
TENDER DOCUMENT

SITC of 3.6 MWp Grid Connected Rooftop Solar Photovoltaic Power Plants at Various Sites under "Smart City Area and Other than Smart City Area" with Comprehensive Maintenance up to 10 Years including Free Maintenance during First Year.



Surat Municipal Corporation

Corporate Office : Muglisara, Surat- 395 003
Phone : EEC-PHONE: -0261-2423751-56, 2422285-87(Ex- 367, 498)
Fax : Fax:- 0261-2451935
Email : eec_smc@yahoo.co.in

Index

SECTION	DESCRIPTION	PAGE NO.
**	E-TENDER NOTICE	3-4
**	ADDENDA CORRIGENDUM:-1	5
**	ABBREVIATIONS	6
**	MOST IMPORTANT CONDITIONS OF THE E-TENDERING	7-8
I	PROFILE OF SMC	9
II	INSTRUCTIONS TO BIDDERS	10-12
III	GENERAL TERMS & CONDITIONS	13-20
IV	SPECIAL CONDITIONS FOR SUPPLY, ERECTION, TESTING AND COMMISSIONING	21-30
V	SPECIAL CONDITIONS FOR MAINTENANCE OF SOLAR PHOTOVOLTAIC BASED POWER PLANT	31-35
VI	SCOPE OF WORK	36-40
VII	TECHNICAL SPECIFICATIONS	41-65
VIII	EVALUATION OF BIDS	66
**	BIDDER'S CERTIFICATE/ UNDERTAKING	67
**	ANNEXURE: A AFFIDAVIT	68
**	FORMAT OF PROPOSAL, BID RESPONSE SHEETS (SHEET NO. 1 TO 12)	69-92
**	PERFORMA OF BANK GUARANTEE FOR SECURITY DEPOSIT CUM PERFORMANCE (ANNEXURE – I)	93-94
**	PERFORMA OF BANK GUARANTEE FOR MAINTENANCE (ANNEXURE – II)	95-96
**	PREFERRED SUPPLIERS (ANNEXURE – III)	97
**	SAFETY EQUIPMENTS/ CHARTS, MISC. ITEMS ETC. PROVIDED AT SITES (ANNEXURE - IV)	98



Surat Municipal Corporation

Light & Energy Efficiency Cell

e-Tender (Online) Invitation Notice: ACE/L&EEC/02/2016-2017

Tender are invited for SITC of 3.6 MWp roof top grid connected solar power plants including its operation and maintenance for 10 years on-line on <https://smc.nprocure.com> from MNRE approved Manufacturers with following schedule: -

(1)	Nos. of Tenders	:-	01
(2)	Total Estimated cost of Tenders	:-	Rs. 3057 Lacs
(3)	Uploading of tender documents	:-	19/10/2016 @ 11:30 AM
(4)	Downloading of tender documents	:-	From 19/10/2016 Up to 11/11/2016 up to 18:00 hours
(5)	Site Visit	:-	24/10/2016 @ 10:00 AM to 25/10/2016 @ 3:00 PM
(6)	Pre-Bid Meeting to bidder	:-	25/10/2016 @ 4:00 PM
(7)	Online submission(Last date)	:-	11/11/2016 up to 18:00 hours
(8)	Submission of documents Tender fee, EMD etc. in hard copy.	:-	From 15/11/2016 to 19/11/2016 up to 17:00 hours
(9)	Opening of technical-bid	:-	21/11/2016

⚙️ Tender documents are available on <https://smc.nprocure.com>.

⚙️ The detailed tender notice will be made available at above address and on website www.suratmunicipal.gov.in.

No. P.R.O./

Date: -

Additional City Engineer (Ele/ Ele & Mech),
Surat Municipal Corporation.



SURAT MUNICIPAL CORPORATION

LIGHT & ENERGY EFFICIENCY CELL

TENDER NOTICE NO: ACE/L&EEC/02/2016-2017

Tenders are invited for the work mentioned below, through online process on <https://smc.nprocure.com> with following schedule: -

Sr. No.	Name of Work	Est. Amount in Lacs Rs.	1) Downloading of tender documents 2) On line Tender submission (Last date) 3) Submission of documents Tender fee, EMD etc. in hard copy. 4) Tender Fee 5) EMD 6) Class of Contractor 7) Site Visit 8) Pre-Bid meeting
(1)	SITC of 3.6MWp Grid Connected Rooftop Solar Photovoltaic Power Plants at various sites under "Smart city Area and other than Smart city area" with comprehensive maintenance up to 10 years including free maintenance during first year".	3057.00	1) From 19/10/2016 Up to 11/11/2016 up to 18:00 hours 2) 11/11/2016 up to 18:00 hours 3) From 15/11/2016 to 19/11/2016 up to 17:00 hours 4) 18000.00 5) 30,57,000.00 6) Manufacturer (MNRE Approved) 7) 24/10/2016 @ 10:00 AM to 25/10/2016 @ 3:00 PM 8) 25/10/2016 @ 4:00 PM

- "Demand Draft for E.M.D. & Tender Fee shall be Submitted in electronic format only through online (by scanning) while uploading the bid. This submission shall mean that EMD and Tender Fee are received for purpose of opening the bid. Accordingly offer of those shall be open whose EMD and tender Fee is received electronically. However for the purpose of realization of DD Bidder shall send the DD in original through RPAD/ Speed Post so as to reach to Account Department (Main Office) within prescribed days from the last date of online submission of the bid as per tender notice. Penetrative action for not submitting DD in original to Account department (Main Office) by Bidder shall be intimated and action shall be taken for abeyance of registration and cancelation of E-tendering code for 01 (One) year. Any documents in supporting of Bid shall be in electronic format only through online (By Scanning) and hardcopy will not be accepted separately"
- Bidders shall have to mention the name and address of tenderer, tender notice number and name of work on the cover of E.M.D. and Tender Fee. Surat Municipal Corporation shall not be responsible for any postal delay / late delivery or loss of documents so mailed.
- All intending bidders shall have to produce the soft copy of P.F. (Provident Fund) Number, without which the application will not be accepted.
- The Competent Authority reserves right to accept or reject any or all the tender to be received without assigning any reasons thereof.
- In case bidder needs any clarification or if training required for participating in online tender, they can visit the www.nprocure.com. which is a website of "(n) Code solutions - A division GNFC Ltd."

Additional City Engineer (Ele/ Ele & Mech),
Surat Municipal Corporation.

**Surat Municipal Corporation
Light & Energy Efficiency Cell**

E-Tender (Online) Invitation Notice No: ACE/L&EEC/02/2016-2017

Name of Work :- SITC of 3.6 MW Grid Connected Rooftop Solar Photovoltaic Power Plants at various sites under "Smart city Area and other than smart city area" with comprehensive maintenance up to 10 years including free maintenance during first year. **ADDENDA CORRIGENDUM:-1**

1. The Tenderer are requested to take note of the following changes made in the tender notice, which are to be taken in to account while submitting the tender. It shall be Presumed to have done so and accordingly submitted the tender.
2. This addenda corrigendum along with associated enclosures shall be submitted in hard copy along with the technical bid of the tender duly signed and stamped by the authorized signatory of the bidder.
3. This Addenda Corrigendum shall be treated as a part of the tender documents.

Sr. No.	Clause(Page No.)	Original Text	Amended Text
1	E-tender notice	<p>Uploading of tender documents: 19/10/2016 up to 11.30 hrs</p> <p>Downloading of tender documents: From 19/10/2016 Up to 11/11/2016, 18:00 hours</p> <p>Site Visit: 24/10/2016 @ 10:00 AM to 25/10/2016 @ 3:00 PM</p> <p>Pre-Bid Meeting to bidder: 25/10/2016 @ 4:00 PM</p> <p>Online submission(Last date): 11/11/2016 up to 18:00 hours</p> <p>Submission of documents Tender fee, EMD etc. in hard copy: From 15/11/2016 to 19/11/2016 up to 17:00 hours</p> <p>Tentative Technical bid opening date: 21/11/2016</p>	<p>Uploading of tender documents: 25.10.2016 up to 11.30 hrs</p> <p>Downloading of tender documents: From 25/10/2016 Up to 19/11/2016, 18:00 hours</p> <p>Site Visit: 03/11/2016 @ 10:00 AM to 04/11/2016 @ 3:00 PM</p> <p>Pre-Bid Meeting to bidder: 04/11/2016 @ 4:00 PM</p> <p>Online submission(Last date): 19/11/2016 up to 18:00 hours</p> <p>Submission of documents Tender fee, EMD etc. in hard copy: From 21/11/2016 to 24/11/2016 up to 17:00 hours</p> <p>Tentative Technical bid opening date: 25/11/2016</p>

All other tender terms, conditions, specifications, stipulations etc. will remain unchanged. Please note that **Addenda-Corrigendum: 1** is part of original tender documents and needs to be sealed, signed and duly attached along with technical-bid of tender.



Add. City Engineer (Ele./Ele.& Mech.),
Surat Municipal Corporation

Seal & Sign of Tenderer

ABBREVIATIONS

- (1) **BG=** Bank Guarantee
- (2) **BIS=** Bureau of Indian Standards
- (3) **CBIP=** Central Board of Irrigation and Power
- (4) **CEA=** Central Electricity Authority
- (5) **CEI=** Chief Electrical Inspector
- (6) **DGVCL=** Dakshin Gujarat Vij Company Ltd.
- (7) **EE=** Energy Efficiency
- (8) **EEC=** Energy Efficiency Cell
- (9) **EMD=** Earnest Money Deposit
- (10) **EMI=** Electro Magnetic Interference
- (11) **EPC=** Engineering, Procurement and Construction
- (12) **GA=** General Arrangement
- (13) **GEDA=** Gujarat Energy Development Agency
- (14) **GERC=** Gujarat Electricity Regulatory Commission
- (15) **GI=** Galvanized Iron
- (16) **GoI=** Government of India
- (17) **MWH=** Mega Watt Hour
- (18) **GWH=** Giga Watt Hour
- (19) **IE=** Indian Electricity
- (20) **IS=** Indian Standard
- (21) **IGBT=** Integrated Bipolar Transistor
- (22) **IP=** Ingress Protection
- (23) **KVAR=** Reactive Power
- (24) **KVARH=** Reactive Energy
- (25) **kWh=** Kilo Watt Hour
- (26) **kWp=** Kilo Watt (Peak)
- (27) **LOI=** Letter of Intent
- (28) **MNRE=** Ministry of New & Renewable Energy
- (29) **MPPT=** Maximum Power Point Tracker
- (30) **PCC=** Plain Cement Concrete
- (31) **PCU=** Power Conditioning Unit
- (32) **PERT=** Program Evaluation Review Technique
- (33) **PV=** Photovoltaic
- (34) **RE=** Renewable Energy
- (35) **REC=** Rural Electrification Corporation
- (36) **SCPG=** Security Deposit Cum Performance Guarantee
- (37) **SEB=** State Electricity Board
- (38) **SITC=** Supply, Installation, Testing & Commissioning
- (39) **SMC=** Surat Municipal Corporation
- (40) **SPP=** Single Phasing Preventer
- (41) **SPV=** Solar Photovoltaic
- (42) **TPL=** Torrent Power Ltd.
- (43) **XLPO=** Crossed Link Polyolefin
- (44) **VAT=** Value Added Tax
- (45) **WW =** Water Works
- (46) **WDS =** Water Distribution Station

Most Important Conditions of the E-tendering

- Bidders have to submit price bid in electronic format only on <https://smc.nprocure.com> website till the last date & time for submission.
- Price bid in physical form shall not be accepted in any case. Any kind of direct/ indirect mention of the prices in technical-bid/ tender documents will not be allowed and tender of such bidder will be rejected.
- "Demand Draft for E.M.D. & Tender Fee shall be Submitted in electronic format only through online (by scanning) while uploading the bid. This submission shall mean that EMD and Tender Fee are received for purpose of opening the bid. Accordingly offer of those shall be open whose EMD and tender Fee is received electronically. However for the purpose of realization of DD Bidder shall send the DD in original through RPAD/ Speed Post so as to reach to Account Department (Main Office) within prescribed days from the last date of online submission of the bid as per tender notice. Penetrative action for not submitting DD in original to Account department (Main Office) by Bidder Shall be intimated and action shall be taken for abeyance of registration and cancelation of E-tendering code for 01 (One) year. Any documents in supporting of Bid shall be in electronic format only through online (By Scanning) and hardcopy will not be accepted separately"
- Bidders shall have to mention the name and address of tenderer, tender notice number and name of work on the cover of E.M.D. and Tender Fee. Surat Municipal Corporation shall not be responsible for any postal delay / late delivery or loss of documents so mailed.
- All documents must be coloured scanned to be seen as original. Scanning in black and white or gray shall not be acceptable.
- All the documents must be notarised with clearly with clearly displaying stamp, number and name of the notary.
- All intending bidders shall have to produce the soft copy of P.F. (Provident Fund) Number, without which the application will not be accepted.
- The Competent Authority reserves right to accept or reject any or all the tender to be received without assigning any reasons thereof.
- Following Documents shall only be submitted in Hard copy to Surat Municipal Corporation by all bidders :
 - Earnest Money Deposited as mentioned in the tender. (i.e. D.D. / Bank Guarantee)
 - Tender Fees as mentioned in the tender.
 - Affidavit on Non Judicial Stamp of Rs. 100/- (**Annexure – A**)
- **Technical-bid shall not be required to submit.** However, following must be submitted as technical bid/ tender documents without which tender of such bidder will be rejected: -
 - (i) Tender fee of Rs. 18,000.00 in form of crossed Demand Draft/ Pay Order only, of any Nationalised/ Schedule Bank payable at Surat acceptable to Corporation drawn in favour of the "Municipal Commissioner, Surat Municipal Corporation" payable at Surat.
 - (ii) Tender guarantee (Earnest Money) of **Rs. 30,57,000.00** (Thirty Lacs Fifty Seven Thousand only) in form of crossed Demand Draft/ Pay Order only, of any Nationalised/ Schedule Bank payable at Surat acceptable to Corporation drawn in favour of the "Municipal Commissioner, Surat Municipal Corporation" payable at Surat.

-
- (iii) Tender papers/ certificate as per following table must be returned along with Tender Fee & EMD as above as a part of technical-bid/ tender documents: -

Sr. No.	Particulars	Page No.
(1)	Most Important Conditions of the E-tendering	6
(2)	Bidder's Certificate/ Undertaking	48
(3)	Annexure A	64

Entire technical bid needs to be submitted by the successful bidder before preparation of the work sanctioning proposal to concern competent authority of the corporation. The all tender (technical-bid) papers as asked above must be submitted duly sealed & signed by the person who has authorization to sign the tender documents.

- If any items/ conditions/ specifications/ scope of work is mentioned differently at more than one place(s) by chance, most appropriate decided by the department will apply & binding to the bidder.

-Sd-
Executive Engineer (Ele),
Light & Energy Efficiency Cell,
Surat Municipal Corporation.

Seal & Signature of the Tenderer:-

SECTION-I

PROFILE OF SMC

Back Ground

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

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

In continuation of the promotional activities for the use of Solar Energy, Ministry of New & Renewable Energy, Government of India had introduced a programme of "Development of Solar Cities". **Surat city has been declared as "Solar City". Under this programme, Surat Municipal Corporation has set targets to reduce conventional energy demand by 10% through RE & EE measures. Further, total target of installation of 4,18,665 kWp Solar based Power Plants has been set for entire city. Out of these, SMC has set target of total 5,000 kWp of Solar Photo Voltaic based power plants.**

With the aforesaid objective, Surat Municipal Corporation has already installed 1390 kWp Solar Photovoltaic Power Plant at various 27 locations of SMC. With continuing efforts to use of environment friendly sources of energy, SMC has planned to install 3.6 MWp capacity SPV based power plants at various 10 locations of SMC through this tender. The details of sites & capacity of SPV based power plants are as below: -

Sr. No.	Name of Site	Proposed Installation Capacity (KWp)
1	Katargam Water Works	940
2	Katargam WDS	650
3	Rander WW	500
4	Sarthana WW	700
5	Varachcha WW	250
6	Althan WDS	270
7	Kosad WDS	150
8	Udhana Zone office	15
9	Rander Zone office	30
10	Mota Varachcha WDS	100
**	Total Capacity Proposed	3605

Note : Out of 3.6 MWp solar power, 1 MWp of Solar power will be used for Smart city area and remaining 2.6 MWp solar power will be used for other than smart city area.

SECTION-II

INSTRUCTIONS TO BIDDERS

2.1 PREAMBLE

3.6 MWp Grid connected Rooftop Solar PV based Power Plants

In order to harness the solar energy potential & efforts to achieve target set under "Solar City", SMC has decided to set up 3.6 MWp Grid connected SPV based Power Plants. The project having installed capacity of 3.6 MWp is to be executed through a single Engineering, Procurement and Construction (EPC) contract. Responsibility for the maintenance of this SPV based Power Plants shall also be of the very EPC contractor. EPC contractor shall also be responsible for the successful Maintenance of these 3.6 MWp SPV based Power Plants for 10 years after the date of 30 days of stabilization period (which is considered from the date of successful DISCOM's grid connection).

Maintenance of the 3.6 MWp Grid Connected SPV based Power Plants shall be for 10 years. However, rates shall be quoted for initial period of 10 years including free guarantee/ warrantee during first year of operation. The maintenance contract shall be renewable for another 10 years on the same terms & conditions but at the price as mutually agreed as per the conditions prevailing at the times.

The EPC contractor shall be responsible for complete design, engineering, procurement, erection, testing and commissioning of the SPV based Power Plants. This would also include site, arrangement & provisions of suitable power evacuation facility and connection of the SPV based Power Plant with DISCOM's HT/ LT connection.

Further, the scope of work for EPC contractor also includes maintenance of the power plants including supply of consumables and spares, wear and tear, overhauling and replacement of damaged equipment and other parts of SPV based Power Plants for 10 years with no extra cost to SMC; however, insurance covers shall be taken by SMC.

2.2 LANGUAGE

Bidders are required to furnish all information and documents as called for in this document in English language. Any printed literature furnished by the bidder may be in another language, provided that such literature is accompanied by an authentic English translation, in which case, for the purpose of interpretation of the document, the English version will govern.

2.3 BID DOCUMENT

All bidders must fill in, sign, and return the acknowledgement of tender document and Notice of Intent to bid form attached with this document.

Tenders should be filled in only with ink or typed. Tender filled in by pencil or otherwise shall not be considered.

All additions, alterations and over-writings in the tender or accompanying documents must be clearly initialled by the signatory to the tender.

In case acceptance of the terms and conditions given in the bid document has any price implication same shall be considered and included into the price part. The SMC can reject any or all offers without assigning any reason thereof.

2.4 SUBMISSION OF BIDS

Shall be done in accordance with Clause No. 3.1 of Section III

2. 5 EARNEST MONEY DEPOSIT (BID SECURITY)

- (i) The Bidder should deposit of **Rs. 30,57,000.00** (Thirty Lacs Fifty Seven Thousand only) as EMD with the offer. This should be in the form of a Demand Draft drawn in favour of "**Municipal Commissioner, Surat Municipal Corporation**" payable at **Surat, Gujarat**. The EMD furnished by the successful bidder shall be refunded/ adjusted after the acceptance of Security Deposit cum Performance Guarantee.
- (ii) Offers, not accompanied with requisite EMD shall be summarily rejected.
- (iii) EMD shall be a non-interest bearing deposit.
- (iv) EMD shall be forfeited in case of revision and/ or modification of terms of offer or withdrawal of offer during the validity period.
- (v) EMD of the successful Bidder shall be forfeited if he fails to deposit the requisite Security Deposit cum Performance Guarantee or fails to enter into contract agreement. In the event of the contractor, after the issue of communication of acceptance of offer by the SMC, fails/ refuses to execute the order as herein, the contractor shall be deemed to have abandoned the contract & such an act shall amount to and be construed as the contractor's calculated and wilful breach of contract, the cost and consequence of which shall be to the sole account of the contractor and in such an event the SMC shall have full right to claim damages thereof in addition to the forfeiture of EMD.
- (vi) The EMD shall be returned to the contractor-
 - a) Whose tender has not been accepted by the SMC on application by the contractor; and whose tender has been accepted by SMC, after the receipt of Security Deposit.

2. 6 SOLVENCY CERTIFICATE

Tenderer has to furnish latest valid solvency certificate along with the technical bid of amount equivalent to min. 20% of total estimated cost i.e. Rs. 30.57 Crores issued by nationalized/ schedule bank and not more than one year old from the last date of submission of technical-bid.

2. 7 EXAMINATION OF BID DOCUMENTS

Intending bidders are required to carefully go through the instructions included in the document and furnish complete information, necessary documents and schedules.

Site Visit is arranged between 03/11/2016 @ 10:00 AM to 04/11/2016 @ 3:00 PM whereas pre-bid meeting is arranged on 04/11/2016 @ 4:00 PM at Main Office. All bidders have to clearly note that site visit & attending price-bid is must; failing which tender will be rejected.

Transfer of document purchased by one bidder to another is not permissible.

It should be noted that under no circumstances, any time extension or any financial or any other kind of adjustment will be permitted for want of non-familiarity of work or work sites.

All costs towards site visit, conference and submission of document shall be borne by the bidders themselves.

Bidders are advised to submit offers strictly in accordance with the terms & conditions and specifications contained in the tender document. Conditional bids or bids having deviations are liable to be rejected at the sole discretion of SMC.

2. 8 RIGHTS OF SMC

Bidders are informed that SMC is neither under any obligation to select any bidder nor to assign any reason for either qualifying or disqualifying any bidder. SMC reserves its right to reject lowest bidder offer. SMC is also not under any obligation to proceed with the project or any part thereof.

At any time prior to opening of price proposals, SMC either on its own initiative or in response to clarifications requested by any prospective bidder may modify the document by issuing an amendment by cable/ fax/ e-mail, etc. to all bidders.

SMC reserves the right to reject any proposal in following cases:

- i. At any time, a material misrepresentation is made or uncovered.
- ii. The bidder does not respond promptly and exhaustively to requests for supplemental information required for the evaluation of the proposal within the time allowed.

2. 9 VALIDITY

Tenders will be valid for a period of 120 days from the date of opening of the technical bid.

2. 10 REJECTION OF BID

No correspondence by any of the bidder shall be entertained till such time decision in the matter is taken unless otherwise specifically asked for by SMC.

The bidder must quote the prices strictly in the matter as indicated in the document, failing which tender is liable for rejection. The rate/ cost shall be entered in words as well as in figures.

2. 11 CONFIDENTIALITY

Bidder shall treat tender documents and contents therein as private and confidential. If at any time during bid preparation, bidder decides to decline the invitation to bid, all documents must be immediately returned.

2. 12 GENERAL

- (i) Although details presented in this technical-bid have been compiled with all reasonable care, it is Bidder's responsibility to satisfy themselves that the information/ documents are adequate and that there are no conflicts between various documents/ stipulations. No dispute or claims will be entertained on this account.
- (ii) Bid proposal preparation is the responsibility of the bidder and no relief or consideration can be given for errors and omissions.

2. 13 CORRESPONDENCE

All further correspondence in connection with this bid shall be addressed to: -

**Executive Engineer,
Light & Energy Efficiency Cell,
Room # 117, Main Office Building,
Surat Municipal Corporation,
Muglisara,
Surat- 395 003.**

Phone : 0261- 2423751-56, 2422285-87 (Ex- 367, 498)
Fax : 0261- 2451935
E-mail : eec_smc@yahoo.co.in, eec_smc2006@rediffmail.com

-Sd-
Executive Engineer,
Light & Energy Efficiency Cell,
Surat Municipal Corporation.

SECTION-III

GENERAL TERMS & CONDITIONS

3.1 SUBMISSION OF BID DOCUMENT

Bidders wishing to participate in this E-Tender shall be required to procure Digital Certificate as per Information Technology Act- 2000. By using this Certificate the bidder can digitally sign his electronic bid. Bidders can procure the Digital Certificate from any of the CCA approved certifying agency or can contact M/ s (n) Code Solution at the below mentioned address who will assist in procuring the same. Bidders who already have a valid Digital Certificate need not procure it again. In case bidders need any clarification regarding online participation they can contact:

M/ s (n) Code Solution,
301, GNFC Info Tower,
Near Grant Bhagwati Hotel,
Ahmedabad- 380 015.
Tel: +91-79-26857316, 26857317, 26857318
URL: [https:// smc.nprocure.com](https://smc.nprocure.com)

Bidders who will to participate in E-Tender need to fill data in pre-defined forms of Tender fee, EMD (Bid Security), Qualifying Criteria & Technical Bid and Price Bid only.

Bidders should upload scan copies of reference documents in support of their eligibility of the bid. After filling the data in pre-defined forms, bidders need to click on final submission link to submit their encrusted bid.

Bids shall be submitted in two parts.

Part – I Technical Bid along with proof of Qualifying Criteria in pre-defined forms in electronic mode and physical form.

Part – II Price Bid in electronic mode only as per bid response sheet no. P-I and P-II.

Note: Price bid in physical form (in hard copy) will not be accepted.

DOCUMENTS COMPRISING THE BID TO BE SUBMITTED IN PHYSICAL FORM

The bid submitted by the bidder in physical form in hard copy shall comprise the following:

"Demand Draft for E.M.D. & Tender Fee shall be Submitted in electronic format only through online (by scanning) while uploading the bid. This submission shall mean that EMD and Tender Fee are received for purpose of opening the bid. Accordingly offer of those shall be open whose EMD and tender Fee is received electronically. However for the purpose of realization of DD Bidder shall send the DD in original through RPAD/ Speed Post so as to reach to Account Department (Main Office) with-in 07 (Seven) Days from the last date of online submission of the bid as per tender notice. Penaltative action for not submitting DD in original to Account department (Main Office) by Bidder Shall be intimated and action shall be taken for abeyance of registration and cancelation of E-tendering code for 01 (One) year. Any documents in supporting of Bid shall be in electronic format only through online (By Scanning) and hardcopy will not be accepted separately"

List of documents to be furnished.

The following details are to be submitted on-line on smc.nprocure.com:

- 1) Scan Copy of Tender Document fees and EMD Details
- 2) Scan Copy of Bid response sheets (no. 1 to 12) all necessary supporting documents.
- 3) Scan Copy of Necessary Documents, Certificates etc. (as mentioned in This Technical Bid)
- 4) Scan Copy of Addenda and Corrigendum (if any)duly signed.
- 5) Digitally signed of Provident fund registration Number.
- 6) Digitally signed of details of his turnover for the last three financial years.
- 7) Digitally signed of solvency certificate of national or schedule bank
- 8) Digitally signed scan copies of completion certificates from head of the office (Min. Executive Engineer or Equivalent Post) concerned for completion of the works.
- 9) Digitally signed scan copy of partnership deed, power of attorney etc.
- 10) Digitally signed scan copy of Electrical contractor licensed issued with the name of firm / organization and copy of MOU with electrical contractor licence holder contractor (in case of MOU with electrical contractor)
- 11) All details as asked in various sections of this tender document with all necessary supporting documents..

Note :-ALL Necessary Documents, Certificates etc. shall be Sealed and Digitally signed. Technical Bid and price Bid are not to be submitted in Physical Form. Please note that Non submission of Technical Bid as well as price bid does not absolve the bidders from any liability created from the bid condition and bidding process. Technical-Bid & Price bid in Hard copy shall be submitted by Successful Bidders upon intimation from SMC.”

The following details shall be submitted in hard copy at prescribed address:

- 1) Tender fees in prescribed format
- 2) Earnest Money Deposit in prescribed format

Please note that only Tender Document fees and EMD shall be submitted to Chief Accountant of S.M.C. in hard copy.

Printed and online documents and set of drawings shall comprehensively be referred to as Tender documents. The several sections forming the documents are the essential parts of the contract and a requirement occurring in one shall be binding as though occurring in all. They are to be taken as mutually explanatory and describe and provide for complete works.

DOWNLOADING OF THE TENDER DOCUMENT

The tender document for this work is available only in Electronic format, which can be downloaded free of cost by the bidder. Tender documents consist of two parts (i) technical bid with qualifying requirements (ii) Price bid.

INFORMATION FOR ON LINE PARTICIPATION

- (i) Internet site address for e-Tender activities will be <https://smc.nprocure.com>.
- (ii) Interested bidders can view detailed tender notice and download tender document from the above mentioned website.
- (iii) Bidders who wish to participate in online tender have to register with the website through the “New User Registration” link provided on the home page. Bidder will create login id & password on the own in registration process.

3. 2 CURRENCY FOR PRICE QUOTE

Bidders shall quote the price in Indian Rupees only. No foreign exchange will be provided by SMC for any imported equipment.

3. 3 PRICE BASIS

The rates should be quoted on 'FIRM PRICE' basis, FOR site including all taxes, construction taxes, cess, duties & levies, packing, forwarding, loading, transportation etc. in the enclosed proforma of Schedule of Rates. Price bid not quoted in the prescribed proforma are liable to be rejected.

Price escalation on account of any statutory during the contractual period increase in custom duty, excise duty, sales tax etc. shall be given extra on furnishing documentary evidence.

If any item is required to be imported for the execution of contract, same shall be done by the Contractor against its own import license. The SMC shall not be responsible for either the import license or the foreign exchange required for such import.

3. 4 OPENING OF TENDER

The Technical Bid shall be opened on the next working day of last date of receipt, if possible. Bidders or their representative who wish to participate in tender opening should remain present at Energy Efficiency Cell-Surat Municipal Corporation. Only one representative of each firm will be allowed to remain present.

The bidders who fulfil the requirements of the qualifying criteria & technical-bid, price-bid of such bidders will be opened.

3. 5 FAILURE OF THE CONTRACTOR TO COMPLY WITH THE PROVISIONS OF THE CONTRACT.

The time specified for delivery and completion of work in the contract tender shall be deemed to be the essence of the contract and the successful tenderer (s) shall arrange supplies & commissioning of the work within the period on receipt of order from SMC.

When a tenderer is unable to complete the commissioning within the specified or extended period, SMC shall be entitled to purchase from elsewhere without notice to the tenderer but on his (i.e. tenderers) account and risk, the goods or any part thereof which the tenderer has failed to supply or if not available, or to cancel the contract of such supplies and tenderer shall be liable for any loss or damage which SMC may sustain by reasons of such failure on the part of the tenderer. The tenderer shall not be entitled to any gain on such purchases made against defaults.

In any case entire project shall be successfully completed till injection of electrical energy in the DISCOM's grid within **4 months** from the date work order failing which a sum equal to 0.2% of unexecuted portion of the contract value per day of the delay subject to a maximum of 10% of unexecuted portion of the contract value, **over and above any other penalty mentioned elsewhere in the tender whichever is higher.**

For Maintenance Works:-

THE BIDDER MUST FURNISH DATA AS ASKED IN THE BID RESPONSE SHEET: 11 FOR ESTIMATED CLAIMED NET ENERGY GENERATION.

MIN. 90% OF CLAIMED NET ENERGY GENERATION MUST BE ACHIEVED FAILING WHICH PRE-DETERMINED MUTUALLY AGREED DAMAGES WILL BE RECOVERED FROM THE BILLS OR OTHERWISE FOR SHORTFALL OF NET ENERGY GENERATION @ PREVAILING ENERGY RATES SUBJECT TO MAX. OF 100% OF MAINTENANCE CONTRACT VALUE FOR THE RESPECTIVE YEAR DURING THE MAINTENACE PERIOD OF 2ND YEAR TO 10TH YEAR AND MAX. 10% OF THE CLAIMED NET ENERGY GENERATION FOR THE FIRST YEAR.

STANDARDS/ APPROVED MATERIALS TO BE USED

The SPV (SPV) Modules offered by the bidder must be approved by MNRE.

The tenderers are required to study carefully the conditions of the tender, the enclosed specifications and the provisions of the relevant BIS/ IEEE/ IEC / BS / VDE and other specifications where necessary before submitting the bids. Technical particulars of the material offered must comply with the standard or other applicable specifications and the relevant provisions of the BIS. In case tenders are called for the material 'ISI' marked only shall be accepted.

The contractor shall perform the contract work in accordance with all applicable codes, statutory regulations and established practices. It is agreed and understood by and between the parties hereto that the contractor shall comply with applicable laws, rules, regulations and by-laws whether now in force or which may hereinafter come in force during the currency of the contract and/ or extension thereof.

3. 6 GUARANTEED TECHNICAL PARTICULARS

The complete literature and specifications of the materials/ equipment/ components offered must accompany the tender.

Wherever it is mentioned in specifications/ drawing/ other documents or instructions that the contractor shall perform certain work and/ or provide certain facilities, it is understood that the contractor shall do so at his own cost

3. 7 STORAGE FACILITY

Materials received at the site should be stored in premises arranged by the bidder. Bidder shall be responsible for safety of material stored, which shall be adequately insured. Insurance charges shall be borne by the bidder. If possible, storage available shall be provided free of cost; however, all responsibility for safety of materials stored will be of the contractor. No damage shall be done to the storage areas/ portions of SMC's buildings. If, some damage is done then the same shall be recovered from the contractor's bills/ deposits or other means.

3. 8 TRANSIT LOSSES/ DAMAGES

The goods will be delivered at the destination in good condition. The contractor has to insure all the goods against loss by theft, destruction or damage by fire, flood, under exposure to weather or otherwise viz (war, rebellion, violence). The insurance charges will have to be borne by the contractor.

3. 9 ACCEPTANCE OF CONDITIONS

The bidder shall sign these conditions on each page at the end in token of acceptance of all the terms and it would be attached with the tender along with the declaration. He should also sign at the bottom of each page of the tender document.

3. 10 INSPECTION

SMC may get pre- dispatch inspection of material done at the works of the Contractor including sub-supplier prior to its despatch to site.

Coordination and inspection of the day-to-day work under the contract shall be the responsibility of the engineer-in-charge. Written instructions regarding any particular job will normally be passed by the engineer-in-charge or his authorized representative. Inspection reports along with manual shall be dispatched along with materials.

Inspection of major components viz. SPV (SPV) Modules, Power conditioning Unit, Data logger, Module Mounting Structures, Cables and hardware's, Junction box and Distribution boxes, Earthing kits, Lightning arrestors (if any), PVC pipes and accessories etc. can be done. The Contractor shall give 10 (Ten) working days written notice for the inspection. If inspection is not carried out during this period, the Contractor shall be at liberty to dispatch the materials along with routine test certificates.

3. 11 APPROVAL/ REJECTION OF MATERIAL

Items not found complying the requirement(s) stipulated in the bid documents shall be rejected by SMC and will have to be replaced by the tenderer at his own cost within the time limit fixed by SMC.

The rejected item must be removed by the contractor within 15 days of intimation of rejection.

3. 12 INCOME TAX, SALES TAX, SERVICE TAX

The bidder shall submit copies of Company's Income Tax PAN Card, IT returns for last three years, Sales Tax Registration No. and Service Tax Registration No.

3. 13 MAINTENANCE OF POWER PLANT

Maintenance of the SPV based Power Plant shall be for 10 years. However, rates shall be quoted for initial period of 10 years including free Maintenance period during first year of operation. The maintenance contract shall be renewable for another 10 years on the same terms & conditions but at the price as mutually agreed as per the conditions prevailing at the times.

The successful bidder will have to maintain the SPV based Power Plant Project for 10 years from the date of successful commissioning and energy generation from the SPP.

3. 14 LIEN/ CLAIM

If, at any time, there should be evidence or any lien or claim for which the SMC might have become liable and which is chargeable to the contractor, the SMC shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the SMC against such lien or claim.

3. 15 COMPLIANCE OF THE PROVISION/ ACT

The contractor shall be responsible for compliance of the provisions of Indian Electricity Act and rules framed under, Employees State Insurance Act, Workmen's Compensation Act, 1923, Employees Provident Fund and Miscellaneous Provisions Act, 1952, Contract Labour (Regulation & Abolition) Act 1970, Industrial Dispute Act, 1948, Fatal Accident Act, 1955, Industrial Employment (Standing Order) Act, compulsory notification of vacancies (Employment Exchange) Act, Payment of Bonus Act, or any other allied Central or State Govt. rules, regulations and schemes made there under. In case of non-fulfilment of any such obligations, the contract will be liable for termination at 15 days notice given by the SMC without prejudice or any of the other rights of the SMC under this contract.

3. 16 COMPENSATION/ INDEMNIFICATION

The contractor shall be liable for payment of all wages and other benefits, such as leave with wages, contributory provident fund, bonus, free medical aid, etc., to his employees and labour as per the statutory requirements as in force or, may be applicable from time to time during the currency of the contract.

The contractor shall bear all liabilities for employee and labour employed or retained by him as regards to any compensation, litigation and any other action arising out of operation of this contract or at the termination of this contract.

The SMC shall not pay any additional amount on any such account. The only remuneration payable to the contractor by the SMC will be on the basis of accepted rates and work executed thereof.

The contractor shall always indemnify the SMC and its representative against all the claims and liabilities for or in respect of all or any claim etc., of workers, labourers, public liabilities and staff employed and/ or engaged in respect of this contract under the aforesaid Acts, rules, regulations and schemes including statutory modifications thereof or otherwise for or in respect of any claim, damage, compensation, expenses, etc., whatsoever payable in consequence of any loss, damage, accident or injury etc., sustained by any employee or any other third person including the employees of the SMC. If at any time the SMC is required to make any payment/ claim/ compensation by virtue of any of the above Acts, etc., such payments shall be deemed to have been made on behalf of the contractor and same shall be recovered from the contractor's bill(s) or from any sum(s) due to the contractor.

All sums payable by way of compensations under any of these conditions shall be considered as reasonable compensation to be applied to the use of the SMC without reference to the actual

loss or damage sustained and whether or not any damage shall have been sustained.

Contractor shall indemnify and keep indemnified the SMC including his executives, engineers, employees and authorized agents/ representatives and shall hold them harmless from any and all loss, damage, liability costs of litigation counsel fees and other expenses arising out of any claim or suit for alleged infringement of patents, copyright, trademarks or trade names or brand relating to any of the stores, material or equipment described in the contract or for the use or resale thereof, and contractor agrees to assume the defence of any and all such suits and to pay any and all costs and expenses incidental thereto and any judgement awarded thereon.

3. 17 FORCE MAJEURE

The contract shall be subject to standard force majeure clauses such as war, civil disturbances, strikes, epidemic, pestilence, earthquake, fire, flood, but excluding wind conditions or any other act of God over which parties have no control or because of any law and order situation and/ or proclamation or ordinance of any govt. or of any statutory authority and in such an event the obligations of either parties shall remain in suspense during that period but work will be resumed immediately after the cause/ event as aforesaid, has ceased or otherwise deemed to have been determined. Provided a notice is given in writing by the party affected within 7 days of the happening of the event mentioning the circumstances constituting force majeure. Should one or both parties be prevented from fulfilling their contractual obligations due to the state of force majeure lasting for a continuous period of thirty days the two parties shall by mutual consultation decide about the further implementation of the contract, and in the event of the non-agreement in this regard, the SMC reserves the right to determine the contract.

Any changes after placement of order in existing rules/ policies by the Government which could seriously affect the construction activities.

3. 18 GENERAL

- (i) The Agency shall have to be obtained the necessary approvals from Discoms and complete the required formalities. SMC will assist administratively in case required. Agency shall have to arrange for all equipment/ meters etc. required for the connection of Solar Power system to DISCOM's distribution network/ system.
- (ii) **MNRE SUBSIDY IS TO BE AVAILED FOR THIS PROJECT. COTRACTOR'S HAS TO USE EQUIPMENTS/ ACCESSORIES AS PER MNRE'S REQUIREMENTS. IN CASE OF GRANT ISN'T RECEIVED FROM MNRE DUE TO CONTRACTOR'S FAULT OR ERROR, APPROPRIATE LIQUIDATED DAMAGES WILL BE CHARGED & DEDUCTED FROM THE CONTRACTOR'S BILLS/ PENDING DUES.**
- (iii) The successful bidder shall have to all the needful to avail tariff benefits given by GERC/ Scheme launched by the MNRE- GoI. Necessary formalities to sign all kind of agreements with DISCOM shall be done by the contractor as per GERC tariff and prevailing regulations. SMC shall assist in providing necessary administrative documents required in support of all necessary agreements to be signed.
- (iv) **The successful bidder shall do the needful to avail benefit of exemption of Custom and excise duty on the materials from Central/ State Government.**
- (v) The bidder shall declare the name of the employee of SMC/ GEDA and his relationship with him in case any employee of SMC/ GEDA is relative of the bidder.
- (vi) The bidder shall not display the photograph of the work and shall not take advantage through publicity of the work without written permission of SMC.

3. 19 BREACH OF CONTRACT

In the event of breach of any of the conditions of the contract at any time on the part of the contractor the contract may be terminated summarily by SMC, Surat without compensation to the contractor.

While making the risk purchases, SMC may exercise its own discretion. In all cases where orders are cancelled due to non-supply of stores, it will be treated as breach of contract and the

SMC shall take action accordingly. It is clarified that SMC may resort to risk purchase without granting any extension.

The contract for the supply of various items can be repudiated at any time by SMC if the supplies are not made to its satisfaction. In case of non-performance in any form and shape of the terms & conditions of the agreement the SMC, Surat has power to cancel the contract pertaining to the supply.

3. 20 DISQUALIFICATION

If a tenderer imposes conditions which are in addition to/ or in contravention with the conditions mentioned herein, his tender is liable to be rejected. In any case none of such conditions will be deemed to have been accepted unless specifically mentioned in the letter of acceptance of tender issued by SMC.

Direct or indirect canvassing on the part of the tenderer or his representatives will be deemed as a disqualification.

3. 21 CHANGE IN CONSTITUTION

In any case in which any of the powers conferred upon the SMC shall have become exercisable and the same had not been exercised the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any further case of default by the contractor.

3. 22 ASSET TRANSFER

Should at any time during the currency of Maintenance contract the SMC decide to sale/ transfer the assets of Solar Power Plant to their sister company/organization or any other company/ organization, all the agreed terms & conditions will remain the same for the new company/ organization. The contractor will provide all the services as per contract awarded.

3.24 SETTLEMENT OF DISPUTES

Except or otherwise specifically provided in the contract, all disputes concerning question of fact arising under the contract shall be decided by the Engineer-in-charge, subject to a written appeal by the contractor to the Engineer-in-charge, and these decisions shall be final and binding on the parties hereto. Any dispute or differences including those considered as such by only one of the parties arising out of or in connection with this contract shall be to the extent possible settled amicably between the parties. If amicable settlement cannot be reached then all disputed issues shall be settled as provided in (a) below.

DISPUTE OR DIFFERENCES TO BE REFERRED TO:

If at any time, any question, disputes or differences of any kind whatsoever shall arises between the Engineer-in-charge and the contractor upon or in relation to or in connection with this contract, either party may forthwith give to the other, notice in writing of the existence of such question, dispute of difference as to any decision, opinion, instruction, direction certificate or evaluation of the Engineer-in-charge.

The question or difference shall be settled by the Municipal Commissioner, who shall state his decision in writing and give notice of the same to the Engineer-in-charge and to the Contractor, such decision shall be final and binding upon both parties to the contract and work on contract if not already breached or abandoned shall proceed normally unless and until the same shall be revised (or upheld) due to any judicial proceeding.

If, Municipal Commissioner fails to give a decision within three (3) calendar months after issuance of notice of a question, dispute or difference or if the contractor is dissatisfied with any such decision of the Municipal Commissioner then the then the matter may be referred for

arbitration as per Indian Arbitration and Reconciliation Act 1996 and its amendment thereof from time to time. The place of arbitration shall be SURAT only.

3.25 JURISDICTION

Legal proceedings, if any, arising out of the tender contract shall be lodged in the jurisdiction of courts situated in Surat only.

3.26 ADDENDA/ CORRIGENDA

Addenda/ Corrigenda to the tender document may be issued prior to the date of opening of the tenders to clarify documents or to reflect modifications in the design, drawing, specifications or contract terms. Each recipient will retain one copy of each addendum/ corrigendum and submit the other copy duly signed with his offer. All addenda/ corrigenda issued by the SMC shall become part of the tender document.

-Sd-
Executive Engineer,
Light & Energy Efficiency Cell,
Surat Municipal Corporation.

SECTION-IV

SPECIAL CONDITIONS FOR SUPPLY, ERECTION, TESTING & COMMISSIONING

GENERAL

- 1.1.1. Special Conditions of Contract shall be read in conjunction with the General Conditions of the Contract, specifications of work, drawing and any other document forming part of this contract wherever the context so requires.
- 1.1.2. Serial number (Identification mark) must be permanently marked on all major components of the SPV systems. Metallic number plates with serial numbers duly riveted or fixed with strong adhesive for non-metallic body, as approved by SMC shall be fixed on charged controller of each lot.
- 1.1.3. Where any portion of the Special Conditions of Contract is repugnant to or at variance with any provisions of the General Conditions of the Contract then unless a different intention appears, the provision of the Special Conditions of contract shall be deemed to over-ride the provisions of the General Conditions of the contract only to the extent such inconsistencies of variations in the special conditions of contract as are not possible of being reconciled with the provisions of general conditions of contract.
- 1.1.4. Competent authority of the corporation reserves the right to reduce the scope of work and split the tender in two parts or more without assigning any reason, even after award of contract, if necessary for any site or all sites and thus variations in contract value shall be applicable. The quoted rates shall remain firm for the above said variation.
- 1.1.5. The materials, design and workmanship shall satisfy the applicable standards, specifications contained herein and codes referred to. Where the Technical Specifications stipulate requirements in addition to those contained in the standard codes and specifications, those additional requirements shall be satisfied.

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

- (i) Telex/ telegram of Intent, detailed Letter of Intent along with Statement of Agreed variations and its enclosures.
- (ii) Special Conditions of Contract
- (iii) Job specifications
- (iv) Drawings
- (v) General Conditions of Contract

SCOPE OF WORK

The scope of work covered in this tender shall be as that specified in the Section of Scope of Work and Technical Specifications and as mentioned elsewhere in this tender document. The scope as described in the tender document is not limiting in so far as the responsibilities of the contractor are concerned and shall include inter-alia, carrying out any and all works and providing any and all facilities those are required in accomplishing an operating system, complying fully with all requirements as are envisaged of it, complete in all respect and satisfying all performance and guarantee requirements stated or implied form the contents of the tender document. The contractor shall make all required liasioning with the concerned power utilities for interconnection of the SPV based Power Plant with the Grid; so as to export the power from SPV based Power Plant. The contractor shall get tested all required equipments from the power utility (like Energy Meter etc.) well before commissioning of the SPV based Power Plant, so as to avoid any delay in export of power.

QUALIFYING REQUIREMENTS

The following are the qualifying requirements for the Bidder. Bids, which do not meet the listed requirements/ non submission of the documents, may not be considered for financial evaluation.

1. Organization

- (i) For Companies- Certified copy of the "Certificate of Incorporation" together with certified "Memorandum and Articles of Association" and a list containing names and addresses of all the directors should be furnished.
- (ii) For Partnership Firms- Certified copy of the partnership together with a certified extract from the Registrar of Firms containing names and addresses of all the partners of the firm should be furnished.
- (iii) For Proprietary firm- Name and address of Proprietor should be furnished.

2 Technical Qualification Criteria

- (i) The bidder must be a solar modules manufacturer and offered modules shall be tested at MNRE test centres and shall comply with the requirement of IEC 61215, IEC 61730, IEC 61701, IEC 62716, IEC 62804 (TS), & IEC 62759-1(Compliance certificate to be attached). The Bidder should have adequate facility for testing of SPV system and shall submit list of testing facility available along with photographs of testing facility. Offered module must have min. efficiency of 15%.
- (ii) The bidder must have experience of supplying, installing and commissioning solar PV systems in India. Appropriate evidences in terms of completion certificate/ handover certificate must be provided for the same.
- (iii) The bidder must have his own office as well as authorized sales & service centre in different parts of India. Bidder should have an authorized exclusive service centre in Gujarat (proof for registered address is required). Preference shall be given to bidder having authorised local service centre at Surat. Appropriate evidences must be provided for the same.
- (iv) The bidder must have executed work(s) for **grid connected Solar Photovoltaic based power plants** during last 7 years as below: -
 - a. At least single work having min. cost/ value of **Rs. 2345.00 Lacs or**
 - b. Two works having min. cost/ value of **Rs. 1466.00 Lacs each or**
 - c. Three works having min. cost/ value of **Rs. 1172.00 Lacs each**

Following enhancement factors will be used for the cost of works executed and financial figures to common base for the value of the works completed in India.

Financial Year	Multiplying factor
One(2015-16)	1.10
Two(2014-15)	1.21
Three (2013-14)	1.33
Four (2012-13)	1.46
Five (2011-12)	1.61
Six (2010-11)	1.77
Seven (2009-10)	1.95

In all of the above cases, tenderer **must have completed at least one work of grid connected rooftop Solar Photovoltaic based power plant having min. capacity of more than 100 kWp for single work. Appropriate evidences must be provided for the same.**

- (v) The Average Annual Turnover of the bidder in field of Solar Power Plant of the last three preceding financial years i.e. **2013-14, 2014-15 And 2015-16 shall not be less than Rs. 9.18 Crores.** Appropriate evidences must be provided for the same.
- (vi) The net worth of the bidder during any one year among last three preceding financial years i.e. **2013-14, 2014-15 And 2015-16** shall be positive.
- (vii) The net yield of system per kW/ Annum should not be less than **1,300 kWh.**
- (viii) Sound financial health of company is a prerequisite.

-
- (ix) Preference shall be given to the bidder who has ISO 9001, ISO 14001 certification.
 - (x) The company/ its product of SPV modules must be registered with **MNRE**.
 - (xi) The bidder must be in business of solar cells/ modules manufacturing/ installation works for last 3 years.

Please fill in the enclosed Bid Response Sheet No. 6

RESPONSIBILITY OF THE CONTRACTOR

- 1.1.1 All expenses towards mobilization at site and demobilization including bringing in equipment, work force, materials, dismantling the equipment, clearing the site after completion of work and liaisoning for interconnection of SPV based Power Plant with the Grid with concerned departments/ agencies etc. shall be deemed to be included in the prices quoted and no separate payments on account of such expenses shall be entertained.
- 1.1.2 Contractor may have to work in energized or partly energized conditions. In such cases, it shall be responsibility of the contractor to arrange for necessary permits or shuts downs and provide skilled and responsible persons for the execution of works. Contractor shall organize his works during the shutdown periods properly and complete the programmed works within the time given. Contractor shall not be paid any extra payments for working under the above said circumstances.
- 1.1.3 It shall be entirely the contractor's responsibility to provide, operate and maintain all necessary construction equipments, scaffoldings and safety gadgets, cranes and other lifting tackles, tools and appliances to perform the work in a workman like and efficient manner and complete all the jobs as per time schedules. However, if any equipment/ facility is provided by SMC, the same shall be on chargeable basis.
- 1.1.4 The procurement and supply, in sequence and at the appropriate time, of all materials and consumables shall be entirely the contractor's responsibility and his rates for execution of work will be inclusive of supply of all these items.
- 1.1.5 In case any material is issued by the SMC, then it will be properly used and maintained. Subsequent to completion of its use, it will be returned to SMC in good condition. In case of damage or misuse of such stores, SMC will recover the cost from the contractor from the payments due to the contractor.

SECURITY CUM PERFORMANCE GUARANTEE (SCPG) & AGREEMENT

- 1.1.1 The contractor shall furnish within 10 days of LoI/ work order, Security Deposit cum Performance Guarantee (SCPG) equivalent to 2.5% of the total contract value in form of Bank Guarantee as per format approved by SMC from any schedule bank (co-operative bank not accepted) having branch in Surat, Gujarat. (Ref. **Annexure: I**)
- 1.1.2 Bank guarantee shall be kept valid for a period of 14 months from the date of commissioning of the solar power projects.
- 1.1.3 Besides above, the successful contractor shall also be required to deposit an amount equal to 2.5% of the order value in addition to above Bank Guarantee as Security Cum Performance Guarantee (Security Deposit) in Municipal Treasury in cash/ by Demand Draft in the name of "Municipal Commissioner, Surat Municipal Corporation" of any nationalised bank/ scheduled bank, Surat branch only within 10 days of order failing which penalty @ 0.065% per day of delay on total amount will be levied. The security deposit shall be released only after successful completion of the defect liability/ guarantee period of 12 months.
- 1.1.4 The SPBG shall be liable to be forfeited wholly or partly at the sole discretion of the SMC, should the contractor either fail to execute the work within the stipulated period or fail to fulfil the contractual obligations or fail to settle in full his dues to the SMC. In case of premature termination of the contract, the SCPG will be forfeited and the SMC will be at liberty to recover the loss suffered by it from the contractor.
- 1.1.5 The SMC is empowered to recover from the SCPG through invocation of B.G./ forfeiting the cash amount deposited through DD or other means for any sum due and for any

other sum that may be fixed by the SMC as being the amount or loss or losses or damages suffered by it due to delay in performance and/ or non-performance and/ or partial performance of any of the conditions of the contract and/ or non-performance of guarantee obligations.

- 1.1.6 No interest is payable on SCPG amount.
- 1.1.7 In the event of full SCPG being forfeited, the SMC at its discretion and without prejudice to its any other rights can terminate the contract.
- 1.1.8 Besides above contractor shall be required to enter into the contract agreement on Gujarat stamp paper, worth Rs. 100.00 (to be brought by the contractor) on receiving the order.

COMPLETION TIME

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

EXTENSION OF TIME

- 1.1 Failure or any delay by the SMC due to any cause whatsoever shall in no way effect or vitiate the contract or alter the character thereof or entitle the contractor to damages or compensation thereof provided that the SMC may extend the time for completion of the work by such period as it may consider necessary or proper.
- 1.2 If the contractor shall desire an extension of the time for completion of the work on the grounds of his having been unavoidably hindered in its execution or the work has been materially increased by the SMC or other such grounds , he shall apply in writing to the engineer in-charge within ten days of the date of occurrence of event on account of which he desires, such extension as aforesaid , and the Engineer –in-charge shall ,if in his opinion (which shall be final) reasonable grounds have been shown thereof, authorizes such extension of time as may be, in his opinion be necessary or proper. Whenever such extension is granted by the engineer in-charge, this would be without prejudice to the SMC's right under this contract.

NO COMPENSATION FOR ALTERATION IN OR RESTRICTION OF WORK

If at any time from the commencement of the work the, SMC shall for any reason require alteration in the work, the Engineer-in-charge shall give notice in writing of the fact to the contractor, who shall have no claim to any payment or compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full or prior to alteration.

CONTRACTOR/ REPRESENTETIVES AT THE SITE

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

SUB-LETTING OF WORK

"In the eventuality sub-letting of work SMC, will be informed ***in advance***. However, the contractor's liability or obligations will not get altered/ delegated to sub-contractor. If any sub-contractor engaged upon the work at the site executes any work which in the opinion of the engineer in-charge is not in accordance with the contract documents, the SMC may give written notice to the contractor requesting him to terminate such sub-contracts and the contractor on

the receipt of such notice shall terminate such contracts.”

POWER OF ENTRY

1.1 In case the contractor does not commence the work in the manner described in the contract documents or if he shall at any time in the opinion of the Engineer in charge:

- i) Fail to carry on the works in conformity with contract document/ schedule or
- ii) Substantially suspend work or the works for a continuous period of 15 days without permission from the engineer in charge, or
- iii) Fail to carry on and execute the works to the satisfaction of the engineer in charge, or
- iv) Commit or suffer or permit any other breach of any of the provisions of the contract on his part to be performed. or
- v) If the contractor abandons the works, or
- vi) If the contractor during the continuance of the contract becomes bankrupt.

In any of such events, the SMC shall have the power to enter upon the works and take possession of the materials, temporary works, equipment, tools and stocks thereon, and to revoke the contractor's license to complete the works by his agents, other contractors or workmen.

USE OF COMPLETED PORTIONS:

1.1 Whenever in the opinion of the SMC the work or any part thereof is in a condition suitable for use and in the best interest of the SMC requires use, the SMC may take possession of the same. The contractor shall, however, be not relieved of his pending obligations.

1.2 Prior to the date of final acceptance of the work by the SMC, all necessary repairs or renewals in the work or part thereof so used on account of defective materials or workmanship or due to the operations failure except normal wear & tear shall be at the expenses of the contractor. Such use shall neither relieve the contractor or any of his responsibilities under the contract, nor act as waiver by the SMC of the conditions thereof. However, if in the opinion of the SMC the use of the work or the part thereof delays the completion of the remainder of the work, the SMC may grant such extensions of time as it may consider reasonable. The decision of the SMC in the matter shall be final. The contractor shall not be entitled to claim any compensation on account of such use by the SMC.

POWER OF THE ENGINEER-IN-CHARGE TO ORDER SUSPENSION OF WORK

The Engineer-in-charge may, from time to time by direction in writing and without invalidating the contract, order the contractor to suspend the work or any part thereof at such time or times and for such reasons as he may consider necessary. After such directions to suspend the work or any part thereof has been given, then proceed with the work or part thereof, directed to be suspended until he receives a written order from the Engineer-in-charge to so proceed. In the event of suspension, the SMC may under the provisions of the contract, extend the time for completion of the work or part thereof by such period as it may find reasonable. The decision of the SMC in the matter shall be final and binding on the contractor.

PAYMENT TERMS

Payments shall be released in the following manner after furnishing of Security cum Performance Guarantee by the successful bidder and signing of Contract Agreement.

- (i) 10% of the contract value (SITC), to be given as advance after Award of Contract/ LoI against furnishing of Bank Guarantee of equivalent amount as per format agreed/ provided by SMC.
- (ii) Remaining 90% payment shall be released against milestones as mentioned below in accordance with the value of contract value after furnishing of Security cum Performance Guarantee: -

SITC Works	
a)	40% of the order value of SITC portion against receipt of all equipment/ accessories at site on prorated basis
b)	20% on erection of SPV based Power Plants on prorated basis.
c)	20% against successful commissioning & injection of electrical energy into DISCOM's grid of the SPV based Power Plants on prorated basis.
d)	5% after successful commissioning, on rectification of all deficiencies, submission of all documents and stabilization period of 30 days. 5% against successful completion of 3 months of satisfactory operations after completion of stabilization period.

(iii) Terms of payments for Maintenance period: -

Payment of Maintenance charges shall be done quarterly, at the end of each quarter on prorated basis.

PAYMENT OF VARIOUS STATUTORY CHARGES RELATED TO ELECTRICAL AUTHORITIES/ AGENCIES LIKE ELECTRICAL INSPECTION FEES, GEDA REGISTRATION & CERTIFICATION CHARGES, DISCOM FEES, SLDC FEES/ CHARGES (IF ANY), ENERGY METER RENT ETC. SHALL BE PAID BY THE SMC. WHEREAS KVARH CHARGES OR ANY OTHER STATUTORY CHARGES SHALL BE PAID BY THE CONTRACTOR OR IT SHALL BE DEDUCTED FROM THE CONTRACTOR'S O & M BILLS/ DUES. HOWEVER, ALL LIASONING WITH THE CONCERN AUTHORITIES, DISCOM, GEDA/ CEI SHALL BE DONE BY THE CONTRACTOR. THE BIDDER IS REQUESTED TO QUOTE ACCORDINGLY.

PAYMENT PROCEDURE

The Bidder shall submit the bills for claim in two copies. The payment shall be made after the verification of the bill by the Engineer In-charge.

It is expressly understood that the drawl of payment by the contractor in the manner specified will not be construed as the fulfilment of the contractor's obligations either in part or whole under the contract and that the contractor shall continue to remain responsible to SMC until all the obligations under the agreement have been fulfilled.

RATES TO BE INCLUSIVE

- 1.1 The rates quoted by the contractor shall remain firm and fixed and binding till the issue of completion certificate and shall not be subject to escalation. Rates shall be deemed to include and cover all costs, expenses, taxes, construction cess, any kind of cess, duties, levies, royalties, foreign exchange variation, etc. and liabilities of every description and all risk of every kind to be taken in execution, completing and handing over the work to the SMC by the contractor. The SMC shall deduct income tax, Sales tax or Works Contract as applicable on the indivisible works contract & other applicable taxes as per the prevailing rates from the bills of the contractor. SMC shall not be responsible for any such liability on the contractor in respect of this contract and exclusion of any applicable taxes at prescribed rates due to ignorance or otherwise shall not form a reason for claiming anything extra at a later date.
- 1.2 The contractor shall guarantee the SPV based power plant & installation work for a period of 12 (twelve) months from the date of completion stabilization period. Any damage or defect that may arise or lie undiscovered at the time of issue of completion certificate, connected in any way with the equipment or materials supplied by him or in the workmanship shall be rectified or replaced by the contractor at his own expenses as deemed necessary by the Engineer-in-charge or in default, the engineer-in-charge may cause the same to be made good by other workman and deduct expenses of which the certificate of Engineer-in-charge shall be final) from any sums that may be then or at any time thereafter, become due to the contractor or from his security deposit.
- 1.3 If the contractor feels that any variation in work or in quality of materials or proportions would be beneficial or necessary to fulfil the guarantee called for, he shall bring this in

writing to the notice of the Engineer-in-charge.

DEFECTS PRIOR TO TAKING OVER:

- 1.1 If at any time before the work is taken over, the Engineer- in-charge shall:
 - (i) Decide that any work done or materials used by the contractor or any sub-contractor is defective or not in accordance with the contract, or that the works or any portion thereof are defective, or do not fulfil the requirements of contract (all such matters being hereinafter, called 'Defects' in this clause) and
 - (ii) As soon as reasonably practicable notice given to the contractor in writing of the said decision specifying particulars of the defects alleged to exist or to have occurred then the contractor shall at his own expense and with all efforts would make good the defects so specified.
- 1.2 In case the contractor fails to do so, the SMC may take, at the cost and risk of the contractor, such steps as may in all circumstances be reasonable to make good such defects. The expenditure so incurred by the SMC will be recovered from the amount due to the contractor. The decision of the Engineer-in charge with regard to the amount to be recovered from the contractor will be final and binding on the contractor. As soon as the works have been completed in accordance with the contract and have passed the tests on completion, the Engineer-in-charge shall issue a certificate in which he shall certify the date on which the works have been so completed and have passed the said tests and the SMC shall be deemed to have taken over the works on the date so certified.

DEFECTS AFTER TAKING OVER:

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

COMPLETION CERTIFICATE

- 1.1 On satisfactory completion of work the contractor shall apply to the State/ local Power Utility/ GEDA, as the case may be, for the issue of commissioning certificate and the same shall be arranged within 15 days of the commissioning of work in all respects (if required), after verifying from the completion documents and satisfying himself that the work has been completed in accordance with details set out in the construction and erection drawings, and the contract documents. No completion certificate shall be given nor shall the work be deemed to have been executed until the export of generated solar power commenced, statutory requirements are completed and all scaffolding, surplus materials and rubbish is cleaned off the site completely.
- 1.2 The following documents will form the completion certificate documents:
 - a) The technical documents as per scope of work & technical specifications according to which the work was carried out.
 - b) Two sets of as built drawings showing therein the modification and corrections made during the course of execution signed by the Engineer-in-charge. One digitized soft copy of as built drawings shall also be submitted.
 - c) Certificates of type/ routine tests performed for various equipment at works along with O&M manuals

-
- d) Statutory clearances/ permissions.
 - e) Payment of all statutory duties, taxes, labour wages & others. (The document (s) having evidence of paying statutory duties, taxes etc. as per requirement of concerned statutory authorities).
 - f) The copy of certified initial meter reading of main meter and back up meter signed by power utility, etc.
 - g) Certificate regarding completion of the facility in all respect by the Engineer In charge
 - h) Copy of Power Purchase Agreement executed with the supply agency.

ESTIMATED ANNUAL ENERGY GENERATION

Bidder is required to furnish estimated annual energy generation as per attached **Bid Response Sheet: 11** along with their offer failing which his offer is liable to be rejected.

No change in data supplied by the bidder at the time of submission of the bid related to estimation of the generation like Module type, module size, Location of site etc. shall be permitted. However, during the execution, in case it becomes absolutely inevitable for the Bidder then minor changes may be accepted by SMC but this should not affect the annual energy estimation. However, SMC will again get the estimation of generation of the SPV based power plant checked with the changes of data and if the generation is found to be less than what was considered for financial evaluation then the Bidder will have to modify the parameters in such a way that estimated generation with changes does not fall below the generation considered for financial evaluation.

Grid Down Time: "The Grid Down Time benefit of 0.5 kWh/kWp/hour round the year shall be given to the bidder for power outage between 9:00A.M. to 4:00P.M."

Note:- The Solar Energy generation shall be calculated on the basis of meter reading of Bi-directional Energy Meter installed at 11kV (HT side) on A.C. side.

INSURANCE

- 1.1 The contractor shall be required to affect insurance to the supplies, transit, personnel and all other related to the satisfaction of the SMC as follows including all third party risks. A copy of all such policies shall be given to the SMC along with proof of premium paid, if required.
 - i) Insurance to cover marine transit cum storage cum erection cum commissioning policy;
 - ii) Insurance to cover third party liability
 - iii) Workmen compensation and/ or group personal accidents Insurance policy covering all its employees and works including of the sub-contractor.
 - iv) It would be the responsibility of the contractor to maintain the SPV based power plant and it's all the equipments in perfect condition at his own cost for the entire period of 10 years for which SMC shall pay the agreed O&M charges only. The replacement/ repair/ modification of any/ all equipments has to be carried out by the contractor at his own cost for the entire period of contract, **so as to give the min. 90% of claimed net energy generation.** SMC shall not be responsible for any break down/ failure of any equipment to any reason thereof and that the contractor shall maintain requisite stock of spares of various equipments. The bidder may take a suitable type of insurance to meet out the above purpose.
 - v) Nevertheless fire and allied perils including earthquake, flood, storms, cyclone, tempest & burglary, insurance policy shall be taken by SMC regularly during maintenance contract period. In case of any loss/ claim under the policy, O&M contractor shall immediately inform the same to SMC & Insurance Company & thereafter shall take all the measures required to protect the interest of SMC/ underwriters and required for settlement of claim. In the case of any delay/ lapse on the part of O&M Contractor the loss would be made up by them. The contractor shall replace the damaged equipment without waiting for settlement of insurance claim.

-
- 1.2 Contractor shall also effect and maintain any and all other insurance, which he may be required under any law or regulation or practice from time to time.
 - 1.3 The Contractor shall take all reasonable precautions to prevent fire of any nature in the general vicinity of SPP areas and he shall be responsible for all damage from fires due directly or indirectly.

TESTS/ INSPECTION

- 1.1 All the standard tests in accordance with the standards adopted shall be carried out at the manufacturer's works on all the major equipment and accessories covered by this specification so as to ensure efficient operation and satisfactory performance of all the component/ parts. The Bidder shall furnish a complete list and details of all such tests to be conducted on different equipment. The contractor will furnish a schedule of testing so that SMC may associate his representative to witness the tests on any one set of major components. The contractor shall also furnish copies of all test/ inspection reports for reference to the SMC.
- 1.2 Any special test to be performed shall be mutually agreed upon between the Bidder and the SMC.
- 1.3 All equipment shall be further tested at site, as recommended, before commissioning.
- 1.4 The work is subject to inspection at all times and at all places by the Engineer In charge. The contractor shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the relevant codes of practice during the performance of the work.
- 1.5 The decision of the Engineer-in-charge in regard to the quality of work and materials and performance to the specifications and drawings shall be final.
- 1.6 If any item is rejected during test/ inspection, the same shall be replaced/ rectified by contractor without any cost
- 1.7 Third party inspection of all major items shall be done by agency appointed/ authorised by SMC, if required. All expenses incurred for third party inspection shall be borne by SMC.

GUARANTEE

- 1.1 The manufacturer's guarantee for all bought out items shall be made available to SMC and shall be valid at least for the entire defect liability period. If manufacturer's guarantee is not so available to the SMC, the contractor himself shall guarantee the items supplied for the entire defect liability period. However, in case the manufacturer's guarantee period is in excess of the defect liability period, such guarantees for such excess period shall be passed on by the contractor to the SMC.
- 1.2 Any material and/ or equipment and/ or accessories which shall prove defective or which shall fail to meet the desired design guarantee or performance guarantee during the defects liability period, the contractor shall replace/ rectified at his own cost that material and/ or equipment and/ or accessories with another of make approved by SMC. Manufacturer's/ contractor's guarantee for such replaced equipment shall also be made available to SMC and should be kept valid at least for one year from the date of last replacement
- 1.3 The contractor shall guarantee the satisfactory performance of the SPV based power plant for a period of 12 months from the date of completion of stabilization period of 30 days. Any damage or defect, that may arise after or remain undiscovered at the time of issue of commissioning certificate, same shall be rectified or replaced by the contractor at his own expenses as deemed necessary by the engineer-in-charge. This guarantee shall be applicable for the quality of works executed as well as for the equipment/ fittings supplied by the contractor.

3.27 STATUTORY APPROVAL FOR WORKS

- 1.1 All statutory approvals for the works (from power utility/ Electrical Inspector or any other approval required as per applicable law, rules thereof shall be obtained by the Bidder. The statutory fees applicable till warranty period shall be included in the offered price.

-
- 1.2 The Inspection and acceptance of the work as above shall not absolve the contractor from any of his responsibility under this contract.
 - 1.3 If any penalty/ levy becomes payable to the State Electricity Utility on account of low power factor of the SPV based power plant, the same has to be borne by the contractor only.
 - 1.4 All fee/ charges payable to any statutory authority on account of maintenance of photovoltaic based power plant shall be borne by the contractor during the warranty period of the contract.
 - 1.5 The contractor shall be responsible for interconnection of photovoltaic based power plant with the grid, so as to export power from photovoltaic based power plant. The date of commissioning will not be considered prior to inter connection of photovoltaic based power plant with the grid. Therefore, the contractor should make all efforts for installation of metering equipment, etc., and carry out the inter connection prior to the final commissioning of the photovoltaic based power plant.

-
Sd-
Executive Engineer,
Light & Energy Efficiency Cell,
Surat Municipal Corporation.

SECTION- V

SPECIAL CONDITIONS FOR MAINTENANCE OF SPV BASED POWER PLANT

TERM OF CONTRACT

The contract for Maintenance on comprehensive basis shall be for 10 years. However, order for Maintenance of the SPV based power plant shall be placed for initial period of 10 years including free Maintenance during first year of operation. The maintenance period shall be reckoned from the first day of completion of stabilization period.

EXTENSION OF TERM

The maintenance contract shall be renewable for a further 10 years on the same terms & conditions but at the price as mutually agreed as per the conditions prevailing at that time.

BATTERY LIMIT

The battery limit for bidder during the period of maintenance contract shall cover complete SPV based power plant and power evacuation system upto inter connection point with existing distribution system at site.

The bidder shall be responsible for supply of all spare parts, repairs/ replacement of any defective equipment(s) at his own cost as required from time to time, schedule and preventive maintenance, major overhauling of the plant, maintaining log sheets for maintenance & performance details, deployment of maintenance staff to ensure continuous operations and qualified engineer for supervision of maintenance work, so as to ensure the smooth operation for the entire period of Maintenance. SMC shall not pay any amount except the agreed maintenance charges.

SCOPE OF WORK

This job involve by means of the enclosed specifications, design, manufacture, supply, installation, commissioning of the SPV power systems with 1 year guarantee period followed by 10 years of comprehensive maintenance contract (4 visit/ year) including comprehensive insurance and all associated civil works of the 3.6 MWp solar power plants consisting of solar arrays.

Contractor shall carry out maintenance work for the Solar Power plant as set forth herein. Contractor shall perform the work and supply all required spare parts in a prudent and efficient manner and in accordance with Manufacturers and systems designers' specifications, the Annual Operating Plan for the Plant and all operation and maintenance manuals.

Contacto shall be required to work/ observe all Indian applicable laws including environmental protection, pollution, sanitary, employment and safety laws.

Contractor shall use all reasonable and practical efforts: -

- ⇒ To maximize plant capacity utilization,
- ⇒ To minimize plant downtime,
- ⇒ To optimize the useful life of the equipment of the power plant.
- ⇒ The contractor shall perform the following obligations prior to takeover of the maintenance activity:
 - Prepare Mobilization plan in consultation with the SMC
 - Provide the services and personnel set forth in the Mobilization Plan
 - Develop and implement plans and procedures including those for fire fighting, maintenance planning, procuring and inventory control of stores and spares, plan to meet emergencies, plant safety and security; and such other facilities and systems as may be necessary to commence contractor's on-going responsibilities.

After taking over the activity of maintenance for the power plant, the Contractor shall be

responsible for the operation and maintenance of the plant and shall perform all necessary services including applicable services listed below:

- a. Provide all maintenance services necessary and advisable to efficiently operate and maintain the plant, including all associated and appurtenant mechanical and electrical equipments keeping in view the objectives set-forth herein above.
- b. Maintenance of the Plant which shall include detail of power output, other operating data, repairs performed and status of equipment, all such records to be maintained for a minimum of forty two (42) months after the creation of such record or data and for any additional length of time required by regulatory agencies with jurisdiction over the Parties. Upon expiry of term, the contractor shall hand over such records to the SMC; however, SMC shall have access to all such records at any time.
- c. Regularly update and implement an equipment repair or replacement and preventive maintenance program that meet the specifications of the equipment manufacturers and the recommendations of the manufacturers.
- d. Perform periodic overhauls or preventive maintenance required for the Plant in accordance with the recommendations of equipment manufacturers. Also attend break down and other maintenance in the Plant.
- e. Provide technical & engineering support for solving maintenance problems.
- f. Perform the services required to procure all spare parts, or equipment/s as required, overhaul of parts, tools and equipment, required to maintain the Plant in accordance with the recommendations of individual original equipment manufacturer.
- g. Maintain the plant's fire protection and safety equipment.
- h. Maintain with the assistance of the SMC, accounting records regarding the facility in accordance with the generally acceptable accounting principles under the Laws of India.

GUARANTEE FOR REACTIVE POWER

It shall be the responsibility of the maintenance contractor to maintain minimum power factor of the solar power plant as per the requirement of concerned Discoms so as to minimize VAR drawl from the discom. Any charges to be paid for the reactive power drawal shall be in scope of contractor. The KVARH charges shall be settled on annual basis.

LIAISONING

It is the responsibility of the contractor to liaison with the following authorities: -

- ⇒ Liasioning with Gujarat State Government, if required.
- ⇒ Liasioning with Gujarat State/ Local Power Utilities (DISCOMS)
- ⇒ Liasioning with GEDA
- ⇒ Any other department(s)/ agency(ies) as may be required.

PERFORMANCE GUARANTEE DURING MAINTENANCE PERIOD

The Bidder will submit a bank guarantee after 12 (twelve) months of commissioning i.e. at the start of maintenance period before the expiry of 12 months of guarantee/ free maintenance period.

The amount of bank guarantee equals to 10% of net estimated energy generation value for the first year at all times up to maintenance period of 10 years. The validity should be of 10 years.

The Bank Guarantee shall be given in the proforma as per **Annexure-II**

INSURANCE

- (i) Contractor shall provide or obtain and maintain in force throughout the period of contract the following insurance coverage:
- (ii) Workmen compensation and/ or group personal accidents Insurance policy covering all its employees and works including of the sub-contractor if any. Insurance to cover third party

liability.

- (iii) Insurance in respect of claims for personal injury to or death of any person in the employment of contractor and arising out of and in the course of such employment, which insurance shall comply with all applicable Indian law and directives.
- (iv) Motor vehicle, general liability and other insurance and deductibles/ excess thereon as may be required by applicable Indian law or in order to enable the contractor to comply with prudent utility practice.
- (v) The bidder may take MBD insurance policy but it would be the responsibility of the contractor to maintain the solar power plant and all the equipments in perfect condition at his own cost for the entire period of 10 years for which SMC shall pay the agreed maintenance charges only. The replacement/ repair/ modification of any/ all equipment shall have to be carried out by the contractor at his own cost for the entire period of contract. SMC shall not be responsible for any break down/ failure of any equipment to any reason thereof. Spares/ components should be replaced at the earliest so that PLF should not fall below the claimed.
- (vi) Nevertheless fire and allied perils including earthquake, flood, storms, cyclone, tempest & burglary, insurance policy shall be taken by SMC regularly during contract period. In case of any loss/ claim under the policy, contractor shall immediately inform the same to SMC & Insurance Company & thereafter shall take all the measures required to protect the interest of SMC/ underwriters and required for settlement of claim. In the case of any delay/ lapse on the part of Contractor the loss would be made up by them. The contractor shall replace the damaged equipment without waiting for settlement insurance claim.

MEASUREMENT OF ENERGY AND METERING: -

(i) **Metering Systems:**

The contractor shall maintain the Metering System (which shall include energy meter and other accessories, if any). The metering system will be designed so as to measure outgoing energy and power delivered by the SPV based power plant to the power utility (DISCOMS) at the delivery point, i.e. point of inter connection and also for the import of energy for any purpose. Accuracy class of all metering equipments shall comply the requirements of power utility (DISCOMS). The reading shall be done jointly with Power Utility Engineer/ GEDA on monthly basis or at mutually agreed time interval.

(ii) **Testing of Meters:**

The SMC shall have the right to carry out surprise inspections of the Metering Systems from time to time to check their accuracy.

All testing and metering equipment shall conform to the relevant IS/ IEC/ DISCOM standards.

If either the contractor or the SMC finds any inaccuracy in the Metering System, the contractor or the SMC, as the case may be, shall notify the power utility and get corrected.

(iii) **Sealing and Maintenance of Meters:**

The Metering System shall be sealed in the presence of both parties or in the presence of Discom's Engineer.

When the Metering System and/ or any component thereof is found to be outside the acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, re-calibrated or replaced by the contractor as soon as possible. If it is to be get repaired/ replaced/ calibrated from the power utility than it shall be done accordingly.

Any meter seals shall not be broken by contractor's representative then all consequences should be on part of contractor.

MAINTENANCE WORKS & CHARGES: -

Maintenance works can be sublet to experienced contractor after taking prior approval of Surat Municipal Corporation.

The maintenance charges shall be inclusive of taxes and duties as applicable. But any increase in taxes, levies/ fees or newly imposed taxes, etc., would be charged extra on submission of documentary proof. Similarly, due credit would be given to SMC in case of withdrawal or

reduction in applicable taxes/ fees/ duties. The maintenance charges should be quoted for 10 years in price schedule (e-format).

Payment will be made after all statutory deductions as applicable to such type of contracts. The rate quoted shall be deemed to be inclusive of all salaries and other cost, expenses of employees, all statutory levies, cost of spares, cost of repair/ replacement/ modification of any equipment or system for the entire period of 10 years. The rates are also inclusive of tools & tackles, etc. and liabilities of every description and all risk of every kind to be taken in maintenance and handing over the plant to the SMC by the contractor. SMC shall not be responsible for any such liability on the contractor in respect of this contract and exclusion of applicable taxes on the date of issue of work order at prescribed rates due to ignorance or otherwise shall not form a reason for claiming anything extra at a later date.

PAYMENT

The payment period will be quarterly. The SMC will be billed by the contractor promptly following the end of each quarter for net power generated during such just completed quarter, and payment will be due on or before the 15th day (due date) from the date of the receipt of the invoice by SMC.

MONTHLY GENERATION DATA STATEMENT

Monthly Generation data statement for net energy delivered to the Utility & energy generation from the power plant shall be taken by SMC's employee as per direction given by the contractor/ discom/ GEDA.

CONTRACTOR OFFICE/ MAINTENANCE ENGINEER IN GUJARAT

During the execution of the contract the contractor shall ensure that a Plant Manager/ engineer with authority to take decisions to be available at site. Such person deputed by the contractor shall report to the Engineer in Charge for smooth work of the plant till satisfactory commissioning at site.

The contractor shall also provide and maintain an office in Gujarat and as near to Surat possible and such office shall be open at all reasonable hours to receive instructions, notices or other communications during the maintenance period from the commissioning. The office shall have telephone, fax and internet facility. The contractor shall be responsible for any misconduct/ indiscipline by his employees or sub-contractor/ agent employee's. The contractor shall abide by the instructions of the SMC Representative, if given in this regard.

POWER OF ENTRY

In case the contractor does not execute the work in the manner described in the contract documents or if he shall at any time in the opinion of the Engineer-in-charge: -

- (i) Fail to maintain the plant in conformity with contract document or
- (ii) Substantially suspend work or the works for a continuous period of 15 days without permission from the Engineer-in-charge, or
- (iii) Fail to carry on and execute the works to the satisfaction of the Engineer-in-charge, or
- (iv) Commit or suffer or permit any other breach of any of the provisions of the contract on his part to be performed, or
- (v) If the contractor abandons the works, or
- (vi) If the contractor during the continuance of the contract becomes bankrupt.

In any of such events, the SMC shall have the power to enter upon the works and take possession of the plant, materials, spares, equipment, tools and stocks thereon.

HANDING OVER THE PLANT AFTER EXPIRY OF TERM

After the expiry of term & extension of term as the case may be, contractor shall hand over the plant to the SMC in excellent condition. The contractor shall demonstrate performance test of all the major & critical equipment to ensure plant dependable capacity in accordance to the norms of manufacturer. While handing over the plant contractor shall hand over all technical documents, literature, and instruction manuals, lists of spare part & tools & tackles. Contractor will also hand over all the relevant record/ documents.

DEFECTS/ NON ACHIEVEMENT PLANT DEPENDABLE CAPACITY AFTER HANDING OVER

In order that the contractor could obtain a Handing Over certificate, he shall rectify any defect/ non-achievement of plant dependable capacity in accordance to the norms of manufacturer arising from the defective maintenance practices or non-compliance of Prudent Utility Practices or that may have been noticed or developed during/ after the plant has been taken over, the period allowed for carrying out such works will be normally one month. If any defect could not be remedied or plant dependable achievement capacity in accordance to the norms of manufacturer could not be achieved within a reasonable time the SMC may proceed to do the work at contractor's risk and expense and deduct from the final bill such amount as may be decided by the SMC.

All the aforesaid safeguards/ rights provided for the Surat Municipal Corporation shall not prejudice its other rights/ remedies elsewhere provided herein and/ or under law.

FINAL PAYMENT

Whenever, in the opinion of the Engineer-in-charge the contractor has completely performed the contract on his part, the Engineer-in-charge will so certify in writing to the contractor.

The final payment to the contractor shall be made after accounting for all the previous payments/ advances/ adjustments of dues, provided always that contractor furnishes a "NO further claim-No dues certificate". The release of final payments does not relieve the contractor from his any other obligations as provided for in the contract.

The SMC shall deduct statutory taxes at source as per prevailing rates from bills of the contractor.

FAILURE OF THE CONTRACTOR TO COMPLY WITH THE PROVISIONS OF THE CONTRACT

If the Contractor refuses or fails to execute the work or any separable part thereof with such diligence or fails to perform any of his obligations under the contract or in any manner commits a breach of any of the provisions of the contract, it shall be open to the SMC, to adopt following course of action at its option, by written notice to the Contractor.

- (i) To determine the contract in which event the contract shall stand terminated and shall cease to be in force and effect on and from the date the decision is announced by the SMC. The contractor shall stop forthwith any of the contractor work, then in progress and handover the work to the SMC. The SMC shall be entitled for recovery of cost/ compensation to complete the unfinished obligations.
- (ii) Without determining the contract, to take over the work of the Contractor or any part thereof and complete the same through a fresh contract or by other means at the risk and cost of the Contractor.

In the event that SMC proceeds in the manner prescribed in above clause then the whole or part of the security/ Performance Guarantee furnished by the Contractor is liable to be forfeited without prejudice to the other rights of the SMC. The SMC shall also have the right of taking possession and utilizing such materials, equipment and plant, belonging to the contractor, as may be at the site of the work in order to complete the unfinished work.

The amount that may have become due to the contractor on account of work already executed by him shall not be payable to him until after the expiry of six months reckoned from the date of the determination of contract or from the taking over of the work or part thereof by the SMC as the case may be. Further during this period of six months the responsibility for faulty workmanship in respect of such completed work shall under the contract, rest exclusively with the Contractor.

Termination of the contract shall not prejudice or affect the rights of the Surat Municipal Corporation which may have accrued up to the date of such termination.

-Sd-
Executive Engineer,
Light & Energy Efficiency Cell,
Surat Municipal Corporation.

SECTION- VI

SCOPE OF WORK

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

To offer for 3.6 MWp Grid Connected Rooftop SPV based Power Plants.

4.1 DESIGN, MANUFACTURING & TESTING

Design, engineering, manufacture, testing at works and supply at sites of suitable Crystalline Silicon Solar Cell Module in the total capacity of 3.6 MWp rating complete with accessories as may be required for erection, commissioning and successful continuous operation of 3.6 MWp capacity SPV based Power Plants with the DISCOM's grid. The SPV based Power Plants shall be equipped with current limiting devices and capacitors so as to maintain power factor as required by the DISCOM's Grid. KVARH drawal should be limited to 5% to total net energy exported in the DISCOM's grid. However, all KVARH charges shall be borne by the contractor.

Design & manufacture of Module mounting structure for SPV module(s) along with design of Module mounting structure foundation, erection, testing & commissioning of all the SPV module(s).

Design, manufacturing, testing at works, transportation, supply, erection, testing at sites and commissioning of SPV based Power Plants' Internal electrical system.

Grid interfacing, including transformer, panels, kiosks, protection equipment, metering equipment, LT lines for the evacuation point of the SPV based Power Plant.

Energy meter(s) for the export of power to the Local grid substation and recording import of the power from the grid will be installed by the supplier.

Design and construction of control room adequate for housing power and control panels, CMS etc. (if required)

VAR drawal compensation system, if required.

Laying of appropriate evacuation system (through proper conduits, cable tray as applicable best practises) for inter connection with the Local grid etc.

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

Rubber mats of appropriate size, electrical shock treatment chart, fire extinguisher, fire buckets, danger notice board/ stickers etc. confirming relevant IS shall be provided at sites as per enclosed **Annexure: IV**.

Suitable arrangement of ladder of sufficient strength and made of MS material with hot-dip galvanized shall be provided at site(s) as per enclosed **Annexure: IV**.

It is contractor's responsibility to observe & implement safety rules & practices as per prevailing acts. SMC will not be responsible for any kind of accident/ damage done person(s) or property(ies) during the entire contract period. No compensation of any kind shall be given to contractor on breaching of any kind of safe working practice during the contract period.

5 STATUTORY APPROVALS

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

- ⇒ Pollution Control Board Clearance, if required
- ⇒ Gujarat Energy Development Agency
- ⇒ State Power utilities viz. DISCOMS
- ⇒ Chief Electrical Inspector (CEI)
- ⇒ Any other concerned authority

6 MANPOWER & UTILITIES

Deployment of manpower, required consumables, testing equipments during erection till commissioning, arrangement of power & water as required for this contract shall be arranged by the bidder.

7 DOCUMENTS

- 1.1 Submission of following documents drawings data design and engineering information to SMC for review and approval in four copies.
- 1.2 Detailed technical specification.
- 1.3 Design criteria.
- 1.4 General arrangement
- 1.5 Schematic diagram for entire evacuation system up to interfacing with LT/ HT distribution at site
- 1.6 GA drawings for all types of structures, PCU & Interfacing, metering with LT/ HT distribution panels at site.
- 1.7 Quality assurance plans.
- 1.8 Test report (for type, acceptance, and routine tests) for major items.
- 1.9 Two sets of all the drawings shall be fully corrected to agree with the actual "as built" site conditions and submitted to SMC after commissioning of the project for record purpose. One digitized soft copy of as built drawings shall also be submitted.
- 1.10 O & M Manuals of all the important equipments (in 02 sets).
- 1.11 The contractor shall forward to SMC
- 1.12 Schedule for various activities in the form of Activity Chart within a week from the date of Award of Contract
- 1.13 Fortnight site work progress report during the installation period
- 1.14 Quarterly maintenance reports after commissioning of the project to SMC.

8. TRAINING

Providing a detailed training plan for all operations, maintenance procedures, which shall after approval by SMC, form the basis of the training program.

Employ and coordinate the training of personnel who will be qualified and experienced to operate and monitor the facility and to coordinate operations of the facility with the grid system. Adequate insurance coverage shall be provided during EPC and maintenance period.

9. GENERAL

- 1.1 To maintain at the facility accurate and up-to-date maintenance details logs, records and quarterly reports regarding the maintenance of facility.
- 1.2 To perform or contract for and oversee the performance of periodic overhauls or maintenance required for the facility in accordance with the recommendations of the original equipment manufacturer.
- 1.3 To maintain and keep all control room, tool room, stores room, equipment, etc. in workable conditions.
- 1.4 To discharge obligations relating to retirement/ Superannuating benefits to employees or any other benefit accruing to them in the nature of compensation, profit in lieu/ in addition to salary, etc. for the period of service with the contractor. To hand over the system to maintain an inventory of spare parts, tools, equipment, consumables and supplies for the facility's operation along-with required inventory to maintain the facility for two year on the basis of average requirement at the time of completion of maintenance period.

-
- 1.5 One year free Maintenance during warranty period including spares and consumables, wear and tear, overhauling and replacement including supply of spares of damaged equipments and other parts of SPV based Power Plant with no extra cost on SMC.

10. MAINTENANCE

SCOPE

SMC wishes to entrust the total maintenance activities of the 3.6 MWp SPV based Power Plants to the contractor on turnkey for the first 10 (ten) years including one year free maintenance during warranty period.

- 10.1 The Turnkey contractor shall be responsible for all the required activities for the successful running, optimum energy generation & maintenance of the SPV based Power Plant including Plant electric's covering.
- 10.2 Deputation of Engineering and supporting personnel for the periodical and break-down works.
- 10.3 Successful running of SPV based Power Plant for optimum energy generation.
- 10.4 Helping in monitoring controlling, troubleshooting, maintaining of records, registers.
- 10.5 Supply of all spares, consumables and fixing/ repairing of the complete to achieved desired/ intended energy generation in best engineering manner/ prudent utility practices prevailing in the field.
- 10.6 Conducting periodical maintenance check, testing, overhauling and taking preventive actions for smooth running of SPV based Power Plant as required.
- 10.7 General up-keeping of all equipment, building parts, roads, SPV based Power Plant area.
- 10.8 Submission of quarterly reports to SMC on the energy generation & operating conditions of the SPV based Power Plant.
- 10.9 Periodical monitoring of the performance of the SPV Modules and regular maintenance of the whole system including SPV Modules, transformers, overhead/ udder ground line, outdoor kiosks, switchgear, equipments etc. are necessary for extracting and maintaining the maximum energy output from the solar power plant.
- 10.10 Maintenance of the SPV based Power Plant shall require to be carried out for 10 years including guarantee period as per Bid Response Sheet. Necessary spares including capacitors (if required), consumables etc. as per suppliers recommendation shall be arranged by the bidder at his own cost.

11. PERFORMANCE MONITORING

Providing necessary training and guidelines to the site staff for proper and efficient functioning of entire solar power plant. In, all normal circumstances energy generation should not fall below the expected.

12. MAINTENANCE

- 12.1 The contractor shall prepare the preventive maintenance schedules and attend to the breakdowns keeping in view that the plant availability is always more than 95% and targeted/ claimed energy generation can be achieved.
- 12.2 The contractor shall carry out the periodical/ plant maintenance as given in the manufacturer's service manual and perform minimum two certified services per year.
- 12.3 Regular periodic checks of the SPV based Power Plant shall be carried out as a part of routine preventive maintenance during low sunlight period. In order to meet the maintenance requirements stock of consumables are to be maintained as well as various spare as recommended by the manufacturer at least for 2 years to be kept for usage/ arranged immediately for replacement at sites.

-
- 12.4 Maintenance of other major equipment involved in SPV based Power Plant are SPV (SPV) Modules, Power conditioning Unit, Data logger, Module Mounting Structures, Cables and hardware's, Junction box and Distribution boxes, Earthing kit, PVC pipes and accessories etc. switchgears and metering panel. Particular care shall be taken for outdoor equipment to prevent corrosion. Cleaning of the SPV modules every fortnight interval or whenever necessary. Resistance of the earthing system as well as individual earth resistance is to be measured and recorded at required interval as per normal practice. If the earth resistance is high suitable action is to be taken to bring down the same within the limits.
- 12.5 Please clearly note that necessary maintenance arrangements for cleaning/ washing of SPV modules shall be done by contractor free of cost. All materials/ equipment shall be arranged for washing & cleaning by the contractor permanently/ whenever necessary free of cost. In case of unavailability of water , contractor has to make necessary arrangement.** No excuse shall be entertained in event of improper/ non-satisfactory power generation due improper cleaning of SPV modules.
- 12.6 According to the recommendations stock of special tools and tackles shall be maintained for SPV based Power Plant and other major electrical equipment.
- 12.7 A maintenance record is to be maintained by the contractor to record the regular maintenance work carried out as well as any breakdown maintenance along with the date of maintenance reasons for the breakdowns steps have taken to attend the breakdown duration of the breakdown etc.
- 12.8 The Contractor shall deploy enough manpower at SPV based Power Plant site to carryout break-down and preventive maintenance schedules as specified.
- 12.9 The Contractor will attend to any breakdown jobs immediately for repair/ replacement/ adjustments and complete at the earliest working round the clock.
- 12.10 The Contractor shall immediately report the accidents, if any, to the Engineer In charge & to all the concerned authorities as per prevailing law of the state showing the circumstances under which it happened and the extent of damage and/ or injury caused. Maintenance contractor would be solely & fully responsible/ liable to pay for any losses/ damages/ claims, etc. and SMC will be fully indemnified for such losses/ claims.
- 12.11 The Contractor shall comply with the provision of all relevant Acts of Central or State Governments including payment of Wages Act 1936, Minimum Wages Act 1948, Employer's Liability Act 1938, Workmen's Compensation Act 1923, Industrial Dispute Act 1947, Maturity Benefit Act 1961, Employees State Insurance Act 1948, Contract Labour (Regulations & Abolishment) Act 1970 or any modification thereof or any other law relating whereto and rules made there under from time to time.
- 12.12 The contractor shall at his own expense provide all amenities to his workmen as per applicable laws and rules.
- 12.13 The Contractor shall ensure that all safety measures are taken at the site to avoid accidents to his or his Co-contractor or SMC's Workmen.
- 12.14 If in the event of negligence or mal-operation by the contractor's contractor any failure of equipment take place such equipment should be repaired/ replaced by contractor at free of cost.

13 QUALITY SPARES & CONSUMABLES

In order to ensure longevity safety of the core equipment and optimum performance of the system the contractor should use only genuine spares of high quality standards as recommended by manufacturers.

14 TOOLS AND TACKLES

The Contractor shall arrange for all the necessary tools and tackles etc. for carrying out all the maintenance work covered under this contract.

-Sd-
Executive Engineer,
Light & Energy Efficiency Cell,
Surat Municipal Corporation.

SECTION- VII

TECHNICAL SPECIFICATIONS

7.1 DEFINITION

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

1	Location / Site Details for the SPV Power Project:-	Refer to the List of the Sites
i	Address of Site	Refer to the List of the Sites
ii	Available Roof-space	As applicable
iii	Ambient Temp.	Site specific
iv	Lat. / Long.	Site specific
v	Elevation	Site specific
vi	Tilt Angle	Suggested as per the Latitude, however best fit as per the roof orientation.
vii	Feeding Point	At the nearest sub-station on LT-side (415V), and HT side (11kV) in-case of Wheeling as per the List of Sites, within the premises as Net/Gross-Metering basis (feed-in-tariff system)
	NOTE:-Sr. no. ii above, BIDDER MUST VISIT THE SITE BEFORE QUOTING THE RATES , OTHERWISE IT WILL BE ASSUMED THAT THE PARTY HAS ALREADY VISITED THE SITE BEFORE QUOTING THE TENDER, AN UNDERTAKING TO BE FURNISHED ACCORDINGLY	

7.2 PV MODULE (S)

7.2.1 Each solar PV plant array capacity should not be less than the capacity of the same SPV Plant capacity and total aggregate SPV array capacity should not be less than the respective peak capacity of 10 sites as mentioned above, on max. radiation day and should comprise of solar mono / multi crystalline modules of minimum 290Watts. The Photovoltaic modules must be tested & approved by one of the IEC authorized test centres, Test Certificates can be from any of the NABL / BIS accredited testing / calibration laboratories the module type must be qualified as per IEC 61215 (Second Edition). In-addition, PV modules must qualify to IEC 61730 Part I to II for safety qualification testing, IEC 61701-Salt Mist Corrosion Testing of Photovoltaic (PV) Modules, IEC 62716-Photovoltaic (PV) Modules – Ammonia (NH3) Corrosion Testing, IEC 62804 (Technical Specifications)-Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation, and IEC 62759-1-Photovoltaic (PV) modules – Transportation testing, Part 1: Transportation and shipping of module package units. SPV module conversion efficiency should not be less than 15.0% under STC. The SPV Modules to be supplied should be tested from MNRE.

7.2.2 The PV module used in Grid Connected Solar Power system should have the latest addition of following BIS-PV Module qualification test or, equivalent IEC Standards:

-

7.2.3 The power output of the module (s) under STC should be as given in section scope of work. Modules of minimum 290 Watts output each or above output should be used. Photo/ electrical conversion efficiency of SPV module shall be greater than 15% under STC.

7.2.4 All materials used shall have a proven history of reliable and stable operation in external applications. It shall perform satisfactorily in relative humidity up to 100% with temperatures between 0° C and +85° C and with stand gust up to 200 km/h from back side of the panel. The terminal box on the module should have a provision for opening for replacing the cable, if required.

Aluminium extruded frame structures with adequate strength and in accordance with relevant BIS standards can also be used with proof that the design of the structure can withstand the wind speed of 170 km per hour as per BIS Standards.

7.2.5 A strip containing the following details should be laminated inside the module so as to be clearly visible from the front side.

IDENTIFICATION AND TRACEABILITY

Each PV module used in any solar power project must use a RF Identification Tag (RFID), which must contain the following Information:

- a. Name of the Supplier or distinctive Logo
- b. Model or Type No.
- c. Serial No.
- d. Year of make.
 - i. Name of the manufacturer of PV Module
 - ii. Name of the manufacturer of solar cells
 - iii. Month and year of the manufacturer (separately for solar cells and modules.
 - iv. Country of Origin (separately for solar cells and modules
 - v. I-V Curve for the module
 - vi. Peak wattage, I_m , V_m and 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

7.2.6 The rated output power of any supplied module shall not vary more than 3-5% from the average power rating of all modules.

7.2.7 The module frame is made of corrosion resistant materials, which is electrolytically compatible with the structural material used for mounting the module.

7.2.8 Protective devices against surges at the PV module shall be provided, if required. Low voltage drop bypass and / or blocking diode(s) may also be provided, if required.

7.2.9 Module Junction box (weather resistant) shall be designed for long life out door operation in harsh environment.

7.2.10 A minimum warranty of 25 (Twenty) years shall be given with degradation of power generated not exceeding 10% (Ten) over the entire period of 10 (Ten) years.

The module shall have warranty of 25years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period. The Bidder will have to furnish a CORPORATE GURANTEE on a required stamp paper for the same.

7.2.11 The solar modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with the thermal expansion properties of the Silicon cells and the module framing arrangement/material. The encapsulation arrangement shall ensure complete moisture proofing for the entire life of the solar modules.

7.2.12 Each module shall have low iron tempered glass front for strength and superior light transmission. It shall also have tough multi layered polymer back sheet for environment protection against moisture and provide high voltage electrical insulation.

7.2.13 **The modules must be manufactured in India.**

7.2.14 Data sheet of the offered module along with their IEC certificate and third party test results must be submitted along with the offer giving details of peak power, peak current, short circuit current, fill factor, open circuit voltage, peak power voltage etc.

Orientation and Tilt of PV Module(s): -

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

SLANTED ROOF MOUNTED FIXED TYPE PV PANEL STRUCTURES

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

- Array tilt angle to the horizontal, with permitted tolerance;
- Details with drawings for fixing the modules;
- Details with drawings of fixing the junction/terminal boxes;
- Interconnection details inside the junction/terminal boxes;
- Structure installation details and drawings;
- Electrical grounding (earthling);
- Inter-panel/Inter-row distances with allowed tolerances; and
- Safety precautions to be taken.

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

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

ii. The Structure shall be made out of Aluminium member as per design to be submitted by firm. The structures shall be designed to allow easy replacement of any module.

iii. Each structure should have angle of inclination as per the site conditions to take maximum insolation.

iv. Each panel frame structure be so fabricated as to be fixed on the rooftop column/wall structures. The structure should be capable of withstanding a wind load of 170KM/hr after installation. The certificate about structure capable to withstand 170KM per Hour wind speed should be provided from Chartered Structural Engineer on his letter pad with his registration No.

v. The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is absolutely essential to install the structures, the supplier shall clearly and unambiguously communicate such requirements along with their specifications in the bid. Detailed engineering drawings and instructions for such prior civil work shall be carried out prior to the supply of Goods. All self drilling fasteners, nuts and bolts shall be of very good quality stainless steel.

vi. No damage in any way should be caused to the porta cabins slanting rooftops while installation of SPV Power Plant. If any damage done it will wholly be the responsibility of the bidder and cost shall be recovered from the bidder.

7.3 EARTHING AND SURGE PROTECTIONS: -

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

7.3.2. Two separate earthings must be provided for safer & reliable operations.

7.3.3 The SPV power plant shall be provided with lightning & over voltage protection. The source of over voltage can be lightning, atmosphere disturbance etc.

Earthing and lightning protection:

a) The array structure of the PV yard shall be grounded properly using adequate number of earthing kits. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.

b) The SPV Power Plant shall be provided with lightning & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc.

c) Metal oxide variators shall be provided inside the Array Junction Boxes. In addition suitable MOV's also shall be provided in the Inverter to protect the inverter from over voltage.

7.4 MECHANICAL COMPONENTS:

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

7.5 MODULE MOUNTING STRUCTURE:

7.5.1 The array structure shall be made of hot dip galvanized MS angles of size not less than 50 mm x 50 mm x 6 mm size. The minimum thickness of galvanization shall be at least 70 (seventy) microns. All nuts & bolts shall be made of very good quality ISI grade stainless steel. The minimum clearance of the lowest part of the module structure and the developed ground level shall not be less than 500 mm or as per site situation(s).

7.5.2 Leg assembly of module mounting structure made of different diameter galvanized tubes may be accepted. The work should be completed with supply, fitting fixing of clamps, saddles, nut & bolts etc. While quoting the rate, the bidder may mention the design & type of structure offered. All nuts & bolts shall be made of very good quality stainless steel.

7.5.3 The structure shall be designed to allow easy replacement of any module and shall be in line with site requirements. The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation,

absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site.

7.5.4 The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time it will withstand wind speed up to maximum 200 km/h.

7.5.5 The supplier/ manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings.

7.5.6 PCC ARRAY FOUNDATION BASE: The legs of the structures made with GI angles will be fixed and grouted in the PCC foundation columns made with 1:2:4 cement concrete. The minimum clearance of the lowest part of any module structure shall not be less 500 mm from ground level. While making foundation design, due consideration shall be given to weight of module assembly, maximum wind speed of 200 km/h and seismic factors for the site.

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

7.6 JUNCTION BOXES

7.6.1 The junction boxes shall be dust, vermin and waterproof and made of FRP. The terminals shall be connected to copper bus bar arrangement of proper sizes. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. Suitable markings shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. The junction boxes shall have suitable arrangement for the following:

7.6.2 Combine groups of modules into independent charging sub-arrays that shall be wired to the PCU.

7.6.3 Provide a test point for each sub-group for quick fault location.

7.6.4 To provide group array isolation.

7.6.5 The rating of the JB's shall be suitable with adequate safety factor to inter connect the Solar PV array.

7.7 DC DISTRIBUTION BOARD (DCDB):

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

7.8 OTHER FEATURES:

7.8.1 The PV module (s) will be warranted for a minimum period of 25 years from the date of supply with maximum 10% degradation in 10 years. Solar PV power plant will be warranted for a period of ten years from the date of supply.

7.8.2 An Operation, Instruction and Maintenance Manual in English and Gujarati should be provided with the system.

7.8.3 The following minimum details must be provided in the Manual:

- a) About Photovoltaic
- b) About solar PV system– its components and expected performance.
- c) About PV module(s)
- d) Clear instructions about mounting of PV module(s)
- e) About electronics
- f) DO's and DONT's
- g) Clear instructions on regular maintenance and trouble shooting of solar power

plant.

- h) Name and address of the person or service center to be contacted in case of failure or complaint.

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

Inverter of the suitable capacity per location has to be used.

The inverter must comply with the following standards: -

The power conditioning units (in multiple string inverters) totalling should not be less than **3,600 kVA** should be provided to convert DC power produced by SPV modules, into AC power. The power conditioning unit should have multiple MPPT controls for multiple strings. The Individual Inverter should not be less than 10kVA and not be greater than 50kVA (3-phase). A multi function power conditioning system combining the functionality of a grid interactive solar inverter with a highly efficient conversion unit having following Technical Specification:

IEC 62109-1, IEC 62109-2: Safety of power converters for use in photovoltaic power systems - Part 1: General requirements, and Safety of power converters for use in photovoltaic power systems - Part 2: Particular requirements for inverters. Safety compliance (Protection degree IP 65 for outdoor mounting, IP 54 for indoor mounting)

IEC/IS 61683: Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)

BS EN 50530: Overall efficiency of grid-connected photovoltaic inverters: This European Standard provides a procedure for the measurement of the accuracy of the maximum power point tracking (MPPT) of inverters, which are used in grid-connected photovoltaic systems. In that case the inverter energizes a low voltage grid of stable AC voltage and constant frequency. Both the static and dynamic MPPT efficiency is considered.

IEC 62116 or, IEEE 1547: Utility-interconnected Photovoltaic Inverters - Test Procedure of Islanding Prevention Measures

In-addition, "IEC 61727:2004 Photovoltaic (PV) systems - Characteristics of the utility interface" is being added, along-with "Technical Standards for Connectivity of the Distributed Generation Resources" as published by Central Electricity Authority (CEA), Ministry of Power, Govt. of India.

IEC 60068-2 (1, 2, 14, 30 & 64): Environmental Testing of PV System – Power Conditioners and Inverters

a) IEC 60068-2-1:

Environmental testing - Part 2-1: Tests - Test A: Cold

b) IEC 60068-2-2:

Environmental testing - Part 2-2: Tests - Test B: Dry heat

c) IEC 60068-2-14:

Environmental testing - Part 2-14: Tests - Test N: Change of temperature

d) IEC 60068-2-30:

Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)

e) IEC 60068-2-64:

Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance

IEC 61000: Part 2 (Environment), Part 3 (Limits) & Part 6 (Generic standards): Electromagnetic Interference (EMI), and Electromagnetic Compatibility (EMC) testing of PV Inverters (as applicable)

The bidder shall use the original parts in case of any fault in the PCU/Inverter during the **O&M period of 10 years**. In case the original part/parts are not available with the manufacturer of the PCU/Inverter (Based on certificate from the manufacturer), the bidder shall use the new parts of other standard brands available in the market or will use the repaired parts but only with the prior permission of SMC.

7.9 THE DETAILS OF THE POWER CONDITIONING UNIT ARE AS GIVEN BELOW: -

PCU Rating (NOMINAL)	<p>415 V AC Grid- tie Interactive Output</p> <p>The power conditioner unit shall convert DC produced by SPV array and adjust the voltage & frequency levels to suit the Grid Purpose.</p> <p>The capacity of the PCU per location is as given in the section 'scope of work'</p>
Grid Supervision	All three phases shall be supervised with respect to rise/ fall in programmable threshold values of frequency & the power section of the plant. The plant shall get disconnected/ connected from the grid in case of a grid fault/ after normal grid conditions have resumed. The grid supervision must comply with VDEW or other relevant/ equivalent regulations
Type & Technology	IGBT based. Utilize a circuit topology and components suitable for meeting the specifications.
Type	Self commuted, current regulated, high frequency IGBT based with Trench Gate Structure
Output voltage	3 phase, 400V AC (+12.5 %, - 20 % V AC)
Frequency	50 Hz \pm 1 Hz
Continuous rating	Not less than system capacity individually
DC input Operating range	200 V to 1000V nominal
Total Harmonic Distortion	less than 3 %
Operating temperature Range	0 to 55 deg C
Housing cabinet	PCU to be housed in suitable cabinet with minimum IP65 standard
Inverter efficiency	>95 % at full load.
Power Control	MPPT
Output Voltage Range on AC Side	<p>415 +10%, -15% V AC</p> <p>A dedicated isolation transformer housed in the PCU enclosure shall be supplied to match the PCU output voltage to the utility grid voltage. PCU/ Solar Inverter voltage range should be reconfigured as per site requirements.</p>
Output Frequency Range	50 +1.5 Hz, -3.5 Hz
DC System Voltage	The electrical safety of the array installation is of the utmost importance. Array electrical configuration shall be in such way, that, the MPPT shall operate with maximum efficiency, between the, low and high temperature of the site.
Maximal Current Ripple	5% PP
Power Factor	0.95 inductive to 0.95 capacitive

Ambient Temperature Range	5° to 55° C
Housing Cabinet	<ol style="list-style-type: none"> 1. PCU shall be housed in suitable switch cabinet, with min IP 21 degree of Ingress Protection. 2. Weatherproof, rodents & insect proof 3. Components and circuit boards mounted inside the enclosures clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings. 4. All doors, covers, panels and cable exits shall be gasketed or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95cm (about 3x8 inch).
Electrical safety Protection	The PCU shall include appropriate self-protective devices/ arrangements
General	Diagnostic feature to protect itself and the PV array from damage in the event of PCU component failure or from parameters beyond the PCU's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner that may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation failure, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuit breaker.
Over/ Under Voltage	<ol style="list-style-type: none"> 1. Mains (Grid) over-under voltage and frequency protection. 2. Over voltage protection against atmospheric lightning. 3. Protection against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.
Fool Proof Protection	<p>Against ISLANDING.</p> <p>Note: - MOV type surge arrestors on AC and DC terminals for over voltage protection from lightning-induced surges.</p>
Accidental Open Circuit	Full protection against accidental open circuit and reverse polarity at the input.
Internal faults	Inbuilt protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure is obligatory.
Galvanic Isolation	Galvanic isolation is provided to avoid any DC component being injected into the grid and the potential for AC components appearing in the array.
Earth Fault Supervision	An integrated earth fault detection device is provided to detect eventual earth fault on DC side and shall send message to the supervisory system.
Disconnection and Islanding	Disconnection of the PV generator in the event of loss of the main grid supply is achieved by in built protection within the power conditioner. This may be achieved through rate of change of

	<p>current, phase angle, unbalanced voltages, or reactive load variants.</p> <p>Operation outside the limits of power quality as described in technical data sheet shall cause the power conditioner to Disconnect the grid.</p> <ol style="list-style-type: none"> 1. Additional parameters requiring automatic disconnection are: - 2. Neutral voltage displacement 3. Over current 4. Earth fault & Reverse power <p>In each of the above cases, tripping time shall be less than 0.5 seconds. Response time in case of grid failure due to switch off or failure based shutdown should be well within 60 seconds.</p>
Automatic reconnection after the Grid failure is restored	PCU has facility to reconnect the Inverter automatically to the grid following restoration of grid, subsequent to grid failure condition.
Array Tracking	Included authentic tracking of the Solar array's maximum power operation voltage (MPPT).
Array Ground Fault	Provided
Operator Interface	LCD and key pad operator interface are provided.
Fault Conditions	Automatic fault conditions reset for all the parameters like voltage, frequency and/ or black-out.
Control Logic Failure Detection	Via watch dog timers
Parameter Access	All parameters accessible through an industry standard communication link.
DC-AC Conversion Efficiency	93% output ranging from 20% to full load. Idling current at no load shall not exceed 2% of the full load current.
DC Isolation	Provided at the output by means of a suitable isolating transformer
Parallel Operation with Grid	Provided and capable of interrupting line to line currents and line to ground faults currents.
Unbalanced Output Load	PCU is able to withstand and unbalanced output load to the extent of 30%.
Shut Down and Standby Mode	<p>Shut down/ standby mode with its contact open under the following conditions before attempting an automatic restart after an appropriate time delay; in sufficient solar power output.</p> <ol style="list-style-type: none"> a) Insufficient solar power input: When the power available from the PV array is insufficient to supply the losses of the PCU, the PCU shall go to a standby/shutdown mode. <p>The PCU control shall prevent excessive cycling during rightly shut down or extended periods of insufficient solar radiation.</p> <ol style="list-style-type: none"> b) Utility-Grid over or under voltage: The PCU shall restart after an over or under voltage shutdown when the utility grid voltage has returned to within limits for a minimum of two

	<p>minutes.</p> <p>c) Utility-Grid over or under frequency: The PCU shall restart after an over or under frequency shutdown when the utility grid voltage has returned to the within limits for minimum of two minutes.</p>
PCU Generated Harmonics	Shall not exceed a total harmonic current distortion of 5%, a single frequency current distortion of 3% and single frequency current distortion of 1%, when the first through the fiftieth integer harmonics of 50 Hz are considered.
Circuit Separation	High voltage & power circuits separated from low voltage and control circuits.
Special Features	<p>PCU must have a single phasing protection with auto islanding.</p> <p>PCU must be totally isolated (except for minor grid detection circuit) during non-production of energy.</p> <p>PCU must have power factor correction.</p> <p>PCU should have the KVAR import & export less than 5%</p>
Internal Wiring	Standard CU wiring, with flame resistant insulation
Cabling Practice	<p>a) Cables: PVC Cu cables as per relevant international Standards</p> <p>b) Cable connections: suitable terminations</p> <p>c) PVC channel with covers to house the cables</p>
High Voltage Test	PCU with stand high voltage test of 2,000 Vrms between either the input or the output terminals and the cabinet (chassis).
EMI (Electromagnetic Interface)	PCU shall not produce EMI which cause malfunctioning of electronic & electrical instruments including communication equipment which are located within the facility in which the PCU is housed.
Display on Front Panel and Indicators	<p>a) instantaneous PCU ac power output and the DC voltage current and power input</p> <p>b) Accuracy of display: 3% of full scale factor or better</p> <p>c) Display visible from outside the PCU enclosure.</p> <p>d) Operational status of the PCU, alarms, trouble indicators and AC and DC disconnect switch positions shall also be Communicated by appropriate messages or indicator lights on the front cover of the PCU enclosure.</p>
Emergency OFF	Emergency OFF button is located at an appropriate position on the unit
Grounding	PCU includes ground lugs for equipment and PV array groundings. The DC circuit ground is a solid single point ground connection.
Exposed Surfaces	Exposed surfaces of ferrous parts are thoroughly cleaned, primed, and painted and suitably protected to survive a nominal 30 years design life of the unit.
Factory Testing	a) Tested to demonstrate operation of its control system and the ability to be automatically synchronized and connected in

	<p>parallel with a utility service, prior to its shipment.</p> <p>b) Operation of all controls, protective and instrumentation circuits demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.</p> <p>c) Demonstration of utility service interface protection circuits and functions, including calibration and functional trip tests of faults and isolation protection equipment.</p> <p>d) Operation of startup, disconnect and shutdown controls also to be tested and demonstrated, stable operation of the PCU and response to control signals shall also be tested and demonstrated.</p> <p>e) Factory testing includes measurement of phase currents, efficiencies, harmonic content and power factor. All tests shall be performed 25, 50, 75 and 50% of the rated nominal power.</p> <p>f) Factory test report: Should be supplied with the unit after all tests. The FTR shall include detailed description of all parameters tested qualified and warranted.</p>
Operating Modes	<p>a) Night or sleep mode : where the Inverter is almost completely turned off, with just the timer and control system still in operation, losses < 2 W per 5 kW</p> <p>b) Standby mode: where the control system continuously Monitors the output of the solar generator until pre-set value is exceeded (typically 10 W). Operational of MPP tracking mode: the control system continuously adjust the voltage of the generator to optimize the power available. The power conditioner shall automatically re-enter standby mode input power reduces below the standby mode threshold. Front panel display providing the status of the PCU, including AC power output & DC current voltage and power input, and unit fault indication</p>
Inverter/ Array Size Ratio	<p>The ratio of the Inverter continuous power rating and the array peak power rating shall be between 80 to 90% or any other value found suitable. This is because better overall annual yield can be obtained by allowing the Inverter to operate for longer periods closer to optimal efficiency. Inverter efficiency should exceed 90% except when operating at less than 10% of maximum output.</p>
MPPT	<p>Maximum power point tracker is integrated in the power conditioner unit to maximize energy drawn from the array. The MPPT shall be microprocessor based to minimize power losses. The MPPT shall have provision (manual setting) for constant voltage operation.</p>

<p>Metering</p>	<p>a) PV array energy production: Meter to log the actual amount of AC energy generated/ consumed by the PV system shall have to be provided.</p> <p>b) Solar irradiance: An integrating pyranometer (Class II or better) to be provided, with the sensor mounted in the plane of the array. Readout shall be integrated with data logging.</p> <p>Note: Energy meters shall be installed by DISCOMS and charges will be paid by SMC.</p>
<p>Data Logging</p>	<p>All major parameters 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.</p> <p>The following parameters shall be accessible via the operating interface display:</p> <p>AC voltage, AC output current, Output power, DC input voltage, DC input current, Time active, Time disabled, Time Idle, Temperatures (C), Converter status, Protective function limits (i.e AC over voltage, AC under voltage, Over frequency, under frequency, ground fault, PV Starting voltage, PV stopping voltage, over voltage delay, under voltage delay over frequency, ground fault delay, PV starting delay, PV stopping delay.</p>
<p>Remote Monitoring System</p>	<ul style="list-style-type: none"> - A remote monitoring system shall be included with each photovoltaic system. - Usually such monitoring systems are connected and synchronized with the inverters. - The monitoring system should transmit the following data in real-time to a central server and store it: <ul style="list-style-type: none"> • DC currents, voltages and power. • AC currents, voltages and power. • Irradiation, ambient temperature, module temperature and wind speed. • Error logs. - This data may be transmitted either using the available LAN or GSM/ GPRS, or any other mode of connectivity available at the site. - This data shall be accessible by SMC through a secure login account. - The stored data should be represented through hourly, daily, monthly, etc. graphs and easily downloadable in .csv or .xls format.
<p>Codes and Standards</p>	<p>The quality of equipment supplied shall be controlled to meet the guidelines for engineering design include in the standards and codes listed in the relevant ISI and other standards, such as</p> <ul style="list-style-type: none"> (a) IEEE 928: Recommended criteria for terrestrial PV power systems. (b) IEEE 929 Recommended practice for utility interface of

	<p>residential and intermediate PV systems.</p> <p>(c) IEEE 519 Guide for harmonic control and reactive compensation of static power controllers.</p> <p>(d) National Electrical NFPA 70-1990 (USA) or equipment national standard.</p> <p>(e) National Electrical Safety Code ANSI C2 (USA) or equipment national standard.</p> <p>Modules should be of MNRE approved make only.</p>
--	---

7.9.1 INVERTER MUST HAVE SPP FEATURE WITH PROVISION OF DISCONNECTION OF ENTIRE POWER INJECTION SYSTEM IN CASE OF FAILURE OF ANY PHASE FROM BOTH ENDS i.e. POWER GENERATION & DISCOM'S GRID.

7.9.2 INVERTER MUST HAVE PROVISION/ FEATURE TO DISCONNECT POWER INJECTION SYSTEM DURING NON- GENERATION PERIOD I.E. WHEN ENERGY INJECTION IS ZERO THEN POWER INJECTION SYSTEM MUST BE ISOLATED SO THAT POWER COULDN'T BE DRAWN BY THE POWER INJECTION SYSTEM/ TRANSFORMER(If any).

7.9.3 APPROPRIATE POWER CORRECTION FACILITY/ CAPACITORS SHOULD BE PROVIDED TO LIMITS THE KVARH EXPORT/ IMPORT TO 5% OF TOTAL NET ENERGY INJECTION BY THE SPV BASED POWER PLANT(S).

7.9.4 Since the PCU is to be used in solar photo voltaic energy system, it should have high operational efficiency. The idling current at no load must not exceed 2 percent of the full-load current.

7.9.5 A suitable Surge Protection Device separately at output (A.C. side) shall be provided for SPV Power Plant.

7.9.6 The PCU shall include appropriate self protective and self diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters beyond the PCU's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation failure, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuit breaker.

7.9.7 The PCU shall restart after an over or under frequency shutdown when the utility grid voltage has returned to the within limits for minimum of two minutes.

7.9.8 The PCU generated harmonics measures at the point of connection to the utility services when operating at the rated power shall not exceed a total harmonic current distortion of 3 percent, a single frequency current distortion of 3 percent and single frequency voltage distortion of 1 percent, when the first through the fiftieth integer harmonics of 50 Hz are considered.

7.9.9 The PCU Power factor at the point of utility service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output, but may be less than 0.95 lagging below 25 percent of the rated output.

- Electrical safety, earthing and protection:

A) Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.

B) Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

C) Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

D) Cabling practice: Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

E) Fast acting semiconductor type current limiting fuses at the main bus-bar to protect from the grid short circuit contribution.

Operating Modes:

The following operating modes are to be made available:

Night or Sleep mode: Where the inverter is almost completely turned off, with just the timer and control system still in operation, losses should not exceed 2 watts per 5 kilowatt.

In case of Grid Failure, the PCU should go in sleep mode/ turned off immediately.

Standby mode: Where the control system continuously monitors the output of the solar generator until pre-set value is exceeded (typically 20 watts)

Operational or MPP tracking mode: The control system continuously adjust the voltage of the generator to optimize the power available. The power conditioner must automatically re-enter stand-by mode when input power reduces below the standby mode threshold. Front Panel display should provide the status of the PCU, including AC Voltage, Current, Power output & DC Current, Voltage and Power input, pf and fault Indication (if any)

Factory Testing:

A) Preparation of all controls, protective and instrumentation circuits shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.

B) Operation of start up, disconnect and shutdown controls shall also be tested and demonstrated. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.

C) Factory testing shall include measurement of phase currents, efficiencies, harmonic content and power factor.

D) A factory Test Report (FTR) shall be supplied along with the unit. The FTR shall include detailed description of all parameters tested qualified and warranted.

7.10 MCCB, ISOLATOR & CABLES FOR GRID CONNECTION: -

7.10.1 4 Pole, 480 V, 50 Hz AC MCCB, of suitable current & protection rating with spreader terminals, extendable rotary handle, thermal & electro-magnetic protection along with appropriate quality & size steel enclosure must be provided for grid connection.

Array Junction Box with Surge Protection Device (SPD) & Fuses:

There should be a separate Array Junction Box with Metal Oxide Varistors (MOV) based Surge Protection Device to be provided for each string inverter on D.C. Side. Further, on

A.C. Side, the Surge Protection Device should be provided in ACDB, besides the existing SPD device of PCU.

7.10.2 1.1 kV grade, 4 Core, XLPE insulated, aluminium conductor armoured cables confirming IS: 7098 (Part- I) of appropriate rating/ size shall be provided for interconnection of Inverter with MCCB & DISCOM's grid.

7.10.3 Cable termination shall be done using appropriate size lugs & cable glands.

7.11 CABLES & ACCESSORIES

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

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

7.12 ENERGY METERING

Energy meters shall be provided by DISCOMS as per prevailing GERC's tariff orders & regulations. The cost of the energy metering will be borne by SMC.

1. Solar Irradiance: An integrating Pyranometer (Class II or better) should be provided, with the sensor mounted in the plane of the array. Readout should be integrated with data logging system for SPV Power Plant.

2. Temperature: Temperature probes for recording the Solar panel temperature and ambient temperature for SPV Power Plant.

3.

3.1) An independent data logging system for plant control and monitoring shall be provided for SPV Power Plant.

3.2) One Computer (desktop) for display of plant performance with the following specifications with printer will also be supplied for SPV Power Plant:

Computer (HP/Dell) 1 No.: Intel i7 processor with 1 TB HDD, 4GB RAM, 4USB ports, DVD RW, 19" TFT Monitor, Optical Mouse, Modem, Wi-Fi LAN Card along with a LaserJet printer along with a minimum 700VA UPS with 20 minutes battery backup. Also, the PC shall be provided with complete functional software and remote linkage access through service provider for call / email / data transfer / IP linkage for plant operations monitoring throughout the 10 years operation & maintenance period shall be provided.

Laptop (HP/Dell) 1 No.: Intel i5 processor with 500GB HDD, 4GB RAM and screen size of 13 inch and above screen size will be provided with complete functional software and remote linkage access through service provider for call / email / data transfer / IP linkage for plant operations monitoring throughout the 10 years operation & maintenance period shall be provided.

3.3) For Remote data monitoring of the plant, a smart phone of minimum 32GB internal storage, 3GB RAM, 5.5 inch touch screen, 13-megapixel and above camera with LED flash, Front facing camera (5 MP and above), HD video recording. The data logging system should be able to display the total cumulative generation data of 3.6 MWp and also to display SPV Power Plant generation data in a single window/link.

3.4) 2 nos. class(0.5s), 3 phase 4wire, HT(11kV) Bi-directional Energy Meter along with necessary CTs & PTs approved by UT Elect. Department will be provided to measure the Energy produced by the SPV Power Plant and check meter also. The expenditure on testing and calibrating of Energy Meter shall be borne by the bidder. All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values. The parameters should be accessible via the operating interface display.

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 over frequency, Ground fault delay, PV starting delay, PV stopping delay). The Solar power generated at different rooftops of SPV Power Plant will be collected at one central point in the same complex from where it will be evacuated on HT side (11kV).

If required, 11kV VCB Isolator panel / 11kV CTs & PTs / protection device/ adapter panel/ breaker/ switchgear/ metering compartment box be provided to terminate the SPV Power Plant output on HT side, for gross metering arrangement, will be provided by the bidder.

COMMON AC DISTRIBUTION PANEL BOARD (ACDPB)

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

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

<i>Fuses</i>	
IS/IEC 60947 (Part 1, 2 & 3), EN 50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): a) Low-voltage Switchgear and Control-gear, Part 1: General rules b) Low-Voltage Switchgear and Control-gear, Part 2: Circuit Breakers c) Low-voltage switchgear and Control-gear, Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units d) EN 50521: Connectors for photovoltaic systems – Safety requirements and tests
IEC 60269-6	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
<i>Surge Arrestors</i>	
IEC 61643-11:2011 / IS 15086-5 (SPD)	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods Remarks: Type 1 & Type 2 are being recommended for use.
<i>Cables</i>	
IEC 60227/IS 694, IEC 60502/IS 1554 (Part 1 & 2)	General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and UV resistant for outdoor installation)
BS EN 50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC cables
<i>Lightning Protection System Components</i>	
IEC 62561 Series (Chemical earthing) or, equivalent Indian Standards	IEC 62561-1 Lightning protection system components (LPSC) - Part 1: Requirements for connection components IEC 62561-2 Lightning protection system components (LPSC) - Part 2: Requirements for conductors and earth electrodes IEC 62561-7 Lightning protection system components (LPSC) - Part 7: Requirements for earthing enhancing compounds

	Remarks: In-addition, "IEC 62305:2013 Protection against lightning - All Parts" will be followed.
<i>Junction Boxes</i>	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermo plastic type with IP 65 protection for outdoor use, and IP 54 protection for indoor use Remarks: For Outdoor environment IP 54 or, above, and for Indoor environment IP 31 or, above.

7.13 CONTROL ROOM

The required control room shall be constructed at additional cost if required.

7.14 SPARE PARTS

One set of essential spares for the PCU shall be provided and made available at the plant.

TRANSFORMER SPECIFICATION

PARTICULAR	SPECIFICATION/DETAIL
General Requirement	Copper wound, Oil immersed, delta/star connected, low loss, core type, outdoor, floor mounting, stepdown, continuously rated, distribution transformers suitable for parallel operation with each other
Reference Standard	IS 1180 part I with amendment
KVA Rating	Refer table "Transformer capacity" in this document
Voltage Ratio	11/0.433 KV
Type of Cooling	Naturally cooled (ONAN)
Type of winding	Dyn11
Terminal Box (HT)	Suitable for 1 No. X 3 C X 185 sq.mm, 11 KV XLPE(E) cable
Terminal Box (LT)	Suitable for Capacity of 2000 Amp. ELECTROLYTETINNED COPPER BUSBAR.
Neutral bushing for Earthing bushing	Additional externally brought out neutral bushing for earthing should be provided.
Tap changing	2.5%, +5%,0%, -2.5% -5%,-7.5%, -10% tapings on HT side OFF load tap changing switch with position indicator, locking device with lock and keys
Frequency	50 HZ
No. of phase	3 PHASE
Impedence volts	AS per IS standards
Over Load Condition	10% AS PER IS
Temperature Rise at ambient of 45 deg. Centigrade in Oil.	45 degree centigrade
Temperature Rise at ambient of 45 deg. Centigrade in winding.	55 degree centigrade

Oil Temperature Indicator (OTI) with 4to 20 mA output signal and Winding Temperature Indicator (WTI) with 4 to20 mA output signal same shall be connected with SCADA system.	Compatible to RS-485
Testing	Test shall be as per relevant IS and specifications
First Filling of OIL	Yes
Losses in Transformer 1. No Load 2. At full Load	As per IS
Accessories	Each transformer must be complete with oil conservator with drain valve, dehydrating breather with metal container, bidirectional rollers, explosion vent, marshalling box, Buchholz relay (for 500 KVA& Above Rated), filter valve, drain valve, two nos. tank earthing terminals, rating and diagram plates, thermometer pocket with 100 mm dial type thermometer with MRP & RSD complete with capillary tube, lifting lugs, air release and oil filling plug, magnetic 150 mm dial type oil level gauge with minimum and maximum level marking etc. as per IS and tender specifications.
For transformer 500 KVA & above	Buchholz relay, explosion vent required
Transformer foundation and necessary civil work like beam, column, brick wall, etc. as per site requirements. However foundation detailed civil drawings should be approved before making the foundations.	HT room and transformer foundation is not in the contractor's scope of work.

TRANSFORMER CAPACITY

Transformers of following capacity may be provided by the vendor at each site.

Sr. No.	Name of Site	Proposed Installation Capacity (KWp)	Transformer Capacity (kVA)
1	Katargam Water Works	940	1100
2	Katargam WDS	650	700
3	Rander WW	500	600
4	Sarthana WW	700	800
5	Varachcha WW	250	300
6	Althan WDS	270	300
7	Kosad WDS	150	200
8	Udhana Zone office	15	20
9	Rander Zone office	30	35
10	Mota Varachcha WDS	100	120

HT CABLE SPECIFICATION

Particular	Specifications/Details
Conductor insulation	
Material	High Purity Void and Moisture free cross Linked

	polyethylene (XLPE) Using Gas Curing Process
Thickness	>=5.5 mm
Insulator Screen	Extruded semi conducting material having coppertape over it
Core indication	Yes required
Core Laying	Right Hand Direction
Inner Sheath / Cover	Extruded
Armoring	
Material	Flat steel GI wire/stripe
Outer Sheath	
Material	PVC
Type	St – 2 as per Is- 5831-1984
Thickness	>=2.4 Mm
Colour	Black
Marking on Outer Sheath	Yes
Voltage grade	Yes
No of Cores / size of conductor / Material of Conductor	Yes
Type of Insulation	Yes
Details about Amour	Yes
Details of Standards	Yes
Year of Manufacturer	Yes
Mark of length at every meter	Yes
Any other details if applicable	
Testing	
Type test as per IS	To furnish certificate
Routine Test as per IS	To furnish certificate
Cable Drum	Non Returnable
Material	Sturdy Wooden
Core coding	AS per IS

HT CABLE TERMINATION (11 KV):

Indoor Type:

The item includes supply, installation, termination, testing and commissioning of heat shrinkable termination kit for HT cables as mentioned in BOQ. These terminations will be made on transformer's H.T. Side and at HT panel. All material and labour required for termination shall be

in the scope of contractor's work.

BREAKER SPECIFICATION

A. Load break switch (630A)

Load break switch should have the following

- Manually operated 12 KV, 630A Load Break switch and Earthing Switch with making capacity
- "Live Cable" LED Indicators thru Capacitor Voltage Dividers mounted on the bushings.
- Mechanical ON/OFF/EARTH Indication
- Anti-reflex operating handle
- Cable Testing facility without disconnecting the cable terminations, cable joints and terminal protectors on the bushings. Cable terminations
- Cable boxes suitable for 1 X 3C x 300 sq mm XLPE Cable with right angle Cable Termination Protectors.

B. Circuit Breaker. (200A / 630A)

Circuit Breaker should have the following:

- Manually operated 200 A / 630A SF6 / Vacuum circuit breaker and Earthing Switch with making capacity
- Mechanical tripped on fault indicator
- Auxiliary contacts 1NO and 1NC
- Anti-reflex operating handle
- "Live Cable" LED Indicators thru Capacitor Voltage Dividers mounted on the bushings.
- O/C + E/F self powered relay
- Shunt Trip circuit for external trip signal
- Mechanical ON/OFF/EARTH Indication
- Cable boxes suitable for 1 X 3C x 300 sq mm XLPE Cable with right angle Cable Termination / protectors / boots

JET PUMP 1/2 HP (CROMPTON/ KIRLOSKOR):

As per site requirement, 1/2HP BIS approved surface pumps shall be installed for SPV Power Plant. Suitable Nos of water outlets shall be provided through B-class ISI Marked GI Pipes with suitable rubber based pipe for cleaning of the modules.

FIRE EXTINGUISHER:

As per requirement, Fire Extinguisher shall be provided and other fire prevents materials like sand basket at the PV array field for SPV Power Plant.

COMPREHENSIVE MAINTENANCE:

All the equipments (but incase of SPV Modules the guarantee period is 25years) shall be provided with comprehensive Maintenance for 10 years against unsatisfactory performance and/or break down due to defective design, workmanship of material. The equipments or, components, or any part thereof, so found defective during Comprehensive Maintenance period shall be forthwith repaired or replaced free of cost to the satisfaction of the Engineer in-charge.

DATA ACQUISITION SYSTEM / PLANT MONITORING:

i. Data Acquisition System shall be provided for each of the solar PV plant above 10 kWp capacity.

ii. Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication to be provided.

iii. Solar Irradiance: An integrating Pyranometer / Solar cell based irradiation sensor (along with calibration certificate) provided, with the sensor mounted in the plane of the array. Readout integrated with data logging system.

-
- iv. Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with readouts integrated with the data logging system
 - v. The following parameters are accessible via the operating interface display in real time separately for solar power plant:
 - a. AC Voltage.
 - b. AC Output current.
 - c. Output Power
 - d. Power factor.
 - e. DC Input Voltage.
 - f. DC Input Current.
 - g. Time Active.
 - h. Time disabled.
 - i. Time Idle.
 - j. Power produced
 - k. Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage).
 - vi. All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.
 - vii. PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT should be of 0.5 accuracy class.
 - viii. Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
 - ix. String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.
 - x. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
 - xi. The data shall be recorded in a common work sheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.
 - xii. All instantaneous data shall be shown on the computer screen.
 - xiii. Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
 - xiv. Provision for instantaneous Internet monitoring and download of historical data shall be also incorporated.
 - xv. Remote Server and Software for centralized Internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system.
 - xvi. Ambient / Solar PV module back surface temperature shall be also monitored on continuous

basis.

- xvii. Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environment data shall be provided.
- xviii. Remote Monitoring and data acquisition through Remote Monitoring System software at the owner / SMC server location with latest software/hardware configuration and service connectivity for online / real time data monitoring / control complete to be supplied and operation and maintenance / control to be ensured by the bidder.
- xix. The bidders shall be obligated to push real-time plant monitoring data on a specified intervals (say 15 minute) through open protocol at receiver location (cloud server) in XML/JSON format, preferably. Suitable provision in this regard will be intimated to the bidders.

PLANT PERFORMANCE EVALUATION BY THIRD-PARTY:

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection (by the selected third-party) for initial commissioning acceptance to qualify for release of subsidy and as per Clause 6.8 of Section-II. Minimum CUF of 15% should be maintained for a period of 5 years for fulfilling one of the conditions for release of PBG. The bidder should send the periodic plant output details to SECI for ensuring the CUF. The PR will be measured at Inverter output level during peak radiation conditions.

Third-Party Inspection shall be carried out by Inspecting officer(s) nominated by MNRE, GEDA, SECI, SMC officials, or, from the officials of TERI, NISE, or any other agencies to be notified by MNRE/GEDA/SECI from time to time.

7.15 DOCUMENTATION

Two sets of installation manual/ user manual shall be supplied along with the each power plant. The manual shall include complete system details such as array lay out, schematic of the system, inverter details, working principle etc. Step by step maintenance and troubleshooting procedures shall be given in the manuals.

7.16 BILL OF MATERIAL

The bidder should provide the bill of material for 3.6 MWp grid connect SPV power plants mentioning the quantity of each of the item consisting in the system, along with the offer/ or as mentioned in the technical-bid.

7.17 HEALTH, SAFETY & ENVIRONMENT

The bidder shall submit the following before starting the installation of the power plant: -

- Safety and Environment policy of the Company
- HSE Manuals for Installation
- Emergency Management Plan

7.18 EXPERIENCE OF THE BIDDER

A comprehensive list of past projects implemented by the bidder (manufacturer) indicating clients, dates, size of projects and any other relevant material should be included in the offer. Companies having experience in execution and operation of solar grid connect systems in India shall be given preference.

7.19 WARRANTY

The successful bidder shall provide a warranty covering the rectification of all defects in the design of equipment, material and workmanship of manufacturing of equipment for a period of 12 (Twelve) months after 30 days of stabilization period and satisfactory commissioning/ issue of

commissioning certificate by GEDA.

7.20 MNRE APPROVAL

The model of SPV module offered should be of type tested design as per Ministry of New and Renewable Energy (MNRE).

The bidder shall submit a copy of the MNRE list indicating inclusion of the model of SPV module offered and MNRE certificate including power curve.

7.21 ENERGY COMPUTATION

The bidder shall submit detailed calculations for arriving at annual energy generation for the SPV based power plant and furnish all the input information/ data including maps, drawings, data considered for calculations in hardcopy and soft copy both.

7.22 TECHNICAL DATA

The bidder shall furnish technical data and documents complete in all respect as per the bidding document.

7.23 MAINTENANCE CHECKS

The successful bidder shall carry out maintenance checks at regular intervals viz. daily, weekly, monthly, quarterly, half yearly and yearly basis during warranty period and maintenance period for which details of such checks shall be furnished along with the bid.

7.24 ELECTRICAL SYSTEM FOR INTERFACING WITH THE GRID

Bidder shall design electrical system in accordance with the Indian Electricity (IE) Rules, Chief Electrical Inspector (CEI) requirements, Standard Practices of SEBs/ Discoms, Code of Practices issued by Bureau of Indian Standards (BIS).

Bidder shall submit complete scheme for grid interfacing & interconnection for SPV power plant at each site including schematic diagrams and the basis of design & brief specifications of equipments, materials and installations along with the offer.

All equipments/ materials shall be suitable for the site conditions and shall be manufactured strictly in accordance with latest relevant Indian Standards published by BIS and all similar materials and removable parts shall be uniform and interchangeable with one and another. Adequate preventive measures shall be taken against aggressive climatic conditions like temperature, corrosion, salinity, humidity, sand storms, wind pressure etc.

Electrical installations shall be constructed strictly according to the following:

- Relevant Code of Practices issued by Bureau of Indian Standards (BIS).
- Indian Electricity (IE) Rules 1956/ Electricity Act, 2003.
- Statutory requirements by Chief Electrical Inspector (CEI) of the State.
- Standard Practices followed by SEBs/ Discoms.
- Central Electricity Authority (CEA) Guidelines.
- Central Board of Irrigation and Power (CBIP) manuals.
- Rural Electrification Corporation (REC) manuals.

Any item not specifically mentioned but essential for successful operation of electrical system with full safety according to statutory requirements shall be included in scope of work of the bidder.

7.25 SOURCES OF COMPONENTS

The bidder shall furnish the make and source of the various components of the power plant as per format given in the bidding document.

7.26 DESIGN IMPROVEMENT

The purchaser or the supplier may propose changes in the specifications of the equipment or quality over and above the guaranteed performance and if the parties agree upon any changes, the specifications shall be modified accordingly.

If any such agreed change is such that it affects the price or completion schedule, the parties shall agree in completion schedule or both, before the supplier proceeds with the change. Following each agreements, the provision thereof shall be incorporated in an amendment to the contract.

7.27 INSPECTION AND TESTING

All items will be carefully inspected and tested during manufacture and prior to dispatch in accordance with the standard practice of manufacturer and the applicable standards. These certificates in triplicate shall be supplied before the dispatch of the equipments.

Purchaser reserves the right to inspect the equipments/ components at the manufacture's works. Purchaser shall have an open access for conducting quality inspection of the system as well as components as and when deemed necessary. Purchaser may engage third party inspection agencies for achieving the assured quality of the components. Bidder shall extend necessary cooperation to the third party inspection agencies besides the Purchasers inspection team for effectively carrying out the Inspection/ testing. However, stage inspection by SMC does not absolve the responsibility of the bidder in providing the performance guarantee/ warranty. Bidder shall strictly comply with the quality requirements suggested by the inspecting authorities from time to time.

7.28 STANDARDS & STATUTORY REQUIREMENTS

The SPV modules and other equipments should conform to the relevant International/ Indian Standards and shall meet all the CEA/ CEI and local statutory requirements. The Bidder shall furnish the standards adopted by them.

All works shall be done as per statutory Acts, Rules and Regulations of the Central/ State Govt. and our own Authorities or as applicable.

7.29 TECHNICAL INFORMATION TO BE PROVIDED BY THE SUCCESSFUL BIDDER

The successful bidder shall be required to provide three copies of the following information, drawings and documents, within two weeks of the placement of order:

- (i) Complete technical specifications of the SPV Module including Power conditioning Unit, Data logger, Module Mounting Structures, Cables and hardware's, Junction box and Distribution boxes, Earthing kit (if required), PVC pipes and accessories
- (ii) The specification of anti-corrosion treatment.
- (iii) The description of erection mode.
- (iv) Necessary engineering drawings like layout of machineries and equipments
- (v) Detailed control loop diagrams, interlock schemes etc.
- (vi) Detailed drawings showing control circuit interconnection drawings and other service requirements.
- (vii) Detailed erection drawings and manuals.
- (viii) Operation/ maintenance/ trouble shooting manual including detailed drawing for local control system.
- (ix) Detailed planning network diagram.

-
- (x) The bidder is requested to append to the offer a bar chart and PERT diagram showing the broad time schedule of supply, erection and commissioning.
 - (xi) Schematic diagram of entire electrical system for grid interfacing & interconnection.
 - (xii) Equipment drawings and instruction manuals of original equipment manufacturer.
 - (xiii) Test reports (Type & Routine both) of all major equipments, material and components
 - (xiv) Check list/ protocols for manufacture, assembly, erection, testing and commissioning
 - (xv) Test certificate of reinforced steel and steel used for module mounting structure

7.30 PROTECTION AGAINST HIGH TEMPERATURE, CORROSIVE ATMOSPHERE, AGGRESSIVE SOIL AND DUST STORMS

SPV modules need to be suitably protected against high temperature and dust storms. All equipments shall be designed for following temperature ranges:

Normal: 0°C to 45°C

Extreme: 0°C to 60°C

All materials, components and equipment shall function and work properly during the lifetime without deterioration due to the aggressive soil, climatic conditions, cyclones and dust loading. Bidder shall submit protection methods/ precautions to be adopted for the satisfactory performance of SPV power plant for such conditions, without fail.

-Sd-
Executive Engineer,
Light & Energy Efficiency Cell,
Surat Municipal Corporation.

SECTION-VIII

EVALUATION OF BIDS

- ⇒ Evaluation of both un-priced bids and priced bids shall be done separately.
- ⇒ Techno-commercial evaluation of the un-priced bids shall be carried out first. This will be done on the basis of Qualification Documents furnished by the bidder and completeness & conformity of the bids with respect to the ITB requirements viz: acceptability of terms and conditions of the tender document, Project completion time quoted by the bidder.
- ⇒ SMC reserves the right to get the generation calculation verified through an independent agency and the generation so calculated will be considered for price evaluation.
- ⇒ However SMC reserves the right:
 - To ask for any additional information
 - To reject any or all bids without assigning any reason thereof.

Price bids of qualified and techno-commercially acceptable bidders only will be opened.

- ⇒ Financial loading for interest component, if any, shall be done considering rate of interest as 8% per annum.
- ⇒ Financial evaluation of the bids shall be carried out on the following considerations: -
 - Total EPC contract price quoted by bidders as per Bid Response Sheet No. P-I.
 - Total present value of maintenance charges.
 - Total Annual Energy Production as furnished by the bidders and corrected by the SMC, if it is found abnormal.
 - Information/ data furnished by the bidders in the Bid Response Sheets.
 - Evaluation of overall return on Investment/ Internal Rate of Return (IRR) for 25 years period.
 - Financial & Technical Capability.
 - Technology of the SPV cell offered.

Any other point which may have financial bearing on overall return of the project can also be considered in the evaluation.

-Sd-
Executive Engineer,
Light & Energy Efficiency Cell,
Surat Municipal Corporation.



Bidder's Certificate/ Undertaking

- ☞ *I/we hereby declare that I/We have persuaded in detail and examined closely the specifications/ general terms & conditions/ special terms & conditions/ important instructions/notes described in the tender documents. I/We hereby agree to be bound by and comply with all such specifications/terms, conditions etc.*
- ☞ *I/We also certify that I/We have visited the sites and inspected the locations of the proposed work and have collected all information including any modification work(s) required for execution of works at site before quoting my/our rates.*
- ☞ *I/We also confirm that my/our offer is strictly in line with the tender specifications, stipulations, terms and conditions etc. and understand that in the event of any deviations, technical or commercial, my/our price bid will not be opened.*
- ☞ *I/We also confirm that min. 90% net energy generation claimed will be achieved failing which pre-determined mutually agreed damages as imposed will be acceptable to me/ us.*
- ☞ *I/We have understand the tender specifications/ terms/ conditions/ all content of tender and particularly intent behind the SITC & maintenance of the Solar Power Plants and bind my/ our self for same.*
- ☞ *If any items/ conditions/ specifications/ scope of work is mentioned differently at more than one place(s) by chance, most appropriate decided by the department will apply & binding to the contractor.*
- ☞ *I/ We understand that the tender spell out the detailed specifications and other terms & conditions for supply, installation, testing, commissioning including & performance expectation during the contractual period. Every attempt has been made to express, communicate, spell out & define all terms, conditions, specification of the works and site conditions etc. related to work; however, I/ We also understand that work has to be viewed in toto and therefore, anything missed out has been considered as a part of the tender even though it is not specifically and exclusively mentioned in the tender by SMC. Tender has been quoted accordingly.*
- ☞ *I/ We have understood the intent of the tender besides content therein. I/ We assures that SPV based Power Plants will deliver the claimed performance with the best safety & work shall be carried out in the best engineering manner & practices prevailing in the field and according to relevant national/ international standards, laws & regulations. Tender cost shall be full & final throughout the contractual period.*
Any minor/ major modification works required to achieve above will be done free of cost by me/ us. No claims will be made and no issue will be raised by me/ us in the aforesaid matter(s) at later date or at any stage.

Signature & Seal of Bidder



ANNEXURE: A

AFFIDAVIT

Name of Work: _____

6 I, the undersigned, do hereby certify that all the statements made in the required attachments are true and correct. I also understand that in case of wrongful / false information, corporation is entitled to take any civil & criminal punitive action against me /us.

The undersigned also hereby certifies that neither our firm M/s _____ nor any of its constituent partners have abandoned any work in India nor any contract awarded to us for such works has been rescinded during last five years, prior to the date of this bid.

The undersigned hereby authorize(S) and request (s) any bank, person, authorities, government or public limited institutions, firm or corporation to furnish pertinent information deemed necessary and requested by the SMC to verify our statements or our competence and general reputation.

The undersigned understands and agreed that further qualifying information may be requested, and agrees to furnish any such information at the request of the SMC.

The SMC and its authorized representative are hereby authorized to conduct any inquiries or investigations to verify the statements, documents, and information submitted in connection with this application and to seek clarification from our bankers and clients regarding any financial and technical aspects. This Affidavit will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by you to verify statements and information provided in the tender or with regard to the resources, experience and competence of the Applicant.

Signed by the authorised signatory of the firm

Title of the office

Name of the firm

Date

Note: The affidavit format as indicated above to be furnished on non judicial stamp paper of Rs. 100 and duly notarized.



Bid Response Sheet No.1

**PROFORMA FOR ACKNOWLEDGEMENT OF
REQUEST FOR PROPOSAL DOCUMENT**

The undersigned hereby acknowledges and confirms receipt of the technical-bid document from SMC and to submit the proposal by due date for a 3.6 MWp SPV based power plants.

The undersigned confirms that the Bidder is in possession of the complete technical-bid.

We confirm that we will be attending the conference.

The undersigned hereby acknowledges that he/ she understands that if the Bidder does not attend the pre-bid conference. SMC will not respond to inquiries from the Bidder after the date of conference.

NAME (COMPANY) with telephone, fax and e-mail details –

SIGNATURE

Name of signatory (printed)

Title of signatory (printed)

Note:

The form should be returned by the fax within seven days and should be followed by mailing the form with the original signature to the attention of Energy Efficiency Cell , SMC, Muglisara, Surat- 395 003.

Signature of Bidder



Bid Response Sheet No.2

PROFORMA FOR DETAILS OF PAST EXPERIENCE IN SOLAR ENERGY BASED POWER PROJECTS

- (1) Total capacity of SPV based power plant projects executed on turnkey basis in Gujarat and India in the last Seven years.
- (2) Maintenance works of SPV based power plant projects undertaken in Gujarat and India for total capacity.
- (3) Maintenance contract for ten years & above in hand indicating capacity thereof.
- (4) Number of power plant of quoted model in operation in Gujarat and India with no. of years in operation.

Note:

The bidder should give all relevant documents for our satisfaction regarding fulfilment of the qualifying criteria in Bid Response Sheet 2 (A) and provide extra sheets also (if necessary); failing with bid is not likely to be considered.

LIST OF SPV BASED POWER PLANT INSTALLED THRU TURNKEY PROJECT IN GUJARAT/ INDIA DURING PRECEDING SEVEN YEARS FROM DUE DATE OF SUBMISSION OF OFFERS: -

Commissioning		KW Rating of power plant	Total capacity of power plant	Place (Location & State)	Name & Contact Details of authorised person
Month	Year				

Please attach separate sheet for Gujarat site.

Signature of Bidder



Bid Response Sheet No.2A

**PROFORMA FOR DETAILS OF PAST EXPERIENCE IN SPV BASED POWER PLANT
PROJECT OF LAST SEVEN YEARS (TURNKEY PROJECT)**

(Separate sheet for each solar power plant)

Sr. No.	Description	
1.	Name of works & SMC's address, contact person with telephone numbers.	
2.	Detailed scope of work.	
3.	Type of plant & machines used (only for major components).	
4.	Capacity of the plant	
5.	Whether maintenance is being looked after, period of maintenance contract.	
6.	Completion time as per contract.	
7.	Actual completion time.	
8.	Reasons for delay, if any.	
9.	Period of successful operation.	
10.	Whether copy of work order & completion certificate for the above mentioned work furnished.	
11.	Actual generation achieved by power plant per year (month-wise).	
12.	Copies of Performance Reports from the prominent customers.	
13.	Additional information, if any.	

Signature of Bidder



Bid Response Sheet No.3

**FINANCIAL AND TECHNICAL
PARAMETERS OF THE ORGANISATION**
(To be furnished by the Bidder)

Name and Address of the bidder -----

Phones:

E-mail

Fax:

I. FINANCIAL

1. Latest Balance sheet filed with ROC (Attach audited copies of annual accounts of past 3 years). Indigenous Bidders to attach copy of accounts audited under section 44AB of Income Tax Act.
2. Net Worth
 - a)Current period
 - b)During the last financial year
 - c)During the year before last financial year
3. Net Sales (in respective currency)
 - a) Current period
 - b) During the last financial year
 - c)During the year before last financial year
4. Certificate of financial soundness from the bankers
5. Income Tax: To furnish copies of the following documents:
Permanent Account No. :
Last Income Tax return copy
6. Sales

Signature of Bidder



Bid Response Sheet No.3A

II. TECHNICAL

1. Bidder's Classifications
 - 1) Manufacturer
 - 2) Authorized Agent
 - 3) Dealer
 - 4) Others (Please specify)

2. Licensed capacity to manufacture:

Description of equipment	Size Capacity	Licensed Capacity	No. of units manufactured		
			Current Year	Last Year	Second Last Year

Plant Details:

- a) Location
 - b) Description, type and size of building
 - c) Is property on lease or free hold? If on lease, indicate date of expiry in each case.
3. Type of the equipment manufactured/ supplied/ installed during last 7 years.

Name of Equipment	Capacity/ size/ model	Nos. manufactured/ supplied/ installed	Project to which supplies have been made	No. of orders in hand

Contd...



Bid Response Sheet No.3A- contd...

4. Details of testing facilities available:
 - a) List of testing equipment available
 - b) Give details of tests, which are carried out on items offered
 - c) Details of the test organization available.

5. Describe Quality Control Organization, if any, and give the organization chart.
 - a) Are goods offered subject to batch test, random sampling, or full 100% test for quality?
 - b) Are tests carried out by factory employees or by a separate testing agency?
 - c) Are independent quality Control Organization checks made and certificates issued?

6. Nearest service centre to buyer:
Location Phone No.

7. Names of three buyers to whom similar equipments have been supplied, installed and commissioned in the past to whom reference could be made by us regarding the bidder's technical and delivery ability.
.....
.....
.....

8. List of components usually subcontracted.

9. Schedules for furnishing technical data and certified drawings after receipt of orders.

Signature of Bidder



Bid Response Sheet No.4

LIST OF SPV BASED POWER PLANT INSTALLED IN THE LAST 7 YEARS

Commissioning		Type of SPV module	Total Capacity	Name of site	Client's Name	Contact tel. no. & address	Whether Energy generation as per guarantee Yes/ No If No, Why?
Month	Year						

(Please fill in the information for Gujarat separately)

Signature of Bidder



Bid Response Sheet No.5

PROFORMA FOR EXCEPTIONS AND DEVIATIONS

The bidder is required to stipulate the list of exceptions and deviations, if any, in the proforma given below only. Any deviations given elsewhere in the offer will not be considered.

Sr. No.	Terms & Conditions	Agreed or Not agreed	Exceptions & Deviations with Justifications
1.	Validity of offer 120 days from the date of opening of the technical bid.		
2.	Scope of work		
3.	Technical Specification of the supply		
4.	Terms of payment		
5.	Firmness of price		
6.	Project Commissioning		
7.	Warranty & Stabilization Period		
8.	Maintenance for 10 (ten) years		
9.	Any other:		

Notes:

1. Attach separate sheet (duly signed), if necessary
2. Information given in this Response Sheet shall be treated as final. Any variations observed elsewhere in the bid shall be ignored while evaluating the bid.

Signature of Bidder



BIDDER'S QUALIFICATION FORM

Sr. No.	Item	Particulars
A	TECHNICAL	
(i)	The bidder shall have experience of executing grid connected SPV based roof-top power plant projects in immediately preceding seven years in India.	
(ii)	Must have sufficient and satisfactory experience of maintenance or work order on hand of at least more than 100 kWp of grid connected SPV based roof-top power plant project for one side in India.	
B	FINANCIAL	
(iii)	The Average Annual Turnover of the bidder of the last three preceding financial years i.e. 2013-14, 2014-15 and 2015-16.	
(iv)	The net worth of the bidder during any one year among last three preceding financial years i.e. 2013-14, 2014-15 and 2015-16.	

Signature of the Bidder



Bid Response Sheet No.7

**TECHNICAL PARTICULARS OF 3.6 MW_p SPV BASED POWER PLANTS FOR
QUOTED MODEL ONLY**

General Data			
1.	Make of SPV Cell/ module		
2.	Type		
3.	Rated output		
4.	Current (Amps.)		
5.	Voltage (V)		
6.	Voltage Variation (%)		
7.	Frequency Variation (%)		
8.	Asymmetry variation (%)		
9.	Structure tilt angle		
10.	Regulation		
11.	Designed max. temp. (deg. C)		
12.	Designed life (years)		
13.	Frequency (Hz)		

Weight			
1.	SPV module (kg/ kW)		
2.	SPV module structure (kg/ kW)		

Signature of the Bidder

**Bid Response Sheet No.8****DETAILS OF EXECUTED PROJECTS**

Project Details		Unit	Values
State			All India
Location			
Total Capacity		kWp	
Total Generation (1ST Year)		KWH	
Total Losses		%	
Net Energy Generation (1ST Year)		KWH	
PLF		%	
Financial Details			
Total cost of Power plant		lacs	
Other Details			
O&M Charges	Year free		1
	Second Year	lacs	
	Escalation		

Signature of the Bidder



Bid Response Sheet No. 9

LIST OF COMPONENTS HAVING LIFE LESS THAN 25 YEARS

Sr.No.	Description of Item	Make	Expected Life

Signature of the Bidder



Bid Response Sheet No. 10

DRAWINGS TO BE ENCLOSED BY THE BIDDER

The Bidder should enclose the following drawings with the bid:

- (a) Layout of SPV based power plant project
- (b) SPV module structure Foundation
- (c) Single line schematic diagram of electrical system for grid interfacing and grid interconnection from SPV based power plant to LT/HT distribution board

Signature of the Bidder



Bid Response Sheet No. 11

DETAILS OF ESTIMATED ENERGY GENERATION OF PROPOSED SPV BASED POWER PLANTS

Project Details	Unit	Values
Total Capacity	kWp	
Total Generation (1ST Year)	kWh	
Total Losses (1ST Year)	%	
Estimated Net Energy Generation:		
1ST Year	kWh	
2nd Year	kWh	
3rd Year	kWh	
4th Year	kWh	
5th Year	kWh	
6th Year	kWh	
7th Year	kWh	
8th Year	kWh	
9th Year	kWh	
10th Year	kWh	
11th Year	kWh	
12th Year	kWh	
13th Year	kWh	
14th Year	kWh	
15th Year	kWh	
16th Year	kWh	
17th Year	kWh	
18th Year	kWh	
19th Year	kWh	
20th Year	kWh	
21st Year	kWh	
22nd Year	kWh	
23rd Year	kWh	
24th Year	kWh	
25th Year	kWh	

NOTE: -

- BIDDER HAS TO FURNISH SEPARATE SHEET FOR EVERY POWER PLANT
- FILLING OF THESE VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.

Signature of the Bidder

**Bid Response Sheet No. 12****1. Katargam Water Works (940 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Transformers (1100 KVA)		
(17)	SF6 outdoor type HT breaker		
(18)	HT Cable		
(19)	HT End termination		
(20)	LT Panel and switchgear		
(21)	Any other component (1)		
(22)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder



**2. Katargam WDS (650 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Transformers (700 KVA)		
(17)	SF6 outdoor type HT breaker		
(18)	HT Cable		
(19)	HT End termination		
(20)	LT Panel and switchgear		
(21)	Any other component (1)		
(22)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder



**3. Rander Water Works (500 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Any other component (1)		
(17)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder

**4. Sarthana Water Works (700 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Any other component (1)		
(17)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder



**5. Varachha Water Works (250 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Any other component (1)		
(17)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder



**6. Althan WDS (270 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Any other component (1)		
(17)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder

**7. Kosad WDS (150 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Any other component (1)		
(17)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder



**8. Udhana Zone office (15 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Any other component (1)		
(17)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder



**9. Rander Zone office (30 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Any other component (1)		
(17)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder

**10. Mota Varachha WDS (100 KWp)
BILL OF MATERIALS**

Sr. No.	Description	Make & Model Offered	Total Qty. as per site requirements
(1)	Solar module (Make, Type, Wattage)		
(2)	Module mounting structure(s)		
(3)	Inverter (Make, Model, Capacity etc.)		
(4)	Sensor Box with Temperature sensors and pyranometer		
(5)	Web Box with RS 485 Communication Cable or as required		
(6)	AC Distribution Board as required for the SPV based Power Plant with sufficient safety factor		
(7)	1 x 4 or sq mm PVC insulated Cu cable (Array to AJB)		
(8)	4 x 10 or sq mm PVC insulated Cu cable (PCU to ACDB input)		
(9)	Multi-contact Male Cable Coupler		
(10)	Multi-contact Female Cable Coupler		
(11)	Earthing kit as required		
(12)	GI Strip		
(13)	Vertical Air terminal		
(14)	Installation kit		
(15)	Safety equipments/ accessories etc.		
(16)	Any other component (1)		
(17)	Any other component (2)		

Notes:

- Bidder has to estimate the actual cable lengths (HT & LT) required during the compulsory site visit and quote the rate accordingly. Tentative drawings sketches shall be provided during site visit.
- **FILLING OF THESE DETAILS/ VALUES IS MUST OTHERWISE OFFER OF SUCH BIDDER SHALL BE REJECTED.**

Signature of the Bidder



PROFORMA OF BANK GUARANTEE TOWARDS SECURITY DEPOSIT/ PERFORMANCE GUARANTEE

(On non-judicial stamp paper of appropriate value)

To,
The Municipal Commissioner,
Surat Municipal Corporation,
Surat.

Ref:- Bank Guarantee towards Security cum Performance Guarantee

Dear Sir,

Whereas M/s. (Name & Address) (hereinafter called "The Bidder") have bid for

And whereas the conditions of bid aforesaid provide, inter-alia, that the bidder shall pay to SMC (Address) (hereinafter referred to as "Beneficiary") a sum of Rs. _____ (Rupeesonly) as Security Deposit / Performance Guarantee in the form and manner and subject to the terms therein mentioned. And whereas the bidder has agreed to provide a BG through a Schedule Bank (Cooperative Bank not accepted)- for Rs. _____ towards performance guarantee / EMD.

Now in consideration or the promises, we (Bank) _____ having our office at (Address) _____ have agreed to and hereby give such guarantee as is hereinafter mentioned in your favour.

We (Bank Name) of (Address) (hereinafter called "The Bank") do hereby unconditionally, unequivocally and irrevocably undertake to pay the amount due and payable under this guarantee without any demur, contest or protest and without any reference to the Bidder (Name & Address) _____ merely on demand from the beneficiary (SMC) stating that the amount claimed is due from the said Bidder (Name)_____. SMC shall be the sole judge and its decision communicated to us in this regard shall be final and conclusively binding on us.

SMC will have the full liberty without reference to us and without affecting this guarantee, postpone for any time or from time to time the exercise of any of the powers and rights conferred on you under the said bid with the said bidder and to enforce or to forbear from enforcing any powers or right or by reason of time being given to the said bidder which under law relating to the sureties would but for the provision have the effect of releasing us. Any such time/indulgence/forbearance and/or any act or omission or commission on your part will not vitiate this guarantee.

We (Bank's Name & Address)_____ undertake to pay to SMC any money so demanded forthwith notwithstanding any dispute(s) raised by in any suit or proceeding(s) pending before any court or tribunal relating thereto, any liability under this presents being absolute and unequivocal. The payment shall be made to SMC on receipt of invocation of this Bank Guarantee. The payment so made by us under this guarantee shall be a valid discharge of our liability for payment thereunder and that the Bidder (Name) shall have no claim whatsoever against us for making such payment.

The guarantee herein contained shall not be determined or affected by the liquidation or winding up, dissolution or change of Constitution or insolvency of the said bidder but shall in all respects and for all



purposes be binding and operative until full payment is received by you as if this is a continuing guarantee to secure your ultimate dues in this premises.

We have power to issue this guarantee in your favour under Memorandum and Articles of Association and undersigned has full power to do under the Power of Attorney dated granted to him by the Bank.

You will be at liberty to alter the terms and conditions of the said bid and/or to take any other security/guarantee/promissory notes from the bidder or others which will not affect/vitiate/discharge our this guarantee.

We _____(Name of Bank) further undertake that no change in the terms of the Bank Guarantee will be made during its currency except with the previous consent of SMC in writing.

This guarantee will bind our successors and assigns and will remain operative irrespective of any change in the constitution of our Bank and/or the bidder or the provision or contract between SMC and the Bidder.

Our liability under this guarantee is restricted to Rs.(Rs.....only) and this guarantee shall remain in force till (date) and unless a demand or claim to enforce the guarantee is filed with us in writing on or before (date)_____, we shall be relieved and discharged from all our liabilities hereunder.

For the purpose of enforcing legal right/remedies in respect of this guarantee, we agree with you that only ----- Courts in the State of Gujarat shall have exclusive jurisdiction.

NOT WITHSTANDING ANYTHING CONTAINED HERE IN:

- 1) Our liability under this bank guarantee is restricted to Rs. ----- (50% amount of ----- Deposit).
- 2) This bank guarantee is valid up to -----
- 3) Our liability to make payment shall arise and we are liable to pay the guarantee amount of any part thereof under this guarantee, only if served upon us a written claim a demand in terms of the guarantee on or before dated -----

Signed and delivery this _____ day of _____ 2015

Yours faithfully,
For and on behalf of Bank

Signature of a person duly authorised
to sign on behalf of the Bank.
With Seal



**PROFORMA OF BANK GUARANTEE TOWARDS
MAINTENANCE PERFORMANCE GUARANTEE
(On non-judicial stamp paper of appropriate value)**

To,
The Municipal Commissioner,
Surat Municipal Corporation,
Surat.

Ref:- Bank Guarantee towards Maintenance performance guarantee .

Whereas M/s. (Name & Address) (hereinafter called "The Bidder") have bid for

And whereas the conditions of bid aforesaid provide, inter alia, that the bidder shall pay to SMC (Address) (hereinafter referred to as "Beneficiary") a sum of Rs. _____ (Rupeesonly) as Maintenance Performance Guarantee in the form and manner and subject to the terms therein mentioned. And whereas the bidder has agreed to provide a BG through a Schedule Bank (Cooperative Bank not accepted) for Rs. _____ towards Maintenance performance guarantee.

Now in consideration or the promises, we (Bank) _____ having our office at (Address) _____ have agreed to and hereby give such guarantee as is hereinafter mentioned in your favour.

We (Bank Name) of (Address) (hereinafter called "The Bank") do hereby unconditionally, unequivocally and irrevocably undertake to pay the amount due and payable under this guarantee without any demur, contest or protest and without any reference to the Bidder (Name & Address) _____ merely on demand from the beneficiary (SMC) stating that the amount claimed is due from the said Bidder (Name)_____. SMC shall be the sole judge and its decision communicated to us in this regard shall be final and conclusively binding on us.

SMC will have the full liberty without reference to us and without affecting this guarantee, postpone for any time or from time to time the exercise of any of the powers and rights conferred on you under the said bid with the said bidder and to enforce or to forbear from enforcing any powers or right or by reason of time being given to the said bidder which under law relating to the sureties would but for the provision have the effect of releasing us. Any such time/indulgence/forbearance and/or any act or omission or commission on your part will not vitiate our guarantee.

We (Bank's Name & Address)_____ undertake to pay to SMC any money so demanded forthwith notwithstanding any dispute(s) raised by in any suit or proceeding(s) pending before any court or tribunal relating thereto, any liability under this presents being absolute and unequivocal. The payment shall be made to SMC on receipt of invocation of this Bank Guarantee. The payment so made by us under this guarantee shall be a valid discharge of our liability for payment there under and that the Bidder (Name) shall have no claim whatsoever against us for making such payment.

The guarantee herein contained shall not be determined or affected by the liquidation or winding up, dissolution or change of Constitution or insolvency of the said bidder but shall in all respects and for all purposes be binding and operative until full payment is received by you as if this is a continuing guarantee to secure your ultimate dues in this premises.

We have power to issue this guarantee in your favour under Memorandum and Articles of Association and undersigned has full power to do under the Power of Attorney dated granted to him by the Bank.



You will be at liberty to alter the terms and conditions of the said bid and/or to take any other security/guarantee/promissory notes from the bidder or others which will not affect/vitiate/discharge our this guarantee.

We _____(Name of Bank) further undertake that no change in the terms of the Bank Guarantee will be made during its currency except with the previous consent of SMC in writing.

This guarantee will bind our successors and assigns and will remain operative irrespective of any change in the constitution of our Bank and/or the bidder or the provision or contract between SMC and the Bidder.

Our liability under this guarantee is restricted to Rs.(Rs.....only) and this guarantee shall remain in force till (date) and unless a demand or claim to enforce the guarantee is filed with us in writing on or before (date)_____, we shall be relieved and discharged from all our liabilities hereunder.

For the purpose of enforcing legal right/remedies in respect of this guarantee, we agree with you that only ----- Courts in the State of Gujarat shall have exclusive jurisdiction.

Signed and delivery this _____ day of _____ 2016

Yours faithfully,
For and on behalf of Bank

Signature of a person duly authorised
to sign on behalf of the Bank.
With Seal



Annexure - III

List of Preferred suppliers for Bought out Items

1)	ENERGY METER	:	L&T/ SIEMENS/ SECURE
2)	MCCB	:	L&T, SIEMENS, SCHNIDER, ABB, CONTROL & SWITCH GEAR
3)	CABLES (LT)	:	CCI, UNISTAR, FINOLEX, INCAB, TORRENT, HAVELLS, BHARATCAB, GLOSTER, RR Kabel, KEI, AVOCAB, TROPODURE
4)	LIGHT FITTINGS	:	PHILIPS/ CGL/ GE LIGHTING/ WIPRO
5)	PVC CABLE	:	CCI, UNISTAR, FINOLEX, INCAB, TORRENT, HAVELLS, BHARATCAB, GLOSTER, RR Kabel, KEI, AVOCAB, TROPODURE
6)	INSTRUMENT TRANSFORMERS	:	LAMCO/ VIDYUT CONTROL/ AREVA/ MEHRU/ CGL
7)	SOLAR MODULE	:	MNRE APPROVED
8)	INVERTER/ PCU	:	ABB, BONFIGLIOLI, DELTA, HELIOS SYSTEM, MITSUBISHI, REFUSOL, SCHNEIDER, SMA
9)	SENSOR BOX WITH TEMPERATURE SENSORS AND PYRANOMETER	:	MNRE APPROVED
10)	WEB BOX WITH RS 485 COMMUNICATION CABLE	:	MNRE APPROVED
11)	VERTICAL AIR TERMINAL	:	MNRE APPROVED/ NORMALLY USED FOR SPP PLANTS
12)	INSTALLATION KIT	:	MNRE APPROVED/ NORMALLY USED FOR SPP PLANTS
13)	TRANSFORMER	:	AREVA, CROMPTON GREAVES, SIEMENS, VOLTAMP, ABB, KIRLOSKAR
14)	H.T POWER CABLE	:	CCI, UNIVERSAL, FINOLEX, INCAB, TORRENT, HAVELLS, GLOSTER
15)	HT PROTECTIVE RELAYS	:	L & T, SIEMENS, AREVA, ABB, ESSUN RAY RULL, SCHNEIDER
16)	H.T VCB PANEL	:	CGL, ABB, JYOTI, SIEMENS, AREVA, SCHEINDER, BICCO LAWRIE, L & T
17)	CABLE TERMINATION KIT (LUGS & GLANDS)	:	DOVELLS, JENSON, HEX, 3D, HMI



Annexure – IV

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

Sr. No.	Site	Proposed Installation capacity (kWp)	Rubber Mats (Nos.)	Shock Treatment Chart (Nos.)	Danger Notice Board/ Sticker (Nos.)	Fire Bucket (Nos.)	Fire Extinguisher (Nos.)
1	Katargam Water Works	940	5	3	8	3	3
2	Katargam WDS	650	5	3	8	3	3
3	Rander WW	500	5	3	8	3	3
4	Sarthana WW	700	5	3	8	3	3
5	Varachcha WW	250	3	2	8	3	3
6	Althan WDS	270	3	2	8	3	3
7	Kosad WDS	150	2	2	8	2	2
8	Udhana Zone office	15	1	1	5	1	1
9	Rander Zone office	30	2	1	5	1	1
10	MotaVarachcha WDS	100	3	1	8	2	2
**	Total	3605	34	21	74	24	24

Note- Safety Equipment's need to be placed as the ISO norms