall be commenced by the contractor unless and until he has obtained the
insurance or insurance required to be obtained by him under or by the foregoing
clauses and no work shall be carried out or continued by the contractor unless and
until each insurance is current and valid at that time.

h. In the event of any claim for insurance becoming due on the account of any
eventuality covered by the respective insurance policy/policies, the contractor shall
reinstate the installation, replace the material or equipment’s or pay compensating
to the affected personnel /employees without waiting for the settlement of the claim
from the insurance company.

71. Terms of Payment

The payment for the works to be executed under this contract shall be made as
follows subject statutory deductions. No variation in the mode of payment will be
acceptable.

1) 60% of the quoted rates after receipt of the material at site and on
submission of the following documents:

(a) Manufacturer’s Inspection and Test Certificates
(b) Contractor’s Certificate that all components, parts, sub system,
consumable etc. for successful installation, commissioning and testing of the system including maintenance have been received at site in good condition and if any shortfall is noticed during installation, commissioning and will be supplied free to the Bank.

(c) Policies of insurance covering all the risks during transit, storage, installation, commissioning, testing and handing over including third party liabilities and fire as mentioned in tender documents.

2) Balance 25% of the quoted rates against erection and testing.

3) Balance 15% of the quoted rates after commissioning and handing over of the entire system.

72. Pre dispatch Inspection

Before dispatching the equipment to site, the equipment, will be inspected at the discretion of the Bank and tested for various parameters by the Bank’s Engineers /Officials at the manufacturer's works and then cleared for shipment. This will however, not in any way absolve the contractor of his responsibility for the continued performance of the system/components after erection & commissioning at the designated site during the period of defects liability.

Deceleration by the bidder

I/We hereby declare that I/We have read and understood the above instructions to the bidders and that the same are binding on me/us.

Signature of bidder
Seal
Place & Date:
### Annexure – I

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Defect liability period</td>
<td>05 years from the date of completion of work</td>
</tr>
<tr>
<td>2</td>
<td>Period of honouring the bills for payment</td>
<td>21 working days from the date of submission of bill</td>
</tr>
<tr>
<td>3</td>
<td>Date of commencement</td>
<td>Reckoned from the date of issue of work order</td>
</tr>
<tr>
<td>4</td>
<td>Date of completion</td>
<td>Within 04 months from the date of issue of Work Order</td>
</tr>
<tr>
<td>5</td>
<td>Liquidated damages for delay</td>
<td>@0.25% of the value of accepted tender per week, subject to a maximum of 5% of value of accepted tender.</td>
</tr>
<tr>
<td>6</td>
<td>Security deposit</td>
<td>10% of value of the work and consists of EMD, ISD and RMD.</td>
</tr>
<tr>
<td>7</td>
<td>Release of security deposit</td>
<td>After 03 months from expiry of Defect liability period.</td>
</tr>
<tr>
<td>8</td>
<td>Statutory deductions</td>
<td>Income tax at Source, work contract tax, VAT and any another tax/cess/surcharge as per applicable law /rules.</td>
</tr>
<tr>
<td>9</td>
<td>Payment terms</td>
<td>60% on receipt of material at site &amp; submission of necessary documents as indicated in the tender.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Balance 25% of the quoted rates against erection and testing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Balance 15% of the quoted rates after commissioning and handing over of the entire system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Payments are subject to effecting various deductions.</td>
</tr>
<tr>
<td>10</td>
<td>Deduction on account of minimum Generation Guarantee</td>
<td>Penalty will be as specified in the tender clause will be effected.</td>
</tr>
</tbody>
</table>
Technical Specification

1. Scope of work

The extent of the work shown and specified hereunder is defined to include all labor, materials, equipment, and supervision required for the design, fabrication, supply, installation, testing and commissioning of the complete solar power generation system, installation of net metering its distribution and subsequent upkeep and maintenance as defined under succeeding paragraphs and subsequent upkeep and maintenance as defined.

A) Generation of 40 KWp of Solar Energy based, conversion of the same to AC power with a guaranteed annual generation of 48,000 KWH per year during the first five years of operation at Bank’s power grid synchronization point including:

a) Design, Manufacturing, engineering Factory Acceptance Test (FAT), supply, installation, testing and commissioning of Solar PV Modules (inclusive of Electrical, Electronic and Mechanical features) along with Power Conditioning Units (PCUs), as required and specified as per MNRE standard.

b) Supply and installation of Module mounting structure / super structure on identified locations. The successful tenderer shall design their SPV Panel structure with Hot dipped galvanised steel and cement concrete (CC) foundation suitable for site condition. Design of SPV structure shall be certified /vetted by a recognized Govt. Engineering College viz. IIT / NIT etc. or by a reputed structural consultant and submitted for approval before taking up the structure and foundation works.

c) Supply, installation, testing and commissioning of three phase Power Conditioning Units (PCU), (inverter plus local grid synchronizing system), distribution panels, electrical switchgears, inverters, metering and connecting the system to the switch gear (MCB/Distribution Board) provided by the Bank for load and connecting up the system to the electrical grid surge protection units etc. as required.

d) Supply and laying of all power and control cables on prefabricated GI cable trays including supply of cable trays, their installation, hangers, supports, cable terminations and all fixing accessories.

e) **Earthing:** Supply and installation of **two nos. 500x500x3mm copper plate of earthing systems with copper strip/cable from earthing station** to the entire system including interconnection of solar panels. Earthing stations shall be provided with
testing point for every pits as per relevant IS, including cutting of roads / paved areas & making good the damages as in original shape.

f) Testing and commissioning of the entire system including synchronizing with power grid and operation as required. The installation shall include the electrical switchgears, cabling, terminations, cable trays, inverters, metering and connecting the system to the electrical grid.

g) The PV modules shall be installed with the necessary tilt with the most effective orientation.

h) All related & required civil works will be the responsibility of successful tenderer.

i) Solar System capacity shall be demonstrated to the Bank’s Engineer/Officials.

j) Onsite training to NABARD Engineer / Officials and workmen for proper operation, maintenance and trouble shooting.

k) Provision for periodic cleaning of the solar panels considering the ambient conditions of the site. Water connection at the same floor at one point shall be provided by Bank.

l) Supply of the recommended spare parts along with the main equipment’s to avoid downtime during Guaranty/Warranty and defect liability period.

m) Inspection of the complete installation at least once every year during guarantee period by the respective equipment manufacturer’s specialist Engineer(s).

n) The metering of electricity shall be carried out as per the regulations stipulated by Telangana Electricity Regulatory Commission and/or Central Electricity Authority.

B) All Inclusive Upkeep & Maintenance during warranty period

All Inclusive Upkeep & Maintenance Contract of the entire system as provided, including all spares and consumables for a period of 10 years after successful completion of work. The rates of the same are to be quoted separately as per Schedule of Quantities (Head-II).

C) Service to be provided by the Bank:

Unless otherwise agreed by NABARD, only the following services shall be provided in connection with this work:

a) Single point water source for cleaning of SPV panels near to the solar system.

Further plumbing for distribution of water to various array locations, if required, to be provided by the contractor.
b) Provision of necessary switchgear in the LT distribution panel for connecting the solar energy based AC power to Bank’s Power grid. However, the termination of cable to the switchgear shall be in the scope of the successful tenderer.  
c) Enclosed indoor space for locating PC, control monitoring, data loggers etc. and PCU/solar inverter (if required).

2. MINIMAL TECHNICAL REQUIREMENTS / STANDARDS FOR SPV ITEMS / SYSTEMS

2.1 PV MODULES:
The PV modules must conform to the latest edition of any of the following IEC/equivalent BIS Standards for PV module design qualification and type approval:

Crystalline Silicon Terrestrial PV Modules: IEC 61215 / IS14286 as approved by Ministry of New and Renewable Energy (MNRE).

In addition, the modules must conform to IEC 61730 Part 1- requirements for construction & Part 2 - requirements for testing, for safety qualification or Equivalent IS PV modules shall be suitable to be used in a highly corrosive atmosphere (coastal areas, etc.) must qualify Salt Mist Corrosion Testing as per IEC 61701 / IS 61701.

2.2 RELEVANT STANDARD/BALANCE OF SYSTEM (BOS) / COMPONENTS/ ITEMS

The system/ components/ items of the SPV power systems/ systems deployed must conform to the latest edition of IEC/ Equivalent BIS Standards/ MNRE specifications / as specified below:

<table>
<thead>
<tr>
<th>System/components/items</th>
<th>Applicable BIS /Equivalent IEC Standard Or MNRE Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge Controller / Maximum peak power transfer (MPPT) units</td>
<td>Environmental Testing</td>
</tr>
<tr>
<td></td>
<td>IEC 60068-2 (1,2,14,30) / Equivalent BIS Std.</td>
</tr>
<tr>
<td>Power Conditioners/ Inverters including (Maximum peak power transfer) MPPT and Protections</td>
<td>Efficiency Measurements</td>
</tr>
<tr>
<td></td>
<td>IEC 61683 / IS 61683</td>
</tr>
<tr>
<td></td>
<td>Environmental Testing</td>
</tr>
<tr>
<td></td>
<td>IEC 60068-2 (1, 2, 14, 30) / Equivalent BIS Std.</td>
</tr>
<tr>
<td></td>
<td>procedure of is landing prevention Measures</td>
</tr>
<tr>
<td></td>
<td>IEC 62116</td>
</tr>
</tbody>
</table>
### General Test and Measuring Method

| Cables | PVC insulated cables for working voltage up to and including 1100 V and UV resistant for outdoor installation | IEC 60227 / IS 694
|        |                                                                                   | IEC 60502 / IS 1554 (Pt. I & II) |
| Junction Boxes / Enclosures for Inverters/Charge Controllers/Luminaries | General Requirements, shall be dust Proof | IP 65 (for outdoor)/ IP 21 (for indoor) as per IEC 529 |

### 2.3. TESTING LABORATORIES / CENTERS

The PV modules must be tested and approved by one of the IEC authorized test centers. Test certificates can be issued by any of the NABL / BIS Accredited Testing / Calibration Laboratories.

Test certificates for the system/ components/ items from any of the NABL / BIS Accredited Testing Calibration Laboratories / MNRE approved test centers to be submitted to the Bank.

### 2.4. IDENTIFICATION AND TRACEABILITY

Each PV module used in the solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module Laminate, but must be able to withstand harsh environmental conditions.

i) Name of the manufacturer of PV Module  
ii) Name of the Manufacturer of Solar cells of PV Module  
iii) Month and year of the manufacture (separately for solar cells and module).  
iv) Country of origin (separately for solar cells and module)  
v) I-V curve for the module  
vi) Peak Wattage, Im, Vm and field factor (FF) for the module  
vii) Unique Serial No. and Model No. of the module  
viii) Date and year of obtaining IEC PV module qualification certificate  
ix) Name of the test lab issuing IEC Certificate  
x) Other relevant information on traceability of solar cells and module as per ISO 9000 series.

2.5 The contractor shall execute the whole & every part of the work in the most substantial manner and both as regard to materials and otherwise in every respect in strict accordance with
the specifications. The contractor shall also confirm the execution of work exactly, fully and faithfully to designs, drawings & instructions in writing in respect of the work assigned by the Bank’s Engineer.

2.6 ACTIONS TO BE TAKEN BY THE SUCCESSFUL TENDERER AFTER AWARD OF WORK

Considering that time is the essence of the contract, the successful tenderer shall take the following actions immediately –

a) He shall contact the Bank’s Engineer-In-Charge of the work immediately after award of work and submit an agreement on a non-judicial stamp paper of adequate value as per the relevant Stamp Act and sign the same in front of the witnesses.
b) All the required submittals must be completed within 14 days from the date of issue of detailed work order.
c) A program PERT chart shall be prepared for execution of the work & the same shall be finalized in consultation with the Bank’s Engineer. The work-schedule chart/ bar-chart indicating the time schedule for commencement of various activities of work like inspection & delivery of materials, commencement of work, completion of work etc. required for the execution & timely completion of work shall be submitted by the tenderer to the Bank’s Engineer for approval within 7 (Seven) days of the date of award of work.

2.6.2 All activities for execution of work shall strictly follow the program chart so finalized unless advised otherwise by the Bank’s Engineer in writing. It shall be the responsibility of the contractor to adhere to this work-schedule and complete the work in the specified time. Any deviation from this schedule, for any reason, shall be brought to the notice of the Bank’s Engineer in writing. Failure to submit the work schedule chart within the specified time or meeting the various committed deadlines shall be treated as delay on the part of the tenderer.

2.6.3 Drawings indicating the design of Solar Power Generation System and distribution proposed along with designs for structures / foundations for SPV array (duly certified / vetted by a recognised Government Engineering College/ reputed structural engineering firm etc. for suitability of the structure to withstand high wind velocity up to 150 Km/h) shall be submitted to the Bank’s Engineer, for approval, within fifteen (15) days of the issue of the detailed order. The drawings shall indicate all relevant details about the component/equipment etc. A three dimensional pictorial view of the same shall also be depicted in the drawings. The contractor shall submit all equipment information, which should include but not limited to the following and obtain approval:

a) General arrangement and dimensional layout
b) Schematic Drawing showing the requirement of SPV Plant, Power conditioning Unit(s), Circuit breakers, Junction Boxes, AC and DC Distribution Boards, meters etc.
c) Structural drawing along with foundation details for the structure.
d) Itemized bill of material for complete SPV plant covering all the components and associated accessories.
2.6.4 Delivery of equipment is to be made to the site in accordance with the program finalized in consultation with Bank’s Engineer. The equipment shall be delivered only after pre-delivery inspection has been carried out by NABARD’s authorized representative. Pre-delivery inspection of equipment shall be carried at the factory premises of principals. The Bank shall be informed of such an inspection at least 07 days in advance.

2.6.5 The Contractor shall at all times, during the period of execution of works. Keep in mind the specified completion time and other terms & conditions of contract as specified in the tender document which is, and shall remain the essence of the contract. On completion of the installation, the tenderer shall conduct a system acceptance test. The tenderer shall propose a detailed system acceptance test plan, which shall be jointly reviewed by NABARD and the tenderer.

2.7. TESTING OF EQUIPMENTS

2.7.1 Type test certificates for all the tests specified for the factory built Solar PV modules, and the component parts shall be submitted by the Bidder along with the bid.

2.7.2 Factory Acceptance Test (FAT) of equipment’s: Delivery of equipment is to be made to the site in accordance with the program finalized in consultation with Bank’s Engineer. The equipment shall be delivered only after pre-delivery inspection has been carried out by NABARD’s authorized representative. Pre-delivery inspection of equipment’s shall be carried at the factory premises of principals. The bank shall be informed of such inspection at least 7 days in advance.

2.7.3 TESTING OF INSTALLATION AFTER COMPLETION

a) All units shall on their completion and before being placed in service, be subjected to a performance test followed by an acceptance inspection and tests to determine that all parts of the installation conform to the requirement and that all equipment’s function as required and the work has been carried out as specified.

b) The contractor shall submit proposed testing procedure to the Bank’s Engineer not later than (one) 15 days before the date of testing.

c) Tests and inspections shall be made by the contractor in the presence of the Bank’s Engineer. Contractor shall notify the Bank’s Engineer in writing at least 07 days before the date of testing in order to facilitate arrangements for Bank’s Engineer to be present.

d) All test instruments and personnel to carry out the testing and commissioning shall be provided by the contractor. Adequate supervision of the tests shall also be maintained.

e) Corrective measures, if necessary, shall be carried out at no additional cost to the Bank.

f) Performance Test - After installation of the complete system, its operating capability shall be demonstrated. The contractor shall provide personnel, tools, etc. for testing. The performance test shall be conducted in the presence of Bank’s Engineer or his authorized representative for a minimum of (10) ten hours for ten working days as per the following:

**Performance test parameter**

i) Measurement of peak DC & AC power generated shall be taken every day for 10 working days at available load condition.

ii) Auto operation of the complete system and Correction of unsatisfactory operation during test period. If any deficiency or variation in the design, fabrication or operation causing unsatisfactory performance is noticed, the same shall be corrected to provide satisfactory performance. Manufacturer/Contractor shall have appropriate service personnel at site during
the test period to service or adjust the systems equipment’s as required.
g) Acceptance: After completion of the system performance tests, a joint acceptance inspection shall be carried out by Bank’s Engineer and the representative of the contractor. The purpose of this inspection shall be to determine that the system has been supplied and installed as specified. If the system is not acceptable for reasons of noncompliance to the drawings and specifications, the contractor shall make immediate corrections within the construction schedule. A final acceptance inspection shall be done to determine all corrections have been made. Even though the equipment shall be inspected and accepted, the acceptance date shall not occur before all contractual obligations are completed including delivery of all “as built” drawings, maintenance, and operation & spare parts manuals etc.

h) Date of virtual completion
After successful performance test, the system shall be put into operation. However, the date on which the system is finally accepted as per terms of the contract will be considered as the date of virtual completion of the work, from which the defect liability period shall be commenced.

2.8 TRAINING
The contractor shall include in his tender, cost of training of operators and maintenance staff. Initial training of operating and maintenance personnel shall be provided at site to ensure competence in the operation and maintenance of the system provided. The training program shall include but not limited to the following elements:

A) OPERATING TRAINING
i) System description including electrical, electronic and mechanical sub-system and their functions.
ii) System operating procedures.
iii) System operating characteristics.
iv) System limitations.
v) On-site system operation.

B) MAINTENANCE TRAINING
i) System description including electrical, electronic and mechanical sub-systems and their functions.
ii) System and component trouble-shooting
iii) On-site inspection and operation and maintenance
iv) Schedule of maintenance, safety checks and procedures.

2.9 DESIGN PARAMETERS / REQUIREMENTS AND EQUIPMENT SPECIFICATIONS
SPECIFIC TECHNICAL REQUIREMENTS
Solar PV system shall consist of following equipment’s:

i) Solar PV modules consisting of required number of PV modules.
ii) Power Conditioning Units with data logger
iii) Mounting structures
iv) Cables and hardware
v) Junction box and distribution boards
vi) Earthing kit
vii) Surge arrestors
viii) Related Civil Works
ix) Control & monitoring system etc.
Broad Technical Specifications:

1. Solar PV Modules
   a) The solar photovoltaic module of ≥250 Wp power output under STC shall be provided with high efficiency (of more than 15%) multi or mono crystalline silicon solar cells.
   b) SPV module shall contain mono/poly crystalline high power silicon solar cells. The solar cell shall have surface anti-reflective coating to enable it to absorb more light in all weather conditions.
   c) It should have rugged design to withstand tough environmental conditions and high wind speeds (over 150 km/h). It shall perform satisfactorily in relative humidity up to 95% and temperature between 10 °C and 85 °C.
   d) PV modules must be designed for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.
   e) The PV module should be IEC 61215-Ed 2 & 61730-1&2 / UL certified and with MNRE (GOI)-SEC test certificate or from other accredited / approved labs. The I-V characteristics of all suitable modules as per specifications, to be used in the systems, are required to be submitted at the time of supply. For modules to be used in a highly corrosive environment throughout their lifetime they must qualify for IEC 61701.

2. Module Mounting Structures
   a. The module mounting structure shall be designed in such a way that it will occupy minimum space without sacrificing the output from suitable number of solar modules in series.
   b. The structure shall be designed to allow easy replacement of any module & shall be in line with the site requirements.
   c. The frames and leg assemblies of the mounting structure should be of standard M.S. sections of angle, channel, tubes and any other sections conforming to IS: 2062. These structures should be hot dip galvanized (80 micron thick coating) for the long life in external weather conditions.
   d. The mounting structure should be of Fixed Type, Tilt angle suitable to site, on PCC Foundation, with SS 304 fastener and clamp fitted to provide rigidity to the structure.
   e. Galvanized Steel Structural members must be considered for all type of structural
      i. Steel proposed for the power plant.
      ii. The array structure shall be grounded properly using earthing kit.
      iii. Design drawings with material selected shall be submitted for prior approval of Bank.
   f. The suitable number of PV panel structures cum Car Park structure shall be provided. Structures shall be non-penetrate with roof.
   g. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent which provides at least spraying thickness of 70 microns on steel as per IS5905, if
steel frame is used. Aluminium frame structures with adequate strength and in accordance with relevant BIS/international standards can also be used.

h. Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site.

i. The structure should be capable of withstanding a wind load of 150 km/hr. after installation.

j. 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. Maximum cars can parked below the structure.

The supplier/developer 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:

i) Determination of true south at the site;

ii) Array tilt angle to the horizontal;

iii) Details with drawings for fixing the modules;

iv) Structure installation details and drawings;

v) Electrical grounding (earthing)

vi) Inter-panel/Inter-row distances with allowed tolerances;

vii) Safety precautions to be taken.

3. PCU / MPPT Inverter

a) PCU / MPPT and 3 phase inverter shall be supplied as integrated unit depending upon the size of the solar power system. It should conform to IEC61683 and must additionally conform to the relevant national / international Electrical Safety Standards IEC60068 2. To minimize power losses, the PCU should be microprocessor based having inverter, which converts DC energy produced by the solar array to 3 phase AC energy.

b) The PCU shall be mounted either on a suitable MS stand on the floor or on the wall with proper supports in the control room. All cable entry to and from the PCU shall be fully sheathed to prevent access of rodents or other insects into the PCU from bottom/top of the PCU.

c) PCU shall be communicable on LAN protocol and should be provided with the following minimum Indications (through LEDs & LCD display)

<table>
<thead>
<tr>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inverter ON</td>
</tr>
<tr>
<td>Grid ON</td>
</tr>
<tr>
<td>Inverter under voltage/over voltage</td>
</tr>
<tr>
<td>Inverter over load</td>
</tr>
<tr>
<td>Inverter over temperature</td>
</tr>
</tbody>
</table>

Protections:

<table>
<thead>
<tr>
<th>Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over voltage both at input &amp; output</td>
</tr>
<tr>
<td>Over current both at input &amp; output</td>
</tr>
<tr>
<td>Over/under grid frequency</td>
</tr>
<tr>
<td>Over temperature</td>
</tr>
<tr>
<td>Short circuit</td>
</tr>
<tr>
<td>Protection against lightening</td>
</tr>
<tr>
<td>Surge voltage induced at output due to external source.</td>
</tr>
</tbody>
</table>
d) The inverter shall be designed for continuous, reliable power supply as per specifications. The inverter shall have high conversion efficiency from 25 percent load to the full rated load. Output shall be true Sine wave with less than 3% THD from no load to full load at 0.8 pf lag or lead. The efficiency of the inverter shall be more than 94% at full load and more than 80% at partial load (50%-75%). The supplier shall specify the conversion efficiency in the offer.

e) The inverter should be capable of operating under ambient temperature 0-55 °C, Humidity 0-95% RH.

f) The inverter shall have internal protection arrangement against any sustained fault in the feeder. The inverter shall have provision for input & output isolation.

g) Inverter shall be tested for islanding protection performance.

h) The software (Plant Manager & PC for remote monitoring through LAN) and hardware except PC, required for interfacing the plant are to be supplied.

i) The dimension, weight, foundation, makes details etc. of the PCU / Inverter shall be clearly indicated in the detailed technical document. Good quality & reputed / standard makes shall be supplied, having experience of trouble free successful functioning for minimum two years in similar solar PV system.

j) The PCU/solar inverter shall be capable of complete automatic operation, including wake-up, synchronization & shut down.

k) Built-in data logging facility to remotely monitor plant performance through external PC shall be provided (PC shall be provided by Bank)

4. Junction Boxes

a) The junction boxes should be dust, vermin & waterproof & made of FRP/ABS plastic for outdoor use and IP 65 rated (for outdoor) / IP 21 (for indoor) and IEC 62208, for long-term use in PV systems. In addition, the direct connection between the strings and the spring clamp connectors should ensure a durable and safe installation.

b) The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming & outgoing cables. Suitable markings shall be provided on the bus bar for easy identification & cable ferrules shall be fitted at the cable termination points for identification.

c) Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / surge arrestors, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups. Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.

5. Cables:-
Cables of appropriate size to be used in the system shall have the following characteristics:

i) Will meet IS 694/1554/IEC 60189 standards
ii) Voltage rating 660/1100V
iii) Excellent resistance to heat, cold, water, oil, abrasion, UV radiation and FRLS.
iv) Flexible

a) Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.

b) Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cables are easily identified.

c) The Cable should be so selected that it should be compatible with the life of the solar PV panels i.e. 25 years.

d) The size of each type of cable selected shall be based on minimum voltage drop, however, the maximum drop shall be limited to 2%

e) Selected cable should carry a current density of minimum 1.2Amp/Sq.mm

f) All electrical cables / wires inside the building to be fixed in Rigid Steel Conduit for wiring inside the building

g) Proper laying of cables have to be ensured in appropriate cable trays, pipes / trenches as per site requirement.

h) For laying / termination of cables, latest BIS / IEC codes / standards be followed.

General Technical Specifications:

The scope of work shall include for supply and installation of pyrometer, temperature probes for recording the solar panel temperature, anemometer for measuring the wind speed. All these instruments shall be integrated and the data should be logged for viewing on the PC screen. Necessary software also shall be provided for the same.

1. Data Logging Provision for plant control and monitoring shall provide time and date stamped system data logs for analysis purposes.

2. Metering and Instrumentation for display of system parameters and status indication shall be provided.

PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system shall be provided. Energy meter along with CT/PT should be of 0.2 accuracy class shall be provided.
**Solar Irradiance:** An integrating Pyrometer (Class II or better) shall be provided, with the sensor mounted in the plane of the array. Readout shall be integrated with data logging system.

**Temperature:** Temperature probes for recording the Solar panel temperature and ambient temperature shall be provided complete with readouts integrated with the data logging system.

**Wind Speed:** An integrated wind speed measurement unit shall be provided. All major parameters shall 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 following parameters should be accessible via the operating interface display.

- AC Voltage & AC Output current.
- Output Power (daily)
- Running hours & total power generation in KWH
- DC Input Voltage.
- DC Input Current.
- Time Active
- Time disabled.
- Time Idle
- Temperatures (°C).
- Inverter Status.

2. Protective function limits (Viz.-AC Over voltage, AC Under voltage, over frequency, under frequency, ground fault, PV starting voltage, PV stopping voltage, over voltage delay, under voltage delay, Ground fault delay, PV starting delay, PV stopping delay).

3. **Earthing:** The structure of the PV arrays will 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 solar systems.

4. **Lightning:** The SPV systems 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.

5. All wiring / cables should be in proper conduit or suitable casing and wires should not be
hanging loose.

6. All connections are to be made through suitable cable/lug/terminals; crimped properly & with use of Cable Glands.

7. Switches / Circuit Breakers / Connectors-safety IS/ IEC 60947 part I, II & III, EN 50521

8. Fuses to be provided to protect against short circuit conditions.

9. Details of solar power system design and layout for all systems shall be submitted along with Technical bid (Part-I)

10. All the components of the systems viz. PV modules, Electronics, etc. should have type approval / test certificates from / internationally accredited labs. / as per MNRE guide lines

11. All components and materials used in the system should be of good quality & conform to the BIS / IEC standards / specifications, wherever available / applicable.

12. Each system should have number plate with name & logo of the manufacturer and the month / year of installation.

13. Operation and Maintenance / Instruction Manual (with Do’s and Don’ts) to be provided with each system.

14. Danger boards should be provided as and where necessary as per IE Act./IE rules as amended up to date.

**DESIGN PARAMETERS**

**i) Environment**

All components and materials are to be designed and selected for long service life under local environment conditions.

**ii) Maintenance consideration**

i) Particular attention shall be given to keep components simple, rugged and easily accessible for routine maintenance and components replacement.

ii) Major assemblies and components such as, electrical components/controls shall be interchangeable and easily removable/replaceable without extensive dismantling of other assemblies of components.

iii) All wiring shall be of a uniform color coding and marking system throughout indicating wiring terminations to permit rapid effective tracing and trouble shooting. Maintenance manual shall reflect said colour coding/markings.

iv) To facilitate identification, each item of equipment shall have a name plate of corrosion resistant metal attached in a conspicuous location.

**iii) Safety considerations**

All components shall be designed to have fail proof performance. In the event of an equipment failure or external influence such as improper operation, power failure or other adverse conditions affecting the proper function of the system or equipment, the said system or equipment shall revert to a safe state.
Appendix (I)

Schedule of Technical Deviations

We confirm that all technical terms and conditions and specifications of the Bank except for deviations listed below are acceptable to us.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Section No.</th>
<th>Clause No.</th>
<th>Deviation proposed</th>
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<tbody>
<tr>
<td>1</td>
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</table>

Seal & Signature of company

Name
Designation
Date

A) SCHEDULE OF TECHNICAL INFORMATION (To be filled by the bidder)

| i)  | Enclose a write up on the system design proposed for this project specifically indicating how the power generated from the solar energy will be synchronized with the local grid. |
| ii) | Enclose a single line diagram (SLD) / schematic layout for the proposal indicating the ratings and quantity of major components viz. SPV Modules, nos. of arrays, AC & DC distributions, PCUs etc. |
| iii) | Enclose Bill of Quantities of major equipment’s Please fill up the details as per the format enclosed under Annex. |
| iv)  | Enclose the proposed layout of the SPV module array showing the spacing between arrays, walk way width etc. |
| v)  | Confirm the minimum guaranteed annualized energy (KWH/year) that will be generated from solar energy source and available for internal use for 25 years. Please fill up the format enclosed under Annex. C. |
| vi) | Confirm the area required by the bidder for installation of SPV panels along with its structure, maintenance, walk ways to provide a generating capacity of 40 KWp as required in the tender. L____________ m W____________ m Area___________ sqm. |
| vii) | Enclose drawing showing typical arrangement for mounting of SPV modules along with dimensions and nature of foundation (plan, elevation and section to be enclosed) |
| viii) | Confirm the total quantum of AC power to be available from the installed SPV Modules. ___________ KVA |
| ix) | Confirm the location of meters to be provided for continuous measurement of AC power generated. |
| x) | Please confirm the acceptance test procedures to be adopted during factory Acceptance Test (FAT) for the SPV Modules as per the enclosed format at Annex H. Also indicate the standard to be followed. |
| xi) | Please confirm the acceptance test procedure to be adopted on completion of the work for the major components and the complete system at site. |
### I. SPV MODULE

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>i.</td>
<td>Manufacture’s Name &amp; Address</td>
</tr>
<tr>
<td>ii.</td>
<td>Type of Modules with cat. Reference</td>
</tr>
<tr>
<td>iii.</td>
<td>Design of module at standard test condition</td>
</tr>
<tr>
<td>a)</td>
<td>Peak power watt</td>
</tr>
<tr>
<td>b)</td>
<td>Peak power voltage</td>
</tr>
<tr>
<td>c)</td>
<td>Peak power current</td>
</tr>
<tr>
<td>d)</td>
<td>Open circuit voltage</td>
</tr>
<tr>
<td>iv.</td>
<td>No. of PV Modules proposed to achieve minimum 40 KWp DC power</td>
</tr>
<tr>
<td>v.</td>
<td>Short circuit current of PV module (Amp.)</td>
</tr>
<tr>
<td>vi.</td>
<td>Max. power rating of one PV Module (Wp) (not less than 250Wp)</td>
</tr>
<tr>
<td>vii.</td>
<td>Photo electrical conversion efficiency of SPV module (not less than 15%)</td>
</tr>
<tr>
<td>viii.</td>
<td>Fill factor of the SPV module (&gt; 0.70)</td>
</tr>
<tr>
<td>ix.</td>
<td>Designated life of the SPV modules</td>
</tr>
<tr>
<td>x.</td>
<td>Overall dimensions (IN mm)</td>
</tr>
<tr>
<td>xi.</td>
<td>Weight</td>
</tr>
<tr>
<td>xii.</td>
<td>Frame materials</td>
</tr>
<tr>
<td>xiii.</td>
<td>Reference of Standards / approval, if any</td>
</tr>
<tr>
<td>xiv.</td>
<td>Life of SPV Module (Years of Operation)</td>
</tr>
</tbody>
</table>

### II. PV ARRAY CAPACITY

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Number of Module in series in each array</td>
</tr>
<tr>
<td>ii.</td>
<td>Peak power rating of one array</td>
</tr>
<tr>
<td>ii.</td>
<td>Number of array considered to achieve the specified output</td>
</tr>
</tbody>
</table>

### III. MODULE MOUNTING STRUCTURE

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>i.</td>
<td>Type of structure and its materials used in frame and accessories</td>
</tr>
<tr>
<td>ii.</td>
<td>Type of mounting structures (Fixed or any other type)</td>
</tr>
<tr>
<td>iii.</td>
<td>Overall dimensions</td>
</tr>
<tr>
<td>iv.</td>
<td>Type of mounting</td>
</tr>
<tr>
<td>v.</td>
<td>Surface azimuth angle of PV Modules</td>
</tr>
<tr>
<td>vi.</td>
<td>Tilt angle (Slope) of PV module</td>
</tr>
<tr>
<td>vii.</td>
<td>Confirm structure &amp; module frame shall be designed at wind speed 150 km/hr.</td>
</tr>
</tbody>
</table>

### IV. POWER CONDITIONING UNITS (PCUs) /solar

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>i.</td>
<td>Manufacturer’s name &amp; address</td>
</tr>
<tr>
<td>ii.</td>
<td>Type of PCU (Centralized or string type)</td>
</tr>
</tbody>
</table>
### iii. Number of units proposed

### iv. Rated capacity of each PCU

### v. Input DC Voltage range

### vi. Output voltage

### vii. Frequency

### viii. Minimum efficiency at full load

### ix. Location (outdoor / indoor)

### x. Output ware shape

### xi. Dimensions in mm

### xii. IP protection level

### xiii. Type of cooling required

### xiv. Type of mounting

### xv. Suitability for specified Ambient Temp. range & Humidity at

### xvi. Type of Protection provided

<table>
<thead>
<tr>
<th>Protection</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over Load Condition</td>
<td></td>
</tr>
<tr>
<td>Short Circuit Protection</td>
<td></td>
</tr>
<tr>
<td>Low/High Voltage Protection</td>
<td></td>
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<tr>
<td>Power Electronic Component Protection</td>
<td></td>
</tr>
<tr>
<td>Anti-Islanding Protection</td>
<td></td>
</tr>
</tbody>
</table>

### xvii. Life of PCU

### V. METERING

### i. Nos. of meters proposed to be provided

### ii. Location of meters

### iii. Manufacturer’s name & address

### iv. Confirm compliance with laid down specification & Appendix-I

---

**Date**  
Signature of the contractor with company seal

List of Major equipment’s to be provided for 40 KWp Solar Power Plant (To be filled by the bidder)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SPV Modules</td>
<td>Total Quantities (Nos.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. of Arrays</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nos. of SPV modules in each array</td>
</tr>
<tr>
<td>2</td>
<td>Power Conditioning Units (PCUs) (Centralized / string type)</td>
<td>Type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quantity</td>
</tr>
<tr>
<td>3</td>
<td>DC Junction Boxes</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>AC Junction Boxes</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Other related items viz. control &amp; power cables, cable trays, surge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diverters, earthing etc. for the complete work as required &amp; specified</td>
<td>Lot</td>
</tr>
</tbody>
</table>

Date

Signature of the contractor with company seal
Undertaking
(Undertaking by manufacturer of SPV Modules and PCUs regarding the manufacture’s obligation to extend uninterrupted after sales service to NABARD)


We, the manufacturer of Solar Power System Component(s) undertake to provide continued after sales service including but not restricted to the following services.

i) To guarantee uninterrupted supply of spare parts throughout the designed life of SPV modules and PCU’s. The designed life of SPV modules and PCU’s shall be as indicated elsewhere in the technical bid.

ii) To assist NABARD in investigation of failure/malfunctioning of any part or system as and when called for by NABARD during and after defects liability period.

iii) We shall propose with cost estimate, any modification / up gradation of safety features, design modification / improvements to be incorporated in the SPV modules and PCU’s subsequent to completion of the contract and suggest a time schedule to implement the same to enhance performance, reliability / life of SPV modules and PCU’s.

iv) We hereby undertake to provide the above services and respond to NABARD’s queries/requests in reasonable time notified by NABARD during the design life of the SPV modules and PCU’s.

v) Any breach of above undertaking will entail NABARD to take any or all actions mentioned below as deemed fit by NABARD.

a) To place on record the performance of firm either in the NABARD Web Site or other publications.

b) Intimate the Regulatory Authorities / bodies or other Banks.
c) Restrict the firm’s participation in further tendering in NABARD.

Date: 

(Name and address of the company with Company Seal)

Note: This undertaking shall be furnished by the manufacturer of SPV Modules and PCUs. 
In case the manufacturers of these two items are different, separate undertakings must be furnished by the respective manufacturer.
**ANNEXURE- ‘C’**

**NAME OF WORK:** “Design, Supply, Installation, Testing and Commissioning of 40 KWp Grid interactive SPV based solar power system for Bank’s Regional Office Building, Hyderabad”

**GUARANTEED ENERGY GENERATION FOR 25 YEARS**

Note: Efficiency of solar PV System shall be guaranteed to minimum 90% at the end of 10 years and 80% at the end of 25 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total (KWh) of guaranteed generation</th>
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<tbody>
<tr>
<td>Year 1</td>
<td></td>
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<td>Year 2</td>
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<td>Year 3</td>
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<td>Year 24</td>
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<td>Year 25</td>
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Date 
Signature of the contractor with company seal
ANNEXURE-D

Format for undertaking product & maintenance support

(To be submitted by the tenderer)


Pursuant to a contract awarded by NABARD for the full scope of work as contained under the tender documents for the above mentioned work of part thereof, we.............................................. (Full name of firm with address), hereby undertake the complete responsibility for proving full product support and also maintenance support for entire period of the designed life of the equipment’s so supplied and installed by us, promptly and expeditiously.

Further, in case any of the components, materials or parts used in the system to provided goes out of production, then we will make available the blue print, drawings of the spare parts and specifications of materials at no cost to NABARD, as and when required in connection with the equipment to enable the NABARD to fabricate or procure spare from other sources.

Thanking you

Yours faithfully

(Signature of the contractor with company `s seal)
ANNEXURE ‘E’

DECLARATION OF COUNTRY OF ORIGIN
(To be furnished by the tenderer)


This is to certify that

a) The SPV Modules & PCU’s offered are new:

b) The SPV Modules will be manufactured, assembled and offered for inspection before dispatch the works/factory of (address in India)

c) The Power Conditioning Units (PCUs) will be manufactured, assembled and offered for inspection before dispatch at the works / factory of (address India)

Therefore, Country of Origin of SPV Modules shall be

Hence the Country of Origin of PCUs shall be.

Date:

(Name of the Company with address and Company Seal)

Note: There could be different country of origin for SPV Modules & PCUs. Specific address shall be provided for carrying out pre-delivery inspection at the works of the manufacturer.
ANNEXURE – ‘F’

Factory Acceptance Test

Solar PV Modules: The Solar PV modules shall be tested at the factory in the following manner:

i) Physical Inspection: The PV modules shall be inspected for its physical parameters such as dimensions, material and workmanship etc.

ii) Performance Parameter: The Solar PV modules shall be tested at the factory on a sun simulator at Standard Temperature Conditions (STC) for the following Parameters:
   a) Open Circuit Voltage (Voc)
   b) Short Circuit Current (Isc)
   c) Max. Power (Pmax.)
   d) Voltage at Max. Power (Vmax.)
   e) Current at Max. Power (Imax.)
   f) Fill Factor
   g) Module efficiency

2. Power Conditioning Unit: The power conditioning unit shall be inspected for the display of parameters as mentioned in the tender either at factory of OEM/Integrator or at site.
**CLIENT’s CERTIFICATE REG. PERFORMANCE OF CONTRACTOR**

<table>
<thead>
<tr>
<th>Name &amp; address of the Client</th>
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</thead>
<tbody>
<tr>
<td>Details of Works executed by Shri /M/s.</td>
</tr>
</tbody>
</table>

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<thead>
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<tbody>
<tr>
<td>1</td>
<td>Name of work with brief particulars</td>
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<tr>
<td>2</td>
<td>Agreement No. and date</td>
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<tr>
<td>3</td>
<td>Agreement amount</td>
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<tr>
<td>4</td>
<td>Date of commencement of work</td>
</tr>
<tr>
<td>5</td>
<td>Stipulated date of completion</td>
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<tr>
<td>6</td>
<td>Gross amount of the work completed and paid</td>
</tr>
<tr>
<td>7</td>
<td>Name and address of the authority under whom works executed</td>
</tr>
<tr>
<td>8</td>
<td>Whether the contractor employed qualified Engineer/Overseer during execution of work?</td>
</tr>
<tr>
<td>9</td>
<td>i) Quality of work (indicate grading)</td>
</tr>
<tr>
<td></td>
<td>ii) Amt. of work paid on reduced rates, if any.</td>
</tr>
<tr>
<td>10</td>
<td>i) Did the contractor go for arbitration?</td>
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<tr>
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<td>ii) If yes, total amount of claim</td>
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<tr>
<td></td>
<td>iii) Total amount awarded</td>
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<tr>
<td>11</td>
<td>Comments on the capabilities of the contractor</td>
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<tr>
<td>a)</td>
<td>Technical proficiency</td>
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<tr>
<td>b)</td>
<td>Financial soundness</td>
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<td>c)</td>
<td>Mobilization of adequate T&amp;P</td>
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<td>d)</td>
<td>Mobilization of manpower</td>
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<tr>
<td>e)</td>
<td>General behaviour</td>
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</tbody>
</table>

Note: All columns should be filled in properly countersigned.
FORMAT OF BANKERS’ CERTIFICATE

1. Composition of the firm (whether Partnership/ Private Limited/ Proprietorship/ Public Limited.)

2. Name of the Proprietor/ Partners/ Directors of the firm.


4. Credit facility/ Overdraft facility enjoyed by the firm.

5. Dealings

6. The period from which the firm has been banking with your bank.

7. Any other remarks.

You may also kindly forward your opinion whether the above firm is considered financially sound to be entrusted with the contract for works estimated to cost Rs.36.00Lakhs.

Signature for the Bank Note:

Bankers’ certificates should be on letter head of the Bank, sealed in cover addressed to NABARD.

In case of partnership firm, certificate should include names of all partners as recorded with the Bank.
FORMAT FOR POWER OF ATTORNEY FOR SIGNING OF PROPOSAL

(On Non-Judicial Stamp Paper of appropriate value)

Know all men by these presents, We………………………………………(Name of the Bidder and address of their registered office) do hereby constitute, appoint and authorise Mr. / Ms. ………………………………………….…………………………………………….……..(Name and residential address of Power of Attorney holder) who is presently employed with us and holding the position of ……………………………………as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our bid for the Design, Supply, Installation, Testing and Commissioning of 40 KWp Grid Interactive SPV Based Solar Power System for Office building NABARD, Hyderabad including signing and submission of all documents and providing information / responses to NABARD, representing us in all matters before NABARD, and generally dealing with NABARD in all matters in connection with our proposal for the said Project.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

Note:

Power of Attorney should be properly stamped and notarized Power of Attorney furnished shall be irrevocable.

Signature/(s) of the Bidder

Name/(s)

Stamp/Seal of the Bidder

(NB: This guarantee will require stamp duty as applicable in the state, where it is executed and shall be signed by the official whose signature verified).
Special conditions of contract

1. Working /detailed /shop drawing /brochures be submitted and approval of MNRE/ Concern agency to be received before taking up the work on site.
2. Payment will be made as per the details given in the Annexure – I.
3. No workmen will be allowed to stay within NABARD premises.
4. Electricity and water etc. will be provided by the Bank, free of cost.
5. Permissions, if any required from the local statutory authorities /bodies shall be obtained by the contractor at his own cost.
6. The contractor shall engage the necessary workers for removal of debris, waste, dust etc. as required by the Engineer – in Charge without the extra cost and also redo the damages caused to the building /works without any extra cost to NABARD and dispose of the debris at the designated place.
7. Work may have to be done during night time to adhere to the time schedule for completion of the work, for which no extra charges will be paid.
8. The contractor shall take out and maintain insurance policies as prescribed in General Condition of the contract throughout the currency of the contract until works are taken over by NABARD.
9. The Contractor shall notify the bank about the Statutory Approvals /Permissions, if any, to be take in respect of installation of the Grid connected Roof Top Solar Power Plant with net metering facility and its subsequent operation and shall take full responsibility in obtaining the same as well as in complying with all statutory requirements.
10. During the defect liability period from the date of completion of works, the bidder is required to provide preventive maintenance of the all components free of cost.
11. When storage is being provided, the surroundings and premises where such storage is located as well as the work of other agencies shall be protected and
not damaged; if any damage is caused, it has to be made good to the satisfaction of the employer at the contractor cost.

12. The contractor shall cover, secure and protect all the items of works as directed, until the works are taken over by NABARD.

13. All the material used in the work shall conform to the latest edition of BIS/Relevant specification and shall be of tested quality and subject to further tests, if required by NABARD, at no extra cost to NABARD.

14. Statutory dedications such as TDS, surcharge thereon, work contract tax and surcharge thereon or other statutory deduction as applicable shall be deducted from bills / amount payable to the contractor.

15. The PV modules will be warranted for a minimum period of 25 years from the date of installation of the system. (Output wattage should not be less than 90% at the end of 10 years and 80% at the end of 25 years).

   Safety Code

1. First aid appliance including adequate supply if sterilized dressing and cotton wool shall be maintained in a readily accessible place.

2. An injured person shall be taken to the hospital without loss of time in cases where the injury necessitates hospitalization.

3. Hoisting machines and tackle if used in works, including their attachments, anchorage and supports shall be in the perfect condition.

4. Inflammable and hazardous items shall not be allowed near the working site.

5. Adequate safety measures against fire, theft etc. will be taken by the Contractor.

6. The Bidder shall observe all the safety precautions for the safety of the labourers and the employees of NABARD during execution of works. As a part of the contract, the Bidder must satisfy the under mentioned safety requirements and must ensure at all times that these are followed without any deviations:
7. The Office Campus is a “NO SMOKING ZONE”, hence use of tobacco and smoking is strictly prohibited.

8. Any job where welding, soldering etc. is required and where lighting of flame is involved or using a source of heat or temporary electrical connections, shall not be done without prior permission from NABARD’s Technical Officer. No job involving heat sources are permitted to be carried out after office hours, holidays, Saturday and Sunday without prior permission from NABARD.

9. It is entirely the responsibility of the Bidder to see that the safety appliances such as safety belts, life lines, helmets, rubber gloves etc., depending on the job, are made available to his staff at Contractor’s cost. If the Bidder needs any suggestion/help in the matter, he can approach NABARD’s Officer-in-Charge. However, any lapse on safety will be viewed seriously.

10. The Bidder shall ensure that the persons posted for the work are well conversant with the operation of fire extinguishers.

11. The Bidder shall take all precautions to avoid accident and causes of accident. He must be careful regarding safety during working of his staff in the premises.

12. II. Safety Precautions for portable electrical appliances:

13. Precautions in handling portable electrical appliances are more significant under monsoon conditions. Some likely situations are highlighted here for the contractor’s attention and action to ensure that conditions and methods of usage conform to safety of personnel and property.

14. Joints in flexible cables: Usage of portable appliance through cable joints sometimes may lead to severe sparking and fire takes place if combustible or flammable materials are lying at the joint. Perhaps this may not be noticed by operator at all. For this and similar reasons, joints in cables of portable appliances are not permitted at all.
15. Appliance body grounding and system grounding: In absence of or ineffective appliance body grounding, operator may receive severe shock in case of phase to body fault during usage. Further, all earth pin socket must have low impedance and mechanically firm earthing according to Indian Electricity Rules so that safety is assured to operator even under fault conditions.

16. Water leakage: Water reduces efficiency of insulation depending upon exposure. Presence of moisture on ordinary switches may give a shock during operation. Switches in chronic leakage areas should preferably be de-energised until rectification is done and contractors must apprise civil works and properties department.

17. Excavation / Additions / Alterations of Building etc.: During excavations, alternations of buildings etc., every care shall be taken that electric shock or damage to cable, etc. are avoided. De-energisation of circuits must be considered whenever required.
## Information to be furnished by the Vendor

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<tbody>
<tr>
<td>1</td>
<td>Name and Registered address</td>
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<tr>
<td>2</td>
<td>Organizational set up of the firm including names, qualifications and experience of partners / Associates and staff</td>
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<tr>
<td>3</td>
<td>Whether Registered (If yes, please enclose copies of relevant supporting documents)</td>
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<tr>
<td>4</td>
<td>Experience (give number of years)</td>
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<td>5</td>
<td>Important large projects executed during last five years by the firm together with approximate cost of the individual project. The full postal address of the clients for whom the works have been executed shall also be given.</td>
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<td>6</td>
<td>Important large projects on which the firm is engaged at present and their estimated cost. (stages of work. viz. Planning and Construction). The full address of the clients shall be indicated against each project.</td>
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<tr>
<td>No</td>
<td>Description</td>
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<td>Important large projects, if any, completed by the partners prior to joining the firm (these projects shall not be included under 5 &amp; 6 above, but shall be shown separately).</td>
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<td>8</td>
<td>Name and address of the Banker/s of the firm</td>
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<td>9</td>
<td>Turnover of the firm during last 3 years (Year-wise)</td>
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</tbody>
</table>
| 10 | Name of Bank Branch and Address  
IFS Code of Bank Branch |
| 11 | Type of Account |
| 12 | Account Number |
| 13 | PAN of firm |
| 14 | Service Tax Registration No. |

Note: Please enclose copies of relevant supporting documents, wherever necessary.

Signature of the applicant with  
Full address and Office Seal.
**STATEMENT - II**

List of technical personnel, giving the technical qualification, experience, including that in the present organization

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name</th>
<th>Age</th>
<th>Qualifications</th>
<th>Work Experience</th>
<th>Nature of works handled</th>
<th>Name of the projects handled</th>
<th>Date from which employed in the present organization</th>
<th>Indicate special experience, if any</th>
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Mention other points, if any, to show technical and managerial competency to indicate any important point in your favour.

Signature of the applicant with

Full address and Office Seal.
**STATEMENT - III**

List of Important Projects executed by the Organization during the last five year.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Project and location</th>
<th>Nature of work involved in contract (eg. residential Office, etc.)</th>
<th>Name of the owner, also indicate whether Govt./ Semi-Govt./ Govt. of India Undertaking or Pvt. Body with full Address</th>
<th>Project cost in lakhs of Rupees</th>
<th>Completion Period</th>
<th>Any Other relevant information</th>
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<tbody>
<tr>
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</table>

Signature of the applicant with Full address and Office Seal.
# STATEMENT - IV

List of Important Projects ON HAND.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Project and location</th>
<th>Nature of work involved in contract (eg. residential Office, etc.)</th>
<th>Name of the owner, also indicate whether Govt./Semi-Govt./Govt. of India Undertaking or Pvt. Body with full Address</th>
<th>Project cost in lakhs of Rupees</th>
<th>Completion Period Stipulated</th>
<th>Actual</th>
<th>Any Other relevant information</th>
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<tbody>
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</table>

Signature of the applicant with Full address and Office Seal.
Tender

for

Design, Supply, installation, testing, commissioning, and, maintenance of 40KWP Grid connected Roof Top SPV based Solar Power Plant with net metering facility

at NABARD, Telangana Regional Office, Hyderabad.

NABARD

PART II - FINANCIAL BID

Department of Premises, Security and Procurement,

NABARD, Telangana Regional Office

1-1-61,RTC ‘x’ Roads, Musheerabad, Hyderabad – 500020

hyderabad@nabard.org Website : www.nabard.org

Part – II (Financial Bid)
Tender for Design, Supply, installation, testing, commissioning, and maintenance of 40KWp Grid connected Roof Top SPV based Solar Power Plant with net metering facility at NABARD, Telangana Regional Office, Hyderabad.

### Schedule of Quantities

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Description of work</th>
<th>Unit</th>
<th>Rate in Rs</th>
<th>Quantity</th>
<th>Amount in Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply of Materials</td>
<td></td>
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<tr>
<td>1</td>
<td>Design, manufacture, supply of complete materials for generation of solar photovoltaic (SPV) based grid interactive Solar power plant of minimum 40 KWp with a guaranteed annualized AC energy output of 48000 Kilo watt hour (KWH) per year during the first five years of operation including required quantities of SPV modules formed into arrays, their mounting arrangement, power conditioning units, required DC &amp; AC distribution panels with surge protection units, cabling from terrace to main distribution board at ground floor, two earthing, data loggers along with PC based arrangement for system performance monitoring through licensed software, Net Metering, safety arrangements etc. as defined in the scope and in accordance with the laid down functional requirement and specifications to provide a composite operational system including liaisoning for all statutory approval etc. as details mentioned in tender Part –I.</td>
<td>Lump sum</td>
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<td>Rate in Words ---- (</td>
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<tr>
<td>Installation, Testing &amp; Commissioning (ITC)</td>
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<td>2</td>
<td>Installation, Testing &amp; Commissioning of the complete system including providing earthing, mounting arrangement for SPV module /arrays, related civil works, net metering etc. as required and as</td>
<td>Lump sum</td>
<td></td>
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</table>
specified to provide a complete operational system including training etc.

| Rate in Words ---- ( |
| Rate for all Inclusive Upkeep & Routine Maintenance of complete system as provided under the main contract for periodic cleaning of PV cells, PCU /solar inverter etc. to ensure the committed minimum power generation including all spares, consumables for trouble shooting, routing, preventive and breakdown maintenance etc. as required as per good engineering practice, recommendation(s) in the respective equipment manufacturer(s) and instructions of engineer-in-charge for maintaining the system(s) in acceptable functional and serviceable state etc. as specified and as per the scope of work laid down (rate shall include fortnightly cleaning of the SPV). |
| Rate in Words ---- ( |
| Total (1+2+3)- in words |

Accepted all terms and conditions

Signature of the applicant with full address and Office Seal.

Date:

Place: