

is to be provided as separator) which is mandatory. The frames and leg assemblies of the array structures shall be made of hot dip Galvanized steel per ASTM A123. All modules have to be appropriately grounded using continuous copper conductor as per appropriate IS but not less than cross section area of 6 sq. mtr.

- vii. In case of galvanization of structures, specific requirement for thickness of galvanization should be at least minimum 80 microns at any point of the galvanized structure. Galvanization shall be measure with elcometer or the material can be sent for testing laboratory. No averaging is allowed for measuring the thickness of galvanization. Inner side galvanization with same specification of any hollow components of module mounting structure is mandatory.
- viii. All fasteners shall be of Stainless steel - SS 304. Nut & bolts, supporting structures including the entire MMS shall have to be adequately protected against all climatic condition.
- ix. Modules shall be clamped / bolted with the structure properly. The material of construction shall be Al / Steel. Clamps / bolts shall be designed in such a way so as not to cast any shadow on the active part of a module.
- x. Modules shall be isolated electrically from the MMS through EPDM sheet of appropriate thickness and all the modules shall be separately earthed through proper earthing. Module to module earthing is mandatory. All modules have to be appropriately grounded using continuous copper conductor as per appropriate IS but not less than Cross section area of 6 sq. meter.
- xi. Module mounting structures shall also be earthed through proper separate earthing.
- xii. The material of construction, structural design and workmanship shall be appropriate with a factor of safety of not less than 1.5.
- xiii. For multiple module mounting structures located in a single row, the alignment of all modules shall be within an error limit of 5 mm in vertical / horizontal line. However, total 10 mm tolerance allowed for mounting structures fixed in single row but shall not be allowed for modules fixed in a single mounting structure.
- xiv. The Contractor shall provide to the Company the detailed design, specifications and calculations of the MMS and take approval from the Company/Consultant.
- xv. The Contractor shall specify installation details of the Solar PV modules and the support structures with appropriate diagrams and drawings.
- xvi. The Module Mounting Structure design shall be certified by a chartered structural engineer and it is mandatory.
- xvii. The Contractor should design the structure height considering highest flood level at the site. The minimum clearance between the lower edge of the module and the ground shall be the higher of (i) above highest flood level at the site and (ii) minimum 500 mm.
- xviii. The structures shall be designed for simple mechanical and electrical installation. It shall support solar PV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly.
- xix. String Cables should be passes from Pipes and Cable-ties shall be used to hold and guide the Pipes (cables/wires) from the modules to inverters or junction boxes.
- xx. The Contractor shall provide to the Company the detailed design, specifications and calculations of the MMS.

- xxi. The Contractor shall specify installation details of the Solar PV modules and the support structures with appropriate diagrams and drawings.
- xxii. The Bidder shall be permitted ramming of the module mounting structure provided that they obtain consent of HPGCL. HPGCL shall provide such consent once it is convinced that such ramming shall not in any way deteriorate the strength of the structure and shall not reduce the structure's strength to enjoy a working life of more than 25 years.
- xxiii. Civil foundation design for Module Mounting Structures (MMS) as well as control room, inverter room shall be made in accordance with the Indian Standard Codes and soil conditions, with the help of Chartered Structural Designer having substantial experience in similar work. The Successful Bidder shall submit the detailed structural design analysis along with calculations and bases/ standards in the Bid.

5.3.21 Structural Steel Work:

- i. The structural steelwork required for termination incoming 33/66 kV line/ Cable, equipment supports, lighting masts and for shielding towers together with all foundation bolts shall be included by the Bidder in its scope of work. The steel work shall be fabricated from galvanized structural sections. Specific requirement for thickness of galvanization should be at least/ minimum 80 microns at any point on any component of module mounting structure when measured.
- ii. The height of structures for incoming line shall be as per the design developed by the Bidder and drawings submitted.
- iii. The incoming line gantry shall be designed on the basis of ACSR conductor/ Cable considered in the design and also considering that terminal tower will be located at a distance of not more than 100 meters from the incoming gantry at SPV power station switchyard. The Bidder shall take into account wind load, temperature variation etc. while designing the gantry structure. The column shall be provided with step bolts and anti-climbing devices.
- iv. The entire structural steel work shall conform to IS: 802. The Bidder shall furnish design calculations for approval by the Company before procuring the material.
- v. All structure pertaining to 33/66 kV switchyard have to be applied outdoor with white paint (lime wash).

5.3.22 Hardware

- i. Metal fittings of specified material for string hardware meant for power conductor and earth wire shall have excellent mechanical properties such as strength, toughness and high corrosion resistance. The suspension and tension clamps shall be made from Aluminium alloy having high mechanical strength. Suspension and tension clamps offered shall be suitable for ACSR/ AAAC conductor as per design.
- ii. All hooks, eyes, pins, bolts, suspension clamps and other fittings for attaching insulators to the tower or to the power conductor shall be so designed as to reduce (to a minimum) the damage to the conductor, insulator or the fitting arising from conductor vibration.
- iii. All drop-forged parts shall be free-from flaws, cracks, or other defects and shall be smooth, close-grained and of true forms and dimensions. All machined surfaces shall be true, smooth and well-finished.
- iv. All ferrous parts of hardware shall be galvanized in accordance with IS 2629. The

galvanization shall withstand four dips of 1-minute duration each in copper-sulphate solution as per the test procedure laid down in the relevant ISS.

- v. The threads in nuts and tapped holes shall be cut after galvanizing, and shall be well-lubricated/greased. All other threads shall be cut before galvanizing.
- vi. Both the suspension and the tension hardware shall be of ball and socket type, and shall be with 'R' and 'W' type security clip of stainless steel or phosphor Bronze conforming to IS 2486. The tension clamps of both compression type and bolted type as shown in the relevant drawings shall be offered. Arcing horns shall be provided on the line side for both the suspension type and compression type hardware.

5.3.23 Fire Extinguishers:

Liquefied CO2 fire extinguisher shall be upright type of capacity 10 kg having IS: 2171. 7 and IS: 10658 marked. The fire extinguisher shall be suitable for fighting fire of Oils, Solvents, Gases, Paints, Varnishes, Electrical Wiring, Live Machinery Fires, and All Flammable Liquid & Gas.

5.3.24 Sand Buckets:

Sand buckets should be wall mounted made from at least 24 SWG sheet with bracket fixing on wall conforming to IS 2546. Bucket stands with four buckets on each stand shall be provided in the Transformer Yard, Switchyard, Inverter Rooms, Control Cum Conference room, Security cabin and one (1) number each for the area covered by 1 MW for a plant.

5.3.25 Sign Boards:

The signboard for nomenclature of sufficient size which can visible from a distance containing brief description of various components of the power plant like switchyard, control room, inverter room etc. as well as the complete power plant in general shall be installed at appropriate locations of the power plant. Contractor shall also provide signage for fire and safety wherever required. The Signboard shall be made of steel plate of not less than 3 mm thick. Letters on the board shall be with appropriate illumination arrangements. The Contractor shall provide to the Company, detailed specifications of the signboards. The language of instructions shall be English/ Hindi as per HPGCL's approval.

5.3.26 General Guideline:

Any civil or electrical work, which is not mentioned or included in this Tender Document but necessary for the plant shall be borne by the Bidder. Successful Bidder shall prepare all designs / drawings have based on the specifications given in the Tender and in light of relevant BIS standard. The Company reserves the right to modify the design at any stage, to meet local site conditions / project requirements. All work shall be carried out in accordance with the latest edition of the Indian Electricity Act and rules formed there under and as amended from time to time.

Disclaimer:

1. Any civil / electrical / other work, which is not mentioned or included in this Tender Document but necessary for the plant shall be borne by the Bidder. All specifications mentioned in this Tender indicates minimum technical requirement.
2. The Contractor may propose alternate specifications or design though the final

acceptance of the same is subject to the Company's/Consultant's discretion.

3. Unless otherwise specified, all equipment and materials shall confirm to the latest applicable Indian Standards. Equipment complying with any other International Standards will also be considered if it ensures performance of equipment equal to a superior to Indian Standard.


Executive Engineer/Planning-I
for CE/DCRTPP (Planning Section, HQ)
HPGCL, Panchkula.

--- End of Section ---

Chapter-6

6 General Terms and Conditions

6.1 Use of Contract Documents & Information

- 6.1.1 The Contractor shall not, without HPGCL's prior written consent, disclose the Contract or any provision thereof or any specification, plan, drawing, pattern therewith to any person other than person employed by the Contractor in performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend strictly for purpose of performance only.
- 6.1.2 The Contractor shall not, without HPGCL's prior written consent, make use of any document or information except for purpose of performing the Contract.

6.1.3 Any document other than the Contract itself shall remain the property of HPGCL.

6.2 Patent Rights

- 6.2.1 The Contractor shall indemnify HPGCL against third party claims of infringement of patent, trademark or industrial design rights arising from use of goods/ design or any part thereof.

6.3 Materials and Workmanship

- 6.3.1 All materials shall be of the best quality and workmanship capable of satisfactory operation under the operating and climatic conditions as may be specified. Unless otherwise specified, they shall conform in all respect to the latest edition of the relevant Bureau of Indian Standard (BIS) specification wherever Indian specifications apply or British Standard (BS) or International Electro-technical Commission (IEC) or internationally accepted standard.
- 6.3.2 The Contractor shall supply and deliver all equipment and materials for installation at site. The Contractor shall arrange for transportation, loading and unloading and safe storage of materials at project site at his own cost and risk.
- 6.3.3 If the Contractor offers equipment manufactured in accordance with other international well recognized standards, he shall, in that case, supply a copy in English of the Standard Specification adopted and shall clearly mention in what respect such standard specification differs from Indian Standard Specifications. The plant, equipment, and materials offered by the Contractor should comply with one consistent set of Standards only as far as possible.
- 6.3.4 No deviation in foreign exchange rate shall be admissible at any point of time after submission of the Bid.

6.4 Inter-changeability

- 6.4.1 All the parts shall be made accurately to standard gauges and specifications so as to facilitate replacement and repairs. All corresponding parts of similar apparatus shall be inter-changeable.

6.5 Packing and Marking

- 6.5.1 The Contractor shall be responsible for securely protecting and packing the plant and equipment as per prescribed standards in force to withstand the journey and ensuring safety of materials and also arrival of materials at destination in original condition and good for contemplated use. Packing case size and weight shall take into consideration the remoteness of the goods' final destination and absence of heavy material handling facilities at all points in transit.
- 6.5.2 Packing lists of materials shall be provided in each package to facilitate checking up of the contents at the destination.
- 6.5.3 In order to import any items, associated with the Project, from abroad or from any other state in India, the Contractor shall have to arrange any clearance, permission, if required at his own risk, from any Government (Government of State and Government of India) or any Government (Government of State and Government of India) controlled organization for transportation of materials from manufacturing shop to delivery at any site. Necessary certificates if so required shall be issued by HPGCL within reasonable time after getting written request from the Bidder along with the necessary documents substantiating necessity of such approvals. All packing material is the property of HPGCL and shall be immediately deposited by the Contractor to HPGCL's Store at Project Site.

6.6 Negligence

- 6.6.1 If the Contractor neglects to manufacture or supply the plant and equipment with due diligence and with expeditiousness or refuses or neglects to comply with any reasonable order given to it in writing by HPGCL or contravenes any provisions of the Contract, HPGCL may give seven (7) seven days notice in writing to the Contractor, to make good the failure, neglect or contravention complained of. If the Contractor fails to comply with the notice within reasonable time from the date of serving thereof, in the event of failure, neglect or contravention capable of being made good within that time, then in such case, if HPGCL thinks fit, it shall be lawful for it to take the manufacture or supply of plant wholly or in part, out of the Contractor's hand and give it to another person on Contract at a reasonable price and HPGCL shall be entitled to retain any balance which may be otherwise due on the Contract by it to the Contractor or such part thereof as may be necessary, to the payment of the cost of manufacture or supply of such plant as aforesaid.
- 6.6.2 If the cost of executing the work as aforesaid shall exceed the balance due to the Contractor and the Contractor fails to make good such deficiency, HPGCL shall take action in the manner it may consider deem fit in terms of the Contract.

6.7 Statutory Responsibility

- 6.7.1 The Contractor shall comply with all applicable laws, by laws, rules, and regulations and shall procure and maintain their validity all necessary Municipal, Panchayat and Government permits & licenses etc. at its own cost.

6.8 Insolvency and Breach of Contract

6.8.1 HPGCL may at anytime by notice in writing summarily terminate the Contract without compensation to the Contractor in any of the following events:

- a. If the Contractor at any time, is adjudged insolvent or have a receiving order or order from administration of its state made against it or shall take any proceeding for compensation under any Insolvency Act for the time being in force or make any conveyance or assignment with its creditors or suspend payment. If the Contractor being a company is wound up voluntarily or by the order of a court or a Receiver, Liquidator or manager on behalf of the Debenture holder is appointed or circumstances have arisen which entitle the Court or debenture holder to appoint a Receiver, Liquidator or Manager.

6.9 Timeline

6.9.1 The Contractor shall provide full programme of the supply in detail and delivery schedule along with work schedule thereto. Strict adherence and guaranteed delivery schedule mentioned in terms and conditions shall be the essence of the Contract and delivery schedule must be maintained.

6.9.2 The work must be completed as per the Timeline below from the date of handing over of site.

Sr.	Stage	Reference from Zero Date ("D")
1.	Issue of Letter of Intent	D
2.	Completion of site developmental work	D+40
3.	Approval of major drawings	D+70
4.	Completion of supply of major balance of system	D+100
5.	Completion of supply of PV modules	D+130
6.	Installation and interconnection of all major equipment	D+160
7.	Interconnection and testing of entire plant	D+180
8.	Commissioning of entire plant	D+190
9.	Operational Acceptance Test & Completion of Facilities (Tentative)	D+220
10.	Performance Guarantee Test-cum-Final Acceptance Test (Tentative)	D+585

6.9.3 The Contractor shall also provide a Bar/ PERT Chart indicating completion schedule for various items involved in the work within the stipulated completion period and the Contractor should strictly adhere to that schedule.

6.9.4 The issue of Lol shall be considered as the Zero Date

6.9.5 The Bar/ PERT Chart provided by the Contractor shall submitted to HPGCL for

approval prior to commencement of the execution of the Project. All comments and modifications provided by HPGCL shall be incorporated and adhered to by the Contractor in the Timeline, Bar/ PERT Chart, detailed execution plan, etc. for execution of the Project.

6.9.6 This schedule shall be prepared so as to ensure the commissioning of complete plant within 190 days from issue of Lol.

6.9.7 Partial commissioning of the solar PV plant shall not be considered.

6.10 Delay in Execution or Failure to Supply

6.10.1 Any delay in completion of the work shall attract liquidated damage/ penalty for late completion as per Liquidated Damage Clause 6.11 of this Tender.

6.10.2 If the Contractor fails to deliver the plant or fails to start the work within specified time frame after issue of Lol or leaves the work site after partial execution of the work, HPGCL shall have the right to get the work done through any other agency at the risk and cost of the Contractor. Further to this, HPGCL may, without prejudice to the right of the Contractor to recover damages for breach of trust of the Contract, may impose penalties.

6.11 Liquidated Damages for Delay and Underperformance

A. Delay in Commissioning

6.11.1 In case the Contractor fails to achieve successful Commissioning of plant by the due date indicated in Timeline Clause 6.9.2, then HPGCL shall levy the Liquidated Damages on the Contractor (wherein partial commissioning shall not be accepted).

6.11.2 The Liquidated Damages levied to the Contractor at half percent (0.5%) of EPC Contract Value (including taxes & duties) for delay of one (1) week or part thereof upto maximum of ten percent (10%) of EPC Contract Value.

6.11.3 The maximum time period allowed (with penalty) delay for Commissioning of the Project shall be ten (10) months from the date of issue of Lol. In case of delay for more than ten (10) months, HPGCL may terminate the Contract and get the Project complete by other suitable agency at the risk and cost of the Contractor.

6.11.4 For calculation of penalty, date of Lol shall be the reference date.

B. Underperformance

6.11.5 At the time of the Operational Acceptance Test, any shortfall in the Performance Ratio (PR) as determined through the Test Procedure in the Appendix 16: Procedure for Performance Testing will attract imposition of Liquidated Damages. For any shortfall in PR below 0.75 by the bidder, a penalty of 1% of the EPC Contract Value (including taxes & duties) shall be levied (i.e. 1% penalty will be imposed in case the Contractor fails to achieve minimum 75% performance ratio).

6.11.6 In case the PR tested as mentioned above remain below than 0.75, the Contractor shall make all necessary corrections in minimum possible time and again commence the

above test, within 7 days, so as to demonstrate the PR equal to or more than 0.75. Each time, the penalty at the rate specified above in Clause No.6.11.5 shall be levied on the Contractor. The penalty shall be deducted from the Bank Guarantee and pending payments (LD on underperformance shall be charged on the NEEGG considering the actual weather data received at the plant site. For quoted NEEGG weather data of NASA be provided by Bidders for the site location).

C. Performance Guarantee Test / Final Acceptance Test

6.11.7 If the "Actual Delivered Energy" at metering point is less than the base NEEGG (corresponding to NEEGG quoted for 1st year of O&M) based on the procedure mentioned in the Appendix 16, then the entire Performance Bank Guarantee shall be encashed by the Company and all the remaining payments yet to be made by the Company to the Contractor shall also be forfeited.

6.12 Penalty for Loss of Generation during O&M

6.12.1 For each Contract Year, the Contractor shall demonstrate "Actual Delivered Energy" at the Metering Point as compared to the 'Base NEEGG' for the particular year (calculated as per the methodology given in Appendix16).

6.12.2 If for any Contract Year, it is found that the "Actual Delivered Energy" is less than 'Base NEEGG' for the particular year, the Contractor shall pay the compensation to HPGCL equivalent to Rs. [Tariff as per HPGCL's PPA *1.05] per kWh of under-generation. In addition, HPGCL will also recover from the Contractor, the full penalty (including the charges of Renewable Energy Certificate) imposed by the Company's Power Purchaser on the Company due to less generation, as per agreement between HPGCL and Power Purchaser. All penalties shall be recovered from payments yet to be made by HPGCL to the Contractor and/ or from the Bank Guarantees available with HPGCL.

The tariff is not finalized as PPA is not yet signed with DISCOMs.

6.12.3 In case of any defect in the system after Commissioning, the Contractor shall repair it within forty eight (48) hours. After 48 hours, penalty shall be charged and the same shall be deducted from the Bank Guarantee submitted to HPGCL. A penalty at the rate of Rs. [Tariff as per HPGCL's PPA*1.05] per kWh shall be charged by the company for the loss of generation. The loss of generation shall be calculated with respect to the NEEGG of that particular year based on the actual radiation.

6.12.4 In case the Project fails to generate any power continuously for 6 months any time during the O&M period, it shall be considered as an "Event of Default".

6.12.5 Upon occurrence of any Event of Default mentioned in Clause 6.12.4 herein above, HPGCL shall have the right to encash the entire amount of O&M Bank Guarantee submitted by the Contractor and withheld any other pending payment.

 6.12.6 HPGCL shall share the benefit, if any, received from Power Purchaser, with the Contractor in case of excess generation against the NEEGG by the Contractor. This is subject to the condition that the CUF achieved by the Project is equal to more than

21.0% during any O&M year. The revenue earned from the Power Purchaser shall be shared with the Contractor for excess quantum of Energy delivered to be calculated as under:

Excess Quantum of Energy Delivered = Actual Delivered Energy – Base NEEGG

Where, CUF (%) = $\frac{\text{Actual Delivered Energy in MWh}}{(20 \text{ MW} \times 365 \times 24)} \times 100$

The sharing of the revenue earned from the excess quantum of Energy Delivered shall be done in the ratio of 70% to HPGCL and 30% to the Contractor.

6.12.7 The Company reserves the right to perform random audits of weather monitoring system of the plant anytime during the entire O&M period. If any discrepancy is found between the measured parameters, the difference between the measured parameters by HPGCL from secondary sources and the weather monitoring system installed by the Contractor at the site will be factored in calculating the adjusted NEEGG during the entire year. However, HPGCL will have the final authority to decide on this matter.

6.13 Defect Liability

6.13.1 The Contractor must warrant that the facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant and Equipment supplied and of the work executed.

6.13.2 If it shall appear to the authorized representative of the Company that any supplies have been executed with unsound, imperfect or unskilled workmanship, or with materials of any inferior description, or that any materials or articles provided by the Contractor for the execution of Contract are unsound or otherwise not in accordance with the Contract, the Contractor shall on demand in writing inform the authorized representative of the Company specifying the item, materials or articles complained of, notwithstanding that the same may have been inadvertently or otherwise passed, certified and paid for. The Contractor shall forthwith rectify or remove and replace that item so specified and provide other proper and suitable materials or articles at its own charge and cost, and in the event of failure to do so within a period to be specified by the authorized representative of the Company in its demand aforesaid, the Project Manager may on expiry of notice period rectify or remove and re-execute the time or remove and replace with others, the materials or articles complained of as the case may be at the risk and cost in all respects of the Contractor. The decisions of the authorized representative of the Company as to any question arising under this Clause shall be final and conclusive.

6.13.3 The Contractor shall be liable for the operation and maintenance of the Facility and consequently shall be required to rectify any defects that emerge during the operation of the Facilities for the entire term of this Contract. The Defect Liability Period shall be eighteen (18) months from the date of expiry or early termination of this Contract ("Defects Liability Period") including the operation and maintenance period.

6.13.4 If during the Defect Liability Period any defect found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with HPGCL regarding appropriate remedying of the defects, and at its cost, repair, replace or

otherwise make good (as the Contractor shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect.

- 6.13.5 Furthermore, without prejudice to the generality of the foregoing, it is clarified that the Contractor shall also be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes:
- a. Improper operation or maintenance of the Facilities by the Contractor during operation and maintenance of the Facility; or
 - b. Operation of the Facilities violating specifications of the Facilities.
- 6.13.6 HPGCL shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. HPGCL shall afford all reasonable opportunity for the Contractor to inspect any such defect.
- 6.13.7 HPGCL shall provide the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations.
- 6.13.8 The Contractor may, with the consent of the Company, remove from the Site any Plant and Equipment or any part of the Facilities that are defective, if the nature of the defect and/ or any damage to the Facilities caused by the defect is such that repairs cannot be expeditiously carried out at the Site.
- 6.13.9 If the repair, replacement or making good is of such a nature that it may affect the efficiency of the Facilities or any part thereof, the Company may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests
- 6.13.10 If such part fails the tests, the Contractor shall carry out further repair, replacement or making good (as the case may be) until that part of the Facilities passes such tests. The tests, in character, shall in any case be not inferior to what has already been agreed upon by HPGCL and the Contractor for the original equipment/part of the Facilities.
- 6.13.11 If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than seven (7) days), the Company may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by HPGCL in connection therewith shall be paid to HPGCL by the Contractor or may be deducted by the Company from any monies due to the Contractor or claimed under the Performance Guarantee, without prejudice to other rights, which HPGCL may have against the Contractor in respect of such defects.
- 6.13.12 If the Facilities or any part thereof cannot be used by reason of such defect and/ or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Company because of any of the aforesaid reasons. Upon correction of the defects in the Facilities or any part thereof by repair/ replacement, such repair/ replacement shall have the defect liability period of eighteen (18) months from such replacement.
- 6.13.13 In addition, the Contractor shall also provide an extended warranty for any such component of the Facilities and for the period of time. Such obligation shall be in addition to the Defect Liability Period specified under Clause 6.13.3.

6.14 Termination for Default

- 6.14.1 The Company may, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Contractor, terminate the Contract in whole or in part if the Contractor fails to deliver or execute any or all of the goods within the time period(s) under the Contract or any extension thereof granted by HPGCL pursuant to the clause for Delay in Execution or Failure to Supply or, if the Contractor fails to perform any other obligations(s) under the Contract.
- 6.14.2 In the event the Company terminates the Contract in whole or in part, pursuant to above, the Company may procure, upon such terms and in such manner as it deems appropriate, goods similar to those undelivered, the Contractor shall be liable to the Company for any excess costs for such similar goods. However, the Contractor shall continue the performance of the Contract to the extent not terminated.
- 6.14.3 In case the Contractor is not able to demonstrate the "Actual Delivered Energy" as per the "Base NEEGG" based on the procedure mentioned in Appendix 16 during the Performance Guarantee Test and after the penalties levied as mentioned in Clause 6.12.; HPGCL reserves the right to terminate the Contract at its discretion if there are no efforts are made from the Contractor to correct the issues regarding plant performance.
- 6.14.4 In case termination of the Contract due to default, the Contractor may be blacklisted by HPGCL and its associate companies, etc. for future work.

6.15 Breach and Cancellation of the Contract

- 6.15.1 In case of non-performance in any form or change of the covenant and conditions of the Contract by the Contractor, the Company shall have the power to annul, rescind, cancel or terminate the order and upon its notifying in writing to the Contractor that it has so done, this Contract shall absolutely determine. The decision of the Company in this regard shall be final and binding.
- 6.15.2 The Company may cancel the order or a portion thereof, and if so purchase or authorize purchase of the plant/equipment not so delivered or order Plant/ Equipment of similar description (opinion of the Company shall be final) at the risk and cost of the Contractor.

6.16 Force Majeure

- 6.16.1 In the event of either party being rendered unable by Force Majeure to perform any obligation required to be performed by them under this Contract, relative obligation of the party affected by such Force Majeure shall be treated as suspended during which the Force Majeure Clause lasts.
- 6.16.2 The term "Force Majeure" shall have herein mean riots (other than among the Contractor's employee), Civil commotion, War (whether declared or not), invasion, act of foreign enemies hostilities, civil war, rebellion, revolution, insurrection, military coup, damage from aircraft, nuclear fission, embargoes, quarantines, acts of god such as earthquake (above 7.0 magnitude on Richter scales), lightning, unprecedented floods,

fires not caused by the Contractors negligence and other causes which the Contractor has no control and accepted as such by HPGCL whose decision shall be final and binding. Normal rainy season and monsoons are not Force Majeure.

6.16.3 Upon occurrence of such causes and upon its termination, the party alleging that it has been rendered unable as aforesaid, thereby, shall notify the other party in writing by registered notice within 24 (twenty four) hours of the alleged beginning and ending thereof giving full particulars and satisfactory evidence in support of its claim.

6.16.4 Time for performance of the relative obligation suspended by the Force Majeure shall stand extended by the period for which such clause lasts.

6.16.5 If works are suspended by Force Majeure conditions lasting for more than two (2) months, HPGCL shall have the option of cancelling this Contract in whole or part thereof, at its discretion.

6.16.6 The Contractor shall not claim any compensation for Force Majeure conditions and shall take appropriate steps to insure men and materials utilized by it under the Contract well in advance.

6.17 Progress Report of Work

6.17.1 The Contractor shall submit a weekly progress report on execution of works conforming to bar/ PERT Chart and format provided by HPGCL. In case of any slippage(s) or delay in execution of work reasons for such delay along with details of hindrances will be submitted by the Contractor along with modified Bar/ PERT Chart mentioning the action plan being taken to keep the due date of completion of project unchanged. If required, the Contractor shall use additional manpower to keep the due date of completion of Project unchanged.

6.17.2 The authorized representative of the Contractor shall review the progress of the Project work every fortnight on a prefixed day at project site with HPGCL or its representative as per the network and record the minutes.

6.18 Insurance

6.18.1 During the construction period, i.e. before the Commissioning of the Project, all insurance related expenses shall be borne by the Contractor. The goods supplied under the Contract shall be fully insured against the loss or damage incidental to manufacture or acquisition, transportation, storage, delivery, theft, natural or other disaster, etc. in such a manner that the Company shall not incur any financial loss, as long as the construction of the Project continues to remain under the custody of the Contractor.

6.18.2 In case of any loss or damage or pilferage or theft or fire accident or combination of the said incidents etc. under the coverage of insurance, the Contractor shall lodge the claim as per rules of insurance. Any FIR required to be lodged to local Police Station shall be the responsibility of the Contractor.

6.18.3 The Contractor shall arrange to supply/ rectify/ recover the materials even if the claim

is unsettled for timely completion of the Project. The final financial settlement with the insurance company shall be rested upon the Contractor.

6.18.4 In case of any delay of the Project attributable to the Contractor, the Contractor himself in consultation with the Company should take the extension of insurance. Any financial implications shall, however, be borne by the Contractor.

6.18.5 The Contractor shall arrange for providing insurance coverage to its workmen under Workmen's Compensation Act or similar Rules and Acts as applicable during execution of work for covering risk against any mishap to its workmen. The Contractor shall also undertake a Third Party Insurance. The Company shall not be responsible for any such loss or mishap.

6.18.6 Comprehensive insurance is to be arranged by the Contractor during the O&M period of the Contract.

6.18.7 At the end of the term of insurance undertaken by the Contractor, the Contractor shall provide all the necessary documents to the satisfaction of the Company in order to enable the Company to take up the insurance of the Plant.

6.19 Statutory Acts, Rules and Standards

6.19.1 The work shall be executed in conformity with the relevant standard of Bureau of Indian Specification (or equivalent International Standard), Electricity Rules, 2010 (as amended up to date), Indian Electricity Act, BARC/DAE rules, Explosive Act 1948, Petroleum Act 1934, National Building Code and relevant Rules in vogue at the time of execution including operation and maintenance period.

6.20 Tools and Tackles

6.20.1 The Contractor shall provide technically suitable tools and tackles for installation & erection of Plant and Machineries conforming to relevant BIS safety and technical standards for proper execution of work. The Company, in no way, shall be responsible for supply of any tools and tackles for implementation of the work and also to carry out operation and maintenance activities.

6.21 Safety Measures

6.21.1 The Contractor shall have to provide necessary and adequate safety measures including personal protective equipment and precautions to avoid any accident, which may cause damage to any equipment/ material or injury to workmen. The Company shall not be responsible for any such accidents.

6.22 Hazardous Material

6.22.1 Any hazardous material used during construction or used as part of the plant has to be taken back by the supplier for recycling or dumping purpose after its operating/ working life, so that it may not affect the environment or any living being. The Contractor shall comply with the State Pollution Board regulation.

6.23 Stoppage of Work

6.23.1 The Company shall not be responsible and not liable to pay any compensation due to stoppage of work as a reaction from local public due to any undue action on the part of the Contractor causing annoyance to local people.

6.24 Hindrance Register

6.24.1 The Contractor may also maintain a Hindrance Register where reasons for delay may be recorded from time to time and at the time of occurrence of the hindrance and get it duly certified by the Project Manager or his authorized representative.

6.25 Responsibility of the Contractor

6.25.1 The Contractor shall provide guarantee and be entirely responsible for the execution of the Contract in accordance with this Tender including but not limited to its specification, schedules, and annexure. The Contractor shall further provide guarantee and be responsible for the quality and workmanship of all materials and completed works, correct designs and drawings, correct delivery of material, erection, testing and commissioning including operation and maintenance.

6.26 Right of the Company to Make Change(s) in Design

6.26.1 All designs shall be approved by HPGCL prior to the execution of such designs.

6.26.2 The Company shall have the right to make any change in the design, which may be necessary in the opinion of HPGCL to make the plant and materials conform to the provisions and contents of the specification without extra cost to HPGCL.

6.27 Manuals

6.27.1 The Contractor shall supply all necessary erection and commissioning manuals, O&M manuals etc. as and when required. Six sets of test results, manuals etc. shall be submitted by the Contractor on completion of the work in hard and soft copies.

6.28 Governing Language

6.28.1 The Contract shall be written in English Language. All correspondence and documents pertaining to the Contract, which are exchanged by the Company and Contractor, shall be written in English.

6.29 Order Amendments

6.29.1 No variation in or modification of the terms of the contract shall be made except by written amendments issued by the Company.

6.30 Assignments or Subletting of Contract

6.30.1 The Contractor shall not, without the prior consent in writing of the Company, assign or sublet or transfer its Contract in whole or in part, its obligations to perform under the Contract or a substantial part thereof, other than raw materials, or for any part of the work of which makers are named in the Contract, provided that any such consent shall not relieve the Contractor from any obligation, duty or responsibility under the Contract.

6.31 Subcontracts

- 6.31.1 The Contractor shall notify the Company in writing of all subcontracts awarded under the Contract if not already specified in his Bid. Such notification in its original Bid or later shall not relieve the Contractor from any liability or obligation under the Contract.
- 6.31.2 Subcontracting a work shall not, under any circumstances, relieve the Contractor from its obligations towards the Project and the Company.
- 6.31.3 In case, the Contractor engages any Subcontractor to carry out a part of the work, the Subcontractor should have requisite Government License for carrying out such part of the work.

6.32 Inspection and Testing

- 6.32.1 The Company or its authorized representative including appointed Consultant for the project shall have, at all times, access to the Contractor's premises and also shall have the power to inspect and examine the materials and workmanship of project work during its manufacture, shop assembly and testing. If part of the plant is required to be manufactured in the premises other than the Contractor's, the necessary permission for inspection shall be obtained by the Contractor on behalf of HPGCL or its duly authorized representative.
- 6.32.2 HPGCL shall have the right to serve notice in writing to the Contractor on any grounds of objections, which he may have in respect of the work. The Contractor has to satisfy the objection, otherwise, the Company at his liberty may reject all or any component of plant or workmanship connected with such work.
- 6.32.3 The Contractor shall issue request letter to HPGCL or his authorized representative for testing of any component of the plant, which is ready for testing at least fifteen (15) days in advance from the date of actual date of testing at the premises of the Contractor or elsewhere. When the inspection and the tests have been satisfactorily completed at the Contractor's works, HPGCL shall issue a certificate to that effect. However, the Company at its own discretion may waive the inspection and testing in writing under very special circumstances. In such case, the Contractor may proceed with the tests which shall be deemed to have been made in HPGCL's presence, and it shall forthwith forward six (6) sets of duly certified copies of test results and certificates to the Company for approval of the Company. The Contractor, on receipt of written acceptance from HPGCL, may dispatch the equipment for erection and installation.
- 6.32.4 For all tests to be carried out, whether in the premises of the Contractor or any Subcontractor or the supplier, the Contractor, shall provide labour, materials, electricity, fuel, water, stores, apparatus and instruments etc. free of charge as may reasonably be demanded to carry out such tests of the plant in accordance with the Contract. The Contractor shall provide all facilities to HPGCL or its authorized representative to accomplish such testing.
- 6.32.5 The Company or his authorized representative shall have the right to carry out inward inspection of the items on delivery at the Site and if the items have been found to be not

in line with the approved specifications, shall have the liberty to reject the same.

6326 If the Company desires, testing of any component(s) of the plant be carried out by an independent agency, the inspection fee, if any, shall be paid by the Company. However, the Contractor shall render all necessary help to HPGCL whenever required free of charge.

6327 The Contractor has to provide the necessary testing reports to HPGCL as and when required.

6328 Neither the waiving of inspection nor acceptance after inspection by HPGCL shall, in anyway, absolve the Contractor of the responsibility of supplying the plant and equipment strictly in accordance with specification and drawings etc.

6.33 Authorized Test Centres

6.33.1 The PV modules, inverters, transformers, panels, wires, etc. deployed in the power plants shall have valid test certificates/ Type test certificates for their qualification as per above specified IEC/ BIS Standards by one of the NABL Accredited Test Centres in India. In case of module or other equipment for which such Test facilities may not exist in India, test certificates/ Type test certificates from reputed ILAC Member Labs abroad will be acceptable.

6.34 Delivery of Equipment

6.34.1 The Contractor shall deliver the equipment of the plant and machineries in accordance with the terms of the Contract at the time(s) to the place(s) and in the manner specified in the Contract. The Contractor shall comply with instructions that may be given by the Company from time to time regarding the transit of the plant and material.

6.34.2 Notification of delivery or dispatch in regard to each and every consignment shall be made to the Company immediately after dispatch or delivery from the manufacturing works. The Contractor shall supply to the consignee Invoice in triplicate and packing account of all stores delivered or dispatched by him.

6.34.3 In case of any occurrence of loss or damage in transit, it shall be the liability of the Contractor to initiate or pursue the claim with the Insurance company. It should take immediate steps to repair the damaged apparatus or replacement there to.

6.35 Liabilities during Transit

6.35.1 The Contractor shall be responsible for loss, damages, or depreciation to goods or of plant, equipment, and machineries up to delivery at the Site.

6.36 Deduction from Contract Price

6.36.1 All costs, claims, damages or expenses, which the Company may have paid for which the Contractor is liable, will be deducted by the Company from deposited bank guarantees or from any money due or which become due to him under this Contract or any contract are being executed elsewhere with the Company.

6.36.2 Any sum of money due and payable to the Contractor, as per the Contract Agreement,

may be appropriated by the Company and set off against any claim of the Company, for the payment of a sum of money arising out of or under any other contract made by the Contractor with the Company. It is an agreed term of the Contract that the sum of money, withheld or obtained under this clause by the Company, will be kept withheld or retained as such by the Company or till this claim arising out of in the same Contract is either mutually settled or determined by the arbitrator, or by competent court, as the case may be, and that the Contractor shall have no claim for interest or damages whatsoever on this account or any other account in respect of any sum of money withheld or retained under this clause and duly notified as such to the Contractor.

6.37 Terms of Payment

6.37.1 The Company shall pay the Contractor in the following manner for supply of material and at the following time for achieving the respective milestones:

Sr.	Payment Milestones	Amount
1.	Upon complete delivery of Module Mounting Structure at site	10% of EPC Contract Price of supply
2.	Upon complete delivery of inverters & junction boxes at site	15% of EPC Contract Price of Supply
3.	Upon delivery and acceptance of all PV modules at site	30% of EPC Contract Price of Supply
4.	Upon complete delivery of Balance of Systems including transformers, cables etc. at site	10% of EPC Contract Price of Supply
5.	Upon achieving Commissioning of the Plant	10% of EPC Contract Price of Supply
6.	Upon Completion of the Facilities and Successful Operational Acceptance Test	15% of EPC Contract Price of Supply
7.	Final Commissioning of the Facility pursuant to successful performance Guarantee Tests and demonstration of annual guaranteed NEEGG	10% of EPC Contract Price of Supply

- EPC Contract Value of Supply is equal to the price of Supply (supply of all equipment) portion of "EPC Contract Price" (including taxes) quoted by the Contractor in its Financial Proposal.
- All supply of equipment shall be considered for payment on a pro-rata basis of 5 MW.

6.37.2 The Company shall pay the Contractor in the following manner for all the erection, testing and commissioning works and at the following time for achieving the respective milestones:

Sr.	Payment Milestones	Amount
1.	Upon complete erection of Module Mounting Structure at site	10% of EPC Contract Value of Works
2.	Upon complete erection of inverters & junction boxes at site	15% of EPC Contract Value of Works
3.	Upon erection and acceptance of installation of all PV modules on module mounting structures at site	30% of EPC Contract Value of Works
4.	Upon complete erection of Balance of Systems including transformers, cables etc. at site	10% of EPC Contract Value of Works
5.	Upon achieving Commissioning of the Plant	10% of EPC Contract Value of Works
6.	Upon Completion of the Facilities and Successful Operational Acceptance Test	15% of EPC Contract Value of Works
7.	Final Commissioning of the Facility pursuant to successful Performance Guarantee Tests and demonstration of annual guaranteed NEEGG	10% of EPC Contract Value of Works
8.	On successful Operation and Maintenance of the Solar Power Plant on quarterly basis for each year till 5 years plus 5 years	Year 1: OM-1 Year 2: OM-2 Year 3: OM-3 Year 4: OM-4 Year 5: OM-5 Year 6: OM-6 Year 7: OM-7 Year 8: OM-8 Year 9: OM-9 Year 10: OM-10

- EPC Contract Value of Works is equal to the price of Works (all the erection, testing and commissioning works) portion of "EPC Contract Price" (including taxes) quoted by the Contractor in its Financial Proposal.
- 'OM' indicates the each year "O&M Contract Price" quoted by the Contractor for each individual year in its Financial Proposal.

6.38 Payments

6.38.1 Subject to any deduction which the Company may be authorized to make under this Contract, and or to any additions or deductions provided for in this Contract, the Contractor shall be entitled to payment as follows:

- 0/
- All payments shall be made in Indian Rupees, unless otherwise specified in the Lol/Contract Agreement. All payment shall be made on the basis of actual measurement for the quantified items as per schedule of works.

- b. The Contractor shall submit the bill / invoice for the work executed showing separately GST and any other statutory levies in the bill / invoice.
- All taxes and deductions shall be applicable as per prevailing income tax and other statutory rules and provisions in force.
- Payment shall be released by the Sr. Accounts Officer/ Accounts Officer, HPGCL, Panchkula through RTGS/NEFT.

6.39 Warranty/ Guarantee

6.39.1 The Plant shall perform as per the Guaranteed Performance indicated by the Bidder in its Financial Proposal. The contractor shall consider the cost of warranty / guarantee for extended period as well.

6.39.2 PV modules used in grid connected solar power plants must be warranted for peak output power at Standard Testing Condition (STC), which shall not be less than 90% at the end of ten (10) years and not less than 80% at the end of twenty five (25) years.

6.39.3 The mechanical structures, electrical works, all plant equipment and components and overall workmanship of the grid solar power plants shall be warranted for a minimum of 5 years.

6.39.4 The Contractor shall ensure that the goods supplied under the Contract are new, unused and of most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

6.39.5 The warranty / guarantee period shall be as follows:

- a. Solar PV Modules: Modules shall be warranted for a minimum period of 25 years in the Bidder's detailed Warranty/ Guarantee certificate. Same shall be furnished with its Bid.
- b. Inverters: Inverters shall be warranted for the guarantee period provided by the original equipment manufacturer. Same shall be furnished with its Bid.
- c. Transformers, associated switchgear and others: Bidder shall furnish in detail its warranties/ guarantees for these items.

6.39.6 During the period of Warranty/ Guarantee the Contractor shall remain liable to replace any defective parts, that becomes defective in the Plant, of its own manufacture or that of its Subcontractors, under the conditions provided for by the Contract under and arising solely from faulty design, materials or workmanship, provided such defective parts are not repairable at Site. After replacement the defective parts shall be returned to the Contractors works at the expense of the Contractor unless otherwise arranged.

6.39.7 At the end of Guarantee period, the Contractor's liability shall cease. In respect of goods not covered above, HPGCL shall be entitled to the benefit of such Guarantee given to the Contractor by the original Contractor or manufacturer of such goods.

6.39.8 During the Operation and Maintenance and Guarantee period, the Contractor shall be