



Appendix 16: Procedure for Performance Testing

Part A: Solar PV power plant Net power generation

1. The Contractor shall quote the ‘Net Electrical Energy Generation Guarantee’ for annual basis considering the Reference Global Average Radiation indicated in this Tender.
2. The Contractor shall demonstrate “Actual Delivered Energy” at metering point as compared to the ‘Base NEEGG’ for every year from the date of starting of O&M Period.
3. The quoted NEEGG as in Table no. 14 B in Appendix 14 for any year shall be permitted with maximum 1 % degradation factor in previous year generation.
- 4. The quoted NEEGG will be used for calculating CUF for that particular year.**
5. The Bidder shall clearly mention the technology used i.e. fixed/tilt or seasonal tracker (please specify) as per Table given in Appendix 6.

Operational Acceptance Test Procedure

Performance Ratio (PR) - Test Procedure

1. Performance Ratio as determined through the PR Test Procedure specified here should not be less than **0.75** for Operational Acceptance Test.
2. The Performance Ratio Test to prove the guaranteed performance parameters of the power plant shall be conducted at site by the Contractor in presence of the Company. The Contractor's Engineer shall make the plant ready to conduct such tests. The Operational Acceptance Test shall be commenced, within a period of one (1) month after successful Commissioning and, there will be continuous monitoring of the performance for 30 days. Any extension of time beyond the above one (1) month shall be mutually agreed upon. These tests shall be binding on both the parties to the Contract to determine compliance of the equipment with the guaranteed performance parameters. This monitoring will be performed on the site under the supervision of the Company/ Company's engineer.
3. The test will consist of guaranteeing the correct operation of the plant over 30 days, by the way of the efficiency rate (performance ratio) based on the reading of the energy produced



and delivered to the grid and the average incident solar radiation. During this period of 30 days, any 5 (five) instances of 15 (fifteen) minutes shall be taken to calculate the instantaneous Performance Ratio of 15 minutes block as per the formula given below in Point No. 5. If the PR of these five instances is above 75%, then Operational Acceptance Test (OAT) shall be considered successful.

4. PR shall be demonstrated against the installed DC Capacity.
5. The Efficiency or performance ratio (PR) of the PV Plant is calculated as follows (according to IEC 61724)

$$\text{Performance Ratio (PR)} = Y_A / Y_R$$

$$Y_A = E_{ac} / P_{Nom}$$

$$Y_R = IR_{Site} / IR_{STC}$$

Where;

Y_A = Final PV system yield (representing the number of hours that the system would need to operate at its rated output power P_{Nom} to contribute the same energy to the grid as was monitored).

Y_R = Reference yield (representing the number of hours during which the solar radiation would need to be at STC irradiance levels in order to contribute the same incident energy as was monitored).

E_{ac} = AC energy injected into the grid during a clearly specified amount of time (kWh).

P_{Nom} = Installed nominal peak power of modules (Nameplate rating at STC) (kWp);

IR_{Site} = Irradiation on the module plane of array during a clearly specified amount of time (measured with a pyranometer installed on the plane of array, POA) (kWh/sq. m).

IR_{STC} = Irradiance at STC (kW/ sq. m); 1000W/m²

Monitoring System for PR Verification

The following instrumentation will be used to determine the Solar Plant Performance:

- Power Meter at the delivery point.
- Power Meter for each inverter for reference only.
- One nos. calibrated pyranometer to determine irradiance on the plane of array (with a target measurement uncertainty of ± 2).



- One nos. calibrated pyranometer to determine irradiance on horizontal plane (with a target measurement uncertainty of ± 2)
- Two nos. thermocouples to measure module temperature with a measurement uncertainty of ± 1 °C.
- Shielded ventilated thermocouple with a measurement accuracy of ± 1 °C.
- An anemometer mounted on a 10m mast to measure wind speed (without additional shadowing on modules).
- Data measurement shall be witnessed in the format mutually agreed before the start of PR test by the employer and the contractor jointly for the said period.
- The Contractor shall show the specified PR for Operational Acceptance.

Part C: The procedure for Performance Guarantee Test (PGT) - cum- Final Acceptance

Test- shall be as follows:

1. A weather station with a calibrated pyranometer shall be installed by the Contractor at the location mutually agreed by the Contractor and GSECL. The test report for the calibration shall be submitted by the Contractor for approval by GSECL. The calibration should be traceable to a national/international laboratory. The output of this pyranometer for shall be logged in the SCADA system.
2. In case the pyranometer is found to be working erratically then immediately the Contractor shall take necessary steps to rectify and/or recalibrate the instrument to the satisfaction of GSECL. However, for the dispute period for which such error has occurred and until the instrument is recalibrated to the satisfaction of GSECL, data from any one of the following list of sources as decided by GSECL will be used:
 - i. A separate pyranometer installed by the Company near the site, if available
 - ii. Average of two closest solar power projects, as identified by GSECL
 - iii. Nearest MNRE weather station
3. “Actual Delivered Energy” from the plant supplied by the Contractor shall be noted for every month and summed up for entire year. For this purpose, the net delivered energy at the metering point shall be taken into account.
4. **To judge the performance on monthly basis and accordingly to initiate measures to meet guaranteed NEEEG quoted for respective years, the measured value of**



energy at step (3) shall be compared with 'Base NEEGG' and hence with 'Base CUF' value. "Base NEEGG/ CUF" for a month is calculated by using the NEEGG quoted in the offer by the Contractor adjusted with a correction factor to take into account the actual average global solar radiation measured by the calibrated pyranometer for that month. This shall be for intermittent performance monitoring only. However, correction in annual NEEGG offered will be only on annual GHI measured.

5. Further, if the plant is not able to achieve the calculated *Base NEEGG/CUF* during PGT and O&M period and there is a shortfall in energy generation, then the Contractor shall be penalized as per relevant Clause of the Tender.
6. The Contractor shall share with GSECL all the radiation, generation, etc. parameters details and all other factors necessary for GSECL to corroborate the estimate. GSECL has the right to cross verify data submitted by the Contractor by all possible means/sources.

Following factors shall be considered for computing the Base NEEGG/ CUF and PR Test:

7. Effect due to variation in annual insolation shall only be considered for computing the Base NEEGG/ CUF.
8. Effect due to variation of meteorological parameters e.g. ambient temperature, wind speed, humidity etc. shall not be considered.
9. **Generation loss due to grid outage (or power evacuation system which is not in the scope of the Contractor):** The measured global solar radiation of the period of the outage of the power evacuation system shall be excluded to calculate average global solar radiation for the period of PGT and O&M.

Solar Radiation:

Ideally, actual measurement of solar radiation at the site is desirable for estimating the projected power output since solar energy is the raw material for power generation. It may be noted that the annual average solar radiation measurement even for 1-2 years is not sufficient. World over, an average radiation value for at least 8-10 years is used for solar power project designing since climatic variations are quite wide year-to-year. Under such a situation, the prevailing practice world over is to develop software which uses satellite measured solar radiation and matches it



with the actual ground measured data for the particular site where actual data has been obtained for many years. The derived values for GETCO S/s are tabulated below:

	Month GHI (kWh/m ² /month)	
	Sikka TPS	Gandhinagar TPS
January	146.	139.5
February	154.8	143.4
March	193.8	184.8
April	206.1	192.3
May	208.9	204.3
June	179.4	177.9
July	155.3	146.6
August	153.8	139.2
September	166.8	154.2
October	169	158.7
November	142.2	136.5
December	134.9	128.7
Annual	2010.9	1906.0

The above radiation data shall be used by the Bidder to calculate annual NEEGG. This radiation data is for evaluation purpose. However, for every year actual radiation shall be considered to calculate the annual NEEGG offered by the Bidder.

Illustration:

If the GHI of a year is more or less then the reference GHI then NEEGG will be calculated as follows:

$$\text{NEEGG} = (\text{Actual GHI} \times \text{NEEGG guaranteed by contractor on reference GHI}) / (\text{Reference GHI})$$

NEEGG guaranteed by Contractor = 71,832,000 KWh

Reference GHI= 1886 KWh/m² per annum



For Example:

Case A) for higher irradiation:

If Actual GHI = 1900 kWh/m² per annum then NEEGG will be:

$$\text{NEEGG} = (1900 \times 71,832,000) / 1886$$

$$\text{NEEGG} = 72,365,217 \text{ KWh/ Annum}$$

Case B) for lower irradiation:

If Actual GHI = 1850 kWh/m² per annum then NEEGG will be:

$$\text{NEEGG} = (1850 \times 71,832,000) / 1886$$

$$\text{NEEGG} = 70,460,870 \text{ KWh/ Annum}$$



Appendix 17: List of Banks (for Bank Guarantee)

Bank Guarantee from the following Banks will be acceptable.

As per Attached Corrigendum **GR no EMD/10/2021/7729/DMO Dtd28 .06.2021**

- The Bank Guarantee submitted should have the clear one time validity in all respect and up to the completion period. If by any reason the Contract Period is extended, the Bidder shall undertake to renew the Bank Guarantee at least one month before the expiry of the validity failing which GSECL will be at liberty to encash the same.



Appendix18 (a): Format of Bank Guarantee for EMD

[To be on non-judicial stamp paper of Rupees One Hundred Only (INR 300/-) or appropriate value as per Stamp Act relevant to place of execution, duly signed on each page. Foreign entities submitting Bid are required to follow the applicable law in their country]

Reference No. Bank Guarantee No. Dated:

EMD BANK GUARANTEE FORMAT FOR TENDER /RFP No. _____

(BANK GUARANTEE ON NON-JUDICIAL STAMP PAPER OF Rs.300)

WHEREAS M/s. _____
(Name and Address of the Firm) having their registered Office at _____ (Address of the Firm's registered Office) (hereinafter called the Tenderer) wish to participate in the Tender No. _____ for _____ of (supply / Erection / Supply & Erection / Work) of _____ (Name of the material / equipment / work) for _____ Gujarat State Electricity Corporation Limited and WHEREAS a Bank Guarantee for (hereinafter called the "Beneficiary") Rs. _____ (Amount of EMD) valid till _____ (mention here date of validity of this Guarantee) which is required to be submitted by the Tenderer along with the Tender.

We, _____
(Name of the Bank and address of the Branch giving the Bank Guarantee) having our registered Office at _____ (Address of Bank's registered Office) hereby gives this Bank Guarantee No. _____ dated _____ and hereby agree unequivocally and unconditionally to pay immediately on demand in writing from the Gujarat State Electricity Corporation Limited or any Officer authorized by it in this behalf any amount not exceeding Rs. _____ (amount of EMD) (Rupees _____) (in words) to the said Gujarat State Electricity Corporation Limited on behalf of the Tenderer.

We, _____ (Name of the Bank) also agree that withdrawal of the Tender or part thereof by the Tenderer within its validity or non-submission of Security Deposit by the Tenderer within one month from the date of Tender or a part thereof has been accepted by the Gujarat State Electricity Corporation Limited would constitute a default on the part of the Tenderer and that this Bank Guarantee is liable to be invoked and encash within its validity by the Beneficiary in case of any occurrence of a default on the part of the Tenderer and that the encash amount is liable to be forfeited by the Beneficiary.

This agreement shall be valid and binding on this Bank up to and inclusive of _____ (mention here the date of validity of Bank Guarantee) and shall not be terminated by notice or by Guarantor change in the constitution of the Bank or the Firm of Tenderer or by any reason whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alterations made, given, conceded with or



without our knowledge or consent by or between the Tenderer and the Gujarat State Electricity Corporation Limited.

“Notwithstanding anything contrary contained in any law for the time being in force or banking practice, this Guarantee shall not be assignable, transferable by the beneficiary (i.e. GSECL). Notice or invocation by any person such as assignee, transferee or agent of beneficiary shall not be entertained by the Bank. Any invocation of the Guarantee can be made only by the beneficiary directly.”

NOT WITHSTANDING anything contained hereinbefore our liability under this Guarantee is restricted to Rs. _____ (amount of EMD) (Rupees _____ (in words). Our Guarantee shall remain in force till _____ (date of validity of the Guarantee). Unless demands or claims under this Bank Guarantee are made to us in writing on or before _____ (date should be 1 month after the above validity period of BG), all rights of Beneficiary under this Bank Guarantee shall be forfeited and we shall be released and discharged from all liabilities there under.

Place:

Date:

(Please mention here complete Postal Address of Bank with Branch Code, Signature of the Bank's authorized Signatory Telephone and Fax Nos) with official seal.

INSTRUCTIONS FOR FURNISHING BANK GUARANTEE

1. The Bank Guarantee by Bidders will be given on non-judicial stamp paper as per stamp duty applicable at the place where the Tender has emanated. The non-judicial stamp paper should be in name of the issuing bank.
2. The Bank Guarantee by Bidder will be given from Nationalized/Scheduled bank as per Appendix 17 only.
3. This bank guarantee/ all further communication relating to the bank guarantee should be forwarded to The Chief Engineer (P&P), Gujarat State Electricity Corporation Limited, Vidyut Bhavan, Race Course, Vadodara, Gujarat only.
4. The full address along with the Telex/Fax No. and email address of the issuing bank to be mentioned.



Appendix 18 (b): Format of Bank Guarantee for Security Deposit/ Performance Bank Guarantee

As per attached circular Ref no LL/CS/Bank Guarantee Formats/106 Dtd 7.12.2019



Appendix18 (c): Format of Bank Guarantee for Performance for O&M

[To be on non-judicial stamp paper of Rupees One Hundred Only (INR 300/-) or appropriate value as per Stamp Act relevant to place of execution, duly signed on each page. Foreign entities submitting Bid are required to follow the applicable law in their country]

Reference No. Bank Guarantee No. Dated:

To:

The Chief Engineer (P&P)

Gujarat State Electricity Corporation Limited (“GSECL”)

VidyutBhwan , Race Course

Vadodarar-390 007, Gujarat

Dear Sir,

WHEREAS *[Insert name of the Contractor]* with address *[Insert address of the Contractor]* having its registered office at *[Insert address of the Contractor]* (hereinafter, the “Bidder”) wishes to participate in RFP document No. GSECL/ PP/ RE&BD/ 4.5 MW Solar PV issued by Gujarat State Electricity Corporation Limited (“GSECL”) (hereinafter, the “Beneficiary”) for Operation and Management of Performance of Solar Power Project.

And WHEREAS a Bank Guarantee for Rupees *[.....]* valid till *[Insert date for 5 years from the date of commissioning]* is required to be submitted by the Contractor as per the terms and conditions of the RFP.



We,[*Insert name of the Bank and address of the Branch giving the Bank Guarantee*] having our registered office at [*Insert address of the registered office of the Bank*] hereby give this Bank Guarantee No. [*Insert Bank Guarantee number*] dated [*Insert the date of the Bank Guarantee*], and hereby agree unequivocally and unconditionally to pay immediately on demand in writing from the Beneficiary any officer authorized by it in this behalf any amount not exceeding Rupees [.....] to the said Beneficiary on behalf of the Bidder.

We [*Insert name of the Bank*] also agree that withdrawal of the Bid or part thereof by the Bidder within its validity or non-submission of further O&M Performance Bank Guarantee by the Bidder within the stipulated time of the Letter of Intent to the Bidder or any violation to the relevant terms stipulated in the RFP would constitute a default on the part of the Bidder and that this Bank Guarantee is liable to be invoked and encashed within its validity by the Beneficiary in case of any occurrence of a default on the part of the Bidder and that the encash amount is liable to be forfeited by the Beneficiary.

This agreement shall be valid and binding on this Bank up to and inclusive of [*Insert the date of validity of the Bank*] and shall not be terminable by notice or by Guarantor change in the constitution of the Bank or the firm of the Bidder Or by any reason whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, conceded with or without our knowledge or consent by or between the Bidder and the Beneficiary.

NOTWITHSTANDING anything contained hereinbefore, our liability under this guarantee is restricted to Rupees(*Insert the Amount*). Our Guarantee shall remain in force till [*Insert date*]. Unless demands or claims under this Bank Guarantee are made to us in writing on or before [*Insert date*], all rights of the Beneficiary under this Bank Guarantee shall be forfeited and we shall be released and discharged from all liabilities there under.



[Insert the address of the Bank with complete postal branch code, telephone and fax numbers, and official round seal of the Bank]

[Insert signature of the Bank's Authorized Signatory]

Attested:

..... [Signature] (Notary Public)

Place:

Date:

INSTRUCTIONS FOR FURNISHING BANK GUARANTEE

- The Bank Guarantee by Bidders will be given on non-judicial stamp paper as per stamp duty applicable at the place where the Tender has emanated. The non-judicial stamp paper should be in name of the issuing bank.
- The Bank Guarantee by the Bidder shall be given from bank only given in Appendix 17.
- This Bank Guarantee/ all further communication relating to the bank guarantee should be forwarded to The Chief Engineer, (P&P), Vadodara
- The full address along with the Telex/Fax No. and email address of the issuing bank to be mentioned.



Appendix 19: Contract Agreement (to be entered separately with GSECL for their respective projects)

This agreement is made at VADODARA the -----day of -----in the Christian year Two thousand ----- between -----(herein after referred to as “THE CONTRACTOR” which expression shall unless excluded by or repugnant to the contract include its successors or permitted assigns) of the one part and the Gujarat State Electricity Corporation Ltd. having their Head Office at Sardar Patel Vidyut Bhavan, Race Course, VADODARA – 390 007 (hereinafter called “The GSECL” which expression shall unless excluded by or repugnant to the context include its successors or assigns) of the other part.

WHEREAS the aforesaid GSECL has accepted the Tender of the aforesaid contractors for ----- as per GSECL’s Order No.-----hereinafter called “**the Works**” and more particularly described enumerated or referred to in the specification, terms and conditions prescribed in the Order letter, covering letter and other letters and schedule of price which for the purpose of identification have been signed by Shri ----- on behalf of the Contractors and by -----on behalf of the GSECL a list whereof is made out in the Schedule hereunder written and all of which said documents are deemed to form part of this contract and included in the expression “ **the Works**” wherever herein used, upon the terms and subject to the conditions hereinafter mentioned.

AND WHEREAS THE GSECL has accepted the Tender of the contractors for the construction of the said works for the sum of Rs. ----- (Rupees:-----) upon the terms and subject to the conditions herein mentioned.

NOW THIS AGREEMENT WITNESSES AND IT IS HEREBY AGREED AND DECLARED THAT:



- (a) The contractors shall do and perform all works and things in this contract mentioned and described or which are implied therein or therefrom respectively or are reasonably necessary for the completion of the works as mentioned and at the times, in the manner and subject to the terms, conditions and stipulations contained in this contract, and in consideration of the due provision, executions, construction and completion of the works agreed to by the contractors as aforesaid, the GSECL doth hereby covenant with the contractor to pay all the sums of money as and when they become due and payable to the contractors under the provisions of the contract. Such payments to be made at such times and in such manner as are provided by the contract.
- (b) The conditions and covenants stipulated herein before in this contract are subject to and without prejudice to the rights of the GSECL to enforce penalty for delays and / or any other rights whatsoever including the right to reject and cancel on default or breach by the contractors of the conditions and the covenants as stipulated in the general conditions, specifications, forms, or Tender schedule, drawing, etc., attached with GSECL's Order No.-----.

The contract value, extent of supply delivery dates, specifications, and other relevant matters may be altered by mutual agreement and if so altered shall not be deemed or construed to mean or apply to affect or alter other terms and conditions of the contract and the general conditions and the contract so altered or revised shall be and shall always be deemed to have been subject to and without prejudice to said stipulation.

SCHEDULE

List of documents forming part of the contract:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

In witness where of the parties hereto have set their hands and seals this day and month year first above written.



1. Signed, Sealed and delivered by:

(Signature with Name, Designation & official seal)

for and on behalf of M/s. _____

In the presence of name, Full Address & Signatures. :

i).

ii).

2. Signed, Sealed and Delivered by:

(Signature with Name, Designation & official seal)

For and on behalf of Gujarat State Electricity Corporation Ltd.,
Vidyut Bhavan, Race Course, VADODARA – 390 007.

In the presence of Name, Full Address & Signature:

i)

ii) -----



Appendix 20: Format for Pre-Bid Queries

Sr.	Chapter No.	Clause No.	Page No.	Tender Term	Bidder's Query

Note :

- Pre Bid meeting will be carried out through Online Plate form. Bidder shall submit name of representative along with Email for participating in to Pre bid meeting.
- Pre bid queries shall be submitted in Xls format over and above signed scanned copy.
- Pre bid queries shall be submitted latest by XX.08.2021



Annexure-A1: Details of Site

Sr No	District	Locations	Power evacuation feasibility (MW)	Metering point
1	Gandhinagar	GTPS	2.5 MW	At GSECL Colony feeder
2	Jamnagar	STPS	2.0 MW	At Sikka Sub station.
3	The coordinates of 2 MW solar project plot area at Sikka TPS are as under. (1) 22° 25' 15" N, 69° 49' 33" E (2) 22 ° 25' 19" N, 69 ° 49' 33" E (3) 22 ° 25' 14"N, 69 ° 49' 41" E (4) 22 ° 25' 18" N, 69° 49' 41" E			

Note: GSECL reserves the right to modify locations/evacuation feasibility & land availability. GSECL reserves the right to exclude/include locations and respective power evacuation feasibility.



Annexure-A2: Advance Payment Guarantee

(To be submitted by Bidder on a Non-Judicial Stamp Paper of Appropriate Value)

Date:

To,

The Chief Engineer (P&P)

Gujarat State Electricity Corporation Limited

Vidyut Bhawan, Race Course

Vadodara-390 007, Gujarat

Subject: Bank Guarantee No. _____

Whereas _____, a _____ incorporated under _____ having its registered office at _____ (hereinafter referred to as the “Contractor ” which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns) have entered into Agreement for Design, Engineering, Supply & Procurement, construction, operation and maintenance of grid connected Solar PV Plant of 2.5 MW at Gandhinagar TPS & 2 MW at Sikka TPS in the State of Gujarat.. India, dated _____ with Gujarat State Electricity Corporation Limited/ Gujarat Power Corporation Limited (GSECL), having its registered office at (Insert address of respective company

Whereas, under the Agreement a payment of 10 % (ten percentage) of the EPC Contract Value is payable in advance to the Contractor, as a security for which the Contractor is required to furnish to GSECL an irrevocable, unconditional, first demand bank guarantee issued for a sum equal to 10% (ten percentage) of the EPC Contract Value.

And whereas, _____ (Insert Bank name) having its registered office at _____ and a branch office at _____, India, hereinafter referred to as the “Bank” (which expression shall, unless repugnant to context or meaning, be deemed to mean and include its successors), being a Nationalised bank of India and acceptable to GSECL, has at the request of the Contractor agreed to issue this advance re payment bank guarantee in favour of GSECL.

Now therefore this Bank Guarantee witnessed as follows:

1. The Bank hereby undertakes the pecuniary responsibility of the Contractor to GSECL for the repayment of the Work Advance by the Contractor to GSECL and hereby issues in favour of GSECL this irrevocable and unconditional work advance payment bank guarantee (hereinafter referred to as the “Guarantee”) on behalf of the Contractor in the amount of



_____ Indian Rupees (insert an amount equal to ten percentage (10 %) of the EPC Contract Value).

2. The Bank for the purpose hereof unconditionally and irrevocably undertakes to pay to GSECL without any demur, reservation, cavil, protest or recourse, immediately on receipt of first written demand from GSECL, any sum or sums (by way of one or more claims) not exceeding in the aggregate the amount of _____ (insert an amount equal to ten percent (10 %) of the EPC Contract Value) without GSECL needing to prove or to show to the Bank grounds or reasons for such demand for the sum specified therein and notwithstanding any dispute or difference between GSECL and the Contractor in respect of the performance of the Agreement or moneys payable by Contractor to GSECL or any matter whatsoever related thereto.

3. The Bank acknowledges that any such demand by GSECL of the amounts payable by the Bank to GSECL shall be final, binding and conclusive evidence in respect of the amount payable by the Contractor to GSECL.

4. The Bank hereby waives the necessity for GSECL from demanding the aforesaid amount or any part thereof from the Contractor and also waives any right that the Bank may have of first requiring GSECL to pursue its legal remedies against the Contractor, before presenting any written demand to the Bank for payment under this Guarantee.

5. The Bank further unconditionally agrees with GSECL that GSECL shall be at liberty, without the Bank's consent and without affecting in any manner the Bank's obligation under this Guarantee, from time to time, to:

- a. Vary and / or modify any of the terms and conditions of the Agreement.
- b. Extend and / or postpone the time for performance of the obligations of the Contractor under the Agreement.
- c. Forbear or enforce any of the rights exercisable by GSECL against the Contractor under the terms and conditions of the Agreement.

and the Bank shall not be relieved from its liability by reason of any such act or omission on the part of GSECL or any indulgence by GSECL to the Contractor or other thing whatsoever which under the law relating to sureties, but for this provision, would have the effect of relieving the Bank of its obligations under this Guarantee

6. The Bank's obligations under this Guarantee shall not be reduced by reason of any partial performance of the Agreement. The Bank's obligations shall not be reduced by any failure by GSECL to timely pay or perform any of its obligations under the Agreement.

7. Any payment made hereunder shall be made free and clear of and without for, or on account of, any present or future taxes, levies, imposts, duties, charges, fees, commissions, deductions or



withholdings of any nature whatsoever and by whomsoever imposed, and where any withholding on a payment is required by law, the Bank shall comply with such withholding obligations and shall pay such additional amount in respect of such payment such that GSECL receives the full amount due hereunder as if no such withholding had occurred.

8. This Guarantee shall be a continuing bank guarantee and shall not be discharged by the change in constitution of any member of the Contractor and the Guarantee shall not be affected or discharged by the liquidation, winding up, bankruptcy, re organisation, dissolution or insolvency of any member of the Contractor or any other circumstances whatsoever.

9. This guarantee shall be in addition to and not in substitution or in derogation of any other security held by GSECL to secure the performance of the obligations of the Contractor under the Agreement.

10. The Bank agrees that GSECL at its option shall be entitled to enforce this Guarantee against the surety, as a principal debtor in the first instance without proceeding at the first instance against the Contractor.

11. Without prejudice to any continuing liability to perform obligations under this Guarantee which have arisen prior thereto, the Bank shall be released from any further obligations arising hereunder after _____ (insert the scheduled date of completion) unless this Guarantee is otherwise extended on account of failure to recover the entire Work Advance from the Contractor by the said date.

12. GSECL may assign this Guarantee to any person and in such case GSECL shall inform the Bank in writing. This Guarantee shall not be assigned or transferred by the Bank.

13. This Guarantee shall be construed and interpreted in accordance with and governed by the laws of India, and subject to Clause 13 above, the courts at Ahmedabad, Gujarat, India shall have jurisdiction over all matters arising out of or relating to this Guarantee.

14. The Bank has the power to issue this Guarantee in favour of GSECL. The aggregate liability of the Bank under this Guarantee shall not under any circumstance exceed _____ Indian Rupees (insert an amount equal to ten percentage (10%) of the EPC Contract Value).

15. Notwithstanding anything contained herein, this Guarantee shall be valid up to ___/___/____. A written claim or demand shall be served upon us on or before the said date, after which this Guarantee shall become null and void.

16. No action, event or condition, which by any Applicable Law should operate to discharge the Bank from liability hereunder, shall have any effect and the Bank hereby waives any right it



may have to apply such law, so that in all respects its liability hereunder shall be irrevocable and, except as stated herein, unconditional in all respects.

18. Capitalised terms not otherwise defined herein shall have their respective meanings given such terms set forth in the Agreement.

In witness where off, the bank, through its authorised officer, has set its hand and stamp on this _____ day of _____ 20__.

SEAL AND SIGNATURE OF BANK REPRESENTATIVE



Annexure-A3: Plot Details of locations

Refer Attachment



Annexure A5: Operation and Maintenance

Operation and Maintenance (O & M)

Operation & Maintenance period shall be as mentioned in NIT. The start of O&M and first year operation shall be considered after completion of all works and certification by GSECL.

Guideline for Operation and Maintenance (O&M):

O&M Contract shall cover complete Solar PV Power plant and power evacuation system up to inter connection point (GETCO end S/S) as specified elsewhere in the Contract. Contractor to achieve guaranteed Generation in respective O&M year.

Further, it is the responsibility of the Contractor to liaison with the following authorities:

- (a) Liaison with State/Central Government.
- (b) Liaison with State Power Utilities.
- (c) Liaison with State Renewable Agency.
- (d) Any other department / agency as may be required.
- (e) GSECL shall provide required documents.

O&M OF PLANT

Comprehensive operation & maintenance of the Solar PV plant including supply of spare parts, consumables, repairs/replacement of any defective equipment etc. shall be performed by the Contractor for a period of 05 years (warranty period) + 05 Years. GSECL shall review the performance of Solar PV plant at the end of 5th year of O & M.

During O&M period, employer personnel shall have unrestricted entry to the solar plant and Control Room any time. GSECL may depute its personals to associate with O&M activities. The Contractor shall assist them in developing expertise through their day to day O&M activities and all records of maintenance must be maintained by the contractor which can be accessed by employer on demand. These recordings are to be handed over to employer after the O&M period of contract.

During the O&M period, the Contactor shall be responsible for any defect in the work due to faulty workmanship or due to use of sub-standard material in the work. Any defects in the work during the warrantee period shall there be rectified/replaced by the contractor without any extra cost to the employer within a reasonable time as may be considered from the date of receipt of such intimation from employer failing which employer shall take up rectification work at the risk and cost of contractor.



The Contractor shall be responsible for supply of all spare parts, repairs / replacement of any defective equipment(s) including civil works at his own cost as required from time to time during the O&M period.

During O & M period the Contractor shall be responsible for all the activities required for the successful running, optimum energy generation etc. This shall include but not necessarily be limited to following:

1. Deputation of adequate number of O&M, engineering and supporting personal, security etc.
2. O&M Contractor shall have to fill at least 65% of post in supervisory and managerial cadres and 80% of posts in other cadres by the local persons. The expression “Local person “ shall mean a person domiciled in Gujarat state for minimum 15 years shall be considered as local person.
3. Operation part consists of deputing necessary manpower necessary to operate the Solar Photovoltaic Power Plant at the optimum capacity. Operation procedures such as preparation to start, routine operations with safety precautions, monitoring of Solar Power Plant etc. shall be carried out as per the manufacturer’s instructions to have trouble free operation of the complete system.
4. Daily work of the operators in the Solar Photovoltaic Power Plant involves cleaning of Modules, logging the voltage, current, power factor, power and energy output of the solar Power Plant. The operator shall also note down failures, interruption in supply and tripping of different relays, reason for such tripping, duration of such interruption etc.
5. The Contractor shall demonstrate guaranteed generation as quoted in respective O&M year. In case the contractor fails to achieve the guaranteed generation, then penalties shall be recovered as defined in this Tender.
6. Water cleaning of SPV modules. The Contractor shall wash the modules minimum twice in a month and maintain this schedule in its records for the cleaning cycle.
7. Housekeeping of complete power plant.
8. Reporting the energy generation data to GSECL.
9. Monitoring, controlling, troubleshooting, maintaining of records, registers etc.
10. Recording/logging of all the operational parameters (e.g. voltage, current, power factor, energy output, temperature etc.) and preparation of daily/weekly/monthly reports etc. including submission of periodical consolidate plant performance reports to the Owner / GSECL.
11. Conducting periodical checking, testing, over hauling and preventive action of all equipment in systematic method including regular cleaning of PV modules of the solar PV plant as per OEM guidelines.
12. The contractor shall carry out the periodical/plant maintenance as given in the manufacturer’s service manual and requirement.
13. Cleaning including cutting/removing of bushes/vegetation etc. of the complete plant on regular basis and as and when required.
14. Particular care shall be taken for outdoor equipment to prevent corrosion. Cleaning of the junction boxes, cable joints, insulators etc. shall also be carried out at every month interval.



15. Resistance of the earthing system as well as individual earthing is to be measured and recorded every month. If the earth resistance is more than 3 ohm, suitable action is to be taken to bring down the same.
16. According to the recommendations stock of special tools and tackles shall be maintained for Modules, PCU's and other major electrical equipment.
17. Breakdown / Corrective Maintenance: Whenever a fault has occurred, the contractor has to attend to rectify the fault & the fault must be rectified at the earliest time from the time of occurrence of fault.
18. 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.
19. The Schedules will be drawn such that some of the jobs other than breakdown, which may require comparatively long stoppage of the Power Plant, shall be carried out preferably during the non-sun period.
20. The Contractor shall ensure that all safety measures are taken at the site to avoid accidents to his employees or his co-contractor's employees as per prevailing safety rules.
21. 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.
22. Supply of all spares, consumables and fixing / installation of the same including proper storage of tool, tackles & spares.
23. The Contractor shall at his own expense provide all amenities to his workmen as per applicable laws and rules.
24. The Contractor shall immediately report the accidents, if any, to the Engineer In charge & to all the concerned authorities as per prevailing laws of the state.
25. 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.
26. Coordinating, on behalf of GSECL, and obtaining renewal of statutory licenses, clearances and approvals from state departments such as State Electricity Supply & Transmission Boards/CEIG/GEDA etc.
27. Contractor shall keep updating the spares inventory at the site every time there is consumption of spare items towards replacement.
28. Coordinating with sub-station upon grid failures, line problems etc. and implementing the needful steps to restore the plant to normal operation
29. Theft incidents: immediate reporting to GSECL, filing FIRs with police stations on behalf of GSECL, coordination for site inspection by insurance companies and clearance of insurance claims, logging of events (date, time) and maintaining records
30. Proper housekeeping shall be maintained during O&M period by the Contractor.
31. Required security personnel shall be deployed for Plant security, round the clock.



HANDING OVER THE FACILITIES

After expiry of O&M period, the Contractor shall hand over the Facilities to Employer in good operating condition along with requisite tools & tackles and spares etc. The Contractor shall demonstrate functional operations of all the major & critical Plant & Equipment. The spare if consumed during O&M period then same shall be replenished at the time of handing over of facilities.



Annexure A6

Site visit for the locations.

Sr No	District	Locations	Date
1	Gandhinagar	GTPS	25.08.2021
2	Jamnagar	STPS	26.08.2021

GSECL has organized site visit of locations as per above schedule. GSECL representative will accompany the representatives of bidders to locations. Bidders shall make sure to provide name along with mobile number of the representative visiting the site at least two days in advance of the date of site visit.

- 1) Sh. P R chaudhary [9925208847](tel:9925208847) sere.gsecl@gebmail.com
- 2) Sh C N Chaudhary [9925213311](tel:9925213311) Eesolar.gsecl@gebmail.com
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