ANNEXURE-6

INDEMNITY BOND TO BE EXECUTED BY THE CONTRACTOR FOR THE REMOVAL / DISPOSAL OF SCRAP/DISPOSAL OF SURPLUS MATERIAL

(TO BE EXECUTED ON STAMP PAPER OF APPROPRIATE VALUE)

INDEMNITY BOND

This INDEMNITY BOND executed this …… day of ……. 20….. by ….....[*Name of Company*]……..., a Company registered under the Companies Act, 1956/ the Companies Act, 2013/Partnership Firm/ Proprietary Concern and having its registered office(s) at ……..(Office Address)……, hereinafter called the Indemnifier(s)/Contractor(s) (which expression shall, unless excluded by or repugnant to the context, be deemed to mean and include its successors, administrators, executors and permitted assigns).

IN FAVOUR OF

RECPDCL, a Government of India Enterprise, having its registered office at **RECPDCL,** RECPDCL Corporate Office Complex, REC World Headquarters, D-Block, Plot No. 1-4, Sector 29, Gurugram 122001, Haryana, (hereinafter referred to as "RECPDCL")

3. RECPDCL has awarded the Contractor(s), contract for execution of work ("Scope of Work") as mentioned in the contract agreement no…….. dated ....., entered into between RECPDCL and Contractor(s), relating to …….(Name & Address of Project/Station)…… (hereinafter called 'the Project').
4. The Indemnifier(s) for the purpose of execution of its Scope of Work had from time to time procured and stored ……..(Details of Material)……. at the Project Site.
5. After completion of the Scope of Work by Indemnifier(s), it has been identified that scrap …… (Details of Scrap Material & its Quantity)……..and/or surplus …… (Details of Surplus Material & its Quantity)…….. belonging to Indemnifier(s) is lying at the said Project Site.
6. Now, the scrap …… (Details of Scrap Material & its Quantity)……..and/or surplus …… (Details of Surplus Material & its Quantity)…….. belonging to the Indemnifier(s), requires to be removed by Indemnifier(s) from the Project Site.

NOW THEREFORE THIS INDEMNITY BOND WITNESSETH AS UNDER:

1. That Indemnifier(s) by way of this indemnity requests RECPDCL to issue approval in favour of Indemnifier(s) for removal of scrap ……(Details of Scrap Material & its Quantity)……..and/or surplus ……(Details of Surplus Material & its Quantity)…….. belonging to Indemnifier(s), from the project.

2. That the Indemnifier(s) shall ensure clearing of its scrap …… (Details of Scrap Material & its Quantity)……..and/or surplus …… (Details of Surplus Material & its Quantity)…….. by itself, as aforesaid.

3. That Indemnifier(s) in consideration of the premises above, for itself and its respective, executors, administrators and assigns, jointly and severally agree and undertake from time to time and at all times hereafter to indemnify RECPDCL and keep RECPDCL indemnified from and against all claims, demands, actions, liabilities and expenses which may be made or taken against or incurred by RECPDCL by reason of the issue of necessary approval by RECPDCL and permitting Indemnifier(s) to remove scrap ……(Details of Scrap Material & its Quantity)……..and/or surplus

……(Details of Surplus Material & its Quantity)…….. belonging to Indemnifier(s), from the project.

4. That Indemnifier(s) undertakes to indemnify and keep RECPDCL harmless from any act of omission or negligence on the part of the Contractor in following the statutory requirements with regard to removal/disposal of scrap and surplus belonging to Indemnifier(s), from the Project Site aforesaid, by the Indemnifier(s). Further, in case the laws require RECPDCL to take prior permission of the relevant Authorities before handing over the scrap and/or surplus to the Indemnifier, the same shall be obtained by the Indemnifier on behalf of RECPDCL.

IN WITNESS WHEREOF, the Indemnifier(s), through its authorized representative, has executed these presents on the Day, Month and Year first mentioned above at

……(Name of the Place)……

Witness: Indemnifier

1. ……

2. ……

(Authorised Signatory)

ANNEXURE- 7

INDEMNITY BOND TO BE EXECUTED BY THE CONTRACTOR FOR THE PLANT HANDED OVER BY RECPDCL FOR PERFORMANCE OF ITS O&M CONTRACT (ENTIRE SOLAR PHOTO VOLTAIC PLANT)

(On non-judicial stamp paper of appropriate value)

INDEMNITY BOND

THIS INDEMNITY BOND is made on this ..... day of ..... 20..... by ..... a Company registered under the Companies Act, 1956/ the Companies Act, 2013/Partnership Firm/Proprietary concern having its Registered Office at..... (hereinafter called as "Contractor" or "Obligor" which expression shall include its successors and permitted assigns) in favour of RECPDCL, a Company incorporated under the Companies Act, 1956 having its Registered Office at and its Project at .....(hereinafter called "RECPDCL" which expression shall include its successors and assigns) :

WHEREAS RECPDCL has awarded to the Contractor a Contract for…… vide its Award Letter/Contract No..... dated and its Amendment No..... and Amendment No..... (applicable when amendments have been issued) (hereinafter called the "Contract") in terms of which RECPDCL is required to hand over various Equipment and facilities provided under Supply Contract, Erection Contract, herein after called "Solar Photo Voltaic Plant" to the Contractor for execution of the Contract.

AND WHEREAS by virtue of Clause No. 3.32.4 of the said Contract, the Contractor is required to execute an Indemnity Bond in favour of RECPDCL for the Solar Photo Voltaic Plant handed over to it by RECPDCL for the purpose of Performance of the Contract/O&M portion of the Contract.

NOW, THEREFORE, this Indemnify Bond witnesseth as follows:

1. That in consideration of Solar Photo Voltaic Plant as mentioned in the Contract, Valued at Rs.....#..... (Rupees.....) handed over to the Contractor for the purpose of Performance of the Contract, the Contractor hereby undertakes to indemnify and shall keep RECPDCL indemnified, for the full value of the Solar Photo Voltaic Plant. The Contractor hereby acknowledges actual receipt of the Solar Photo Voltaic Plant as detailed in the Schedule appended hereto. The Contractor shall hold such Solar Photo Voltaic Plant in trust as a "Trustee" for and on behalf of RECPDCL.
2. That the Contractor is obliged and shall remain absolutely responsible for the safe O&M/protection and custody of the Solar Photo Voltaic Project against all risks whatsoever till completion of O&M Contract in accordance with the terms of the Contract and is taken over by RECPDCL. The Contractor undertakes to keep RECPDCL harmless against any loss or damage that may be caused to the Solar Photo Voltaic Plant.

3. The Contractor undertakes that the Solar Photo Voltaic Plant shall be used exclusively for the Performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the Solar Photo Voltaic Plant shall be utilized for any other work or purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnify Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purposes including legal/penal consequences.

4. That RECPDCL is and shall remain the exclusive Employer of the Solar Photo Voltaic Plant free

from all encumbrances, charges or liens of any kind, whatsoever. The Solar Photo Voltaic Plant shall at all times be open to inspection and checking by Engineer-in-Charge or other employees/agents authorized by him in this regard. Further, RECPDCL shall always be free at all times to take possession of the Solar Photo Voltaic Plant in whatever form the Solar Photo Voltaic Plant may be, if in its opinion, the Solar Photo Voltaic Plant are likely to be endangered, mis-utilised or converted to uses other than those specified in the Contract, by any acts of omission or commission on the part of the Contractor or any other person or on account of any reason whatsoever and the Contractor binds itself and undertakes to comply with the directions or demand of RECPDCL to return the Solar Photo Voltaic Plant without any demur or reservation.

5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Solar Photo Voltaic Plant or the same or any part thereof is mis-utilised in any manner whatsoever, then the Contractor hereby agrees that the decision of the Engineer-in-Charge of RECPDCL as to assessment of loss or damage to the Solar Photo Voltaic Plant shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and/or damaged Solar Photo Voltaic Plant at its own cost and / or shall pay the amount of loss to RECPDCL without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to RECPDCL against the Contractor under the Contract and under this Indemnify Bond.

6. NOW THE CONDITION of this Bond is that if the Contractor shall duly and punctually comply with the terms of and conditions of this Bond to the satisfaction of RECPDCL, THEN, the above Bond shall be void, but otherwise, it shall remain in full force and virtue.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned

SCHEDULE

Particulars of the Equipment / Facilities handed- over	Quantity	Value	Other details, (if any)	Signature of Attorney in token of receipt

WITNESS **For and on behalf of M/s. .....**

Signature ---------- Name ----------

Name ---------- Signature ----------

Address ---------- Designation ----------

Authorized representative*

Common Seal

Signature ----------

Name ----------

Address ----------

* Indemnity Bonds are to be executed by the authorized persons and (i) in case of contracting Company under common seal of the Company or (ii) having the power of attorney issued under common seal of the company with authority to execute Indemnity Bonds.

In case of (ii), the original Power of Attorney if it is specifically for this contract or a Notarized copy of the Power of Attorney if it is a General Power of Attorney and such documents should be attached to Indemnity Bond.

The value shall be sum of Supply and Erection Contract value

ANNEXURE- 8

SAMPLE SHEET FOR CALCULATION OF EBV

Bidder	A	B	C	Remarks
Capacity in MW (AC)	75	75	75	As per Tender
Total EPC Cost (X1) in Rs lakhs	27500	29000	30000	As Quoted
Total O&M Cost including statutory & Other charges/ Year -in Rs Lakhs				
1	350	360	390	As Quoted
2	368	378	410	As Quoted
3	386	397	430	As Quoted
Discounting Factor	10.00%	10.00%	10.00%	As per tender
NPV of O&M Price(X2) in Rs Lakhs	912.32	937.94	1,016.45	Derived
EBV Rs Lakhs	28412.32	29937.94	31016.45	**X1+X2**

Note: All values/cost Up to 3 decimal and arbitrary in nature.

ANNEXURE-9

BUSINESS RULES AND OTHER TERMS & CONDITIONS FOR E-REVERSE AUCTION (e-RA)

1. Reverse Auctions are carried out under the framework of rules as defined by RECPDCL and all bidders participating in Reverse Auction shall understand/accept and give an undertaking for compliance with the same to the RECPDCL in the prescribed format (**Annexure – 10**).

2. Reverse Auction shall be carried out amongst the bidders who have quoted within lowest price **+ 15%** of the evaluation criteria price. However in case no other bidders fall within +15% of L-1 quoted prices then as decided by RECPDCL shall be allowed to participate in the online Reverse Auctioning.

3. The overall lowest price quoted by the bidder will be considered as Reserve Base Price during reverse auction, further the item wise price of all items shall be arrived from the overall lowest quoted price in the same ratio as quoted by the bidders earlier in the financial bid and all the technically qualified bidders will be considered at same platform.

4. The minimum decrement step for e-Auctioning is in the multiples of Rs. **25, 00,000/- (INR Twenty five lacs only)** in EPC & NPV of O&M Price bid.

5. Preferably the time duration to be kept for conducting Reverse Auction process is from 11:00 AM to 3:00 PM with the incremental time duration of 30 minutes from the time of last quote considering that the bidder may be provided the sufficient time for quoting their best lowest rates. The window may be extended to accommodate 30 minutes, if required, response time. The auction will terminate either at the scheduled end time or as extended as per requirement till there is no response during the incremental time duration. However RECPDCL reserves the right to modify the process with pre-information to bidders if required.

6. The eligible bidders can participate in the online Reverse Auction from any place of their choice and need not to visit RECPDCL office for this purpose.

7. The User ID and password for online reverse auction is same as used in online bidding process/ provided at the time of bidder registration.

8. The Reserve Base Price for Reverse Auction will be informed after the Opening of Price Bid. This shall be the lowest rate received against the initial price bids submitted by participating bidders.

9. RECPDCL shall make all out efforts to rectify the problem(s) leading to system failure during the online reverse auction. However in case the system could not be restored within the reasonable time period as deemed fit by RECPDCL, the reverse auction event shall be suitable extended/ shall be restarted again after rectification by giving a new schedule for the same, which shall cover the left over time period as per the original schedule. On restart of reverse auction the last R1 price received during reverse auction at which the reverse auction event got terminated, shall be the starting price.

10. Where necessary, RECPDCL will facilitate training for participation in Reverse Auction either on its own or through the service provider for the Reverse Auction to familiarize the vendors/bidders with Reverse Auction process.

11. Any vendor/bidder not participating in training shall do so at his own risk and it shall not be open for him to make any complaint/grievance later.

12. No request for postponement/fixing of Training Date/Time shall be entertained.

13. The Date and Time of commencement of Reverse Auction shall be communicated to the shortlisted bidders **at least One day in advance**.

14. Any force majeure or other condition leading to postponement of auction shall entitle RECPDCL to postpone the auction.

15. Any bid once made through registered log-in ID / password by the vendor/ bidder cannot be cancelled. The bidder, in other words, is bound to sell the "Offering" as per the RFP at the bid price.

16. Every successive bid by the bidder / vendor being decremented bid shall replace the earlier bid automatically and the final bid as per the time and log-in ID shall prevail over the earlier bids.

17. No two bids can have identical price from two different vendors. In other words, there shall never be a "Tie" in bids.

18. All bidders will be able to view during the auction time the current lowest price in portal. Bidder shall be able to view not only the lowest bid but also the last bid made by him at any point of time during the auction time.

19. Names of bidders/ vendors shall be anonymously masked in the Reverse Auction process and vendors will be given suitable dummy names. After completion of Reverse Auction, the service provider /auctioneer shall submit a report to RECPDCL with all details of bid and the original names of the bidders and the L-1 bidder.

20. RECPDCL shall however, be entitled to cancel the procurement of Reverse Auction process, if in its view procurement or reverse auction process cannot be conducted in a fair manner and / or in the interest of RECPDCL.

21. No vendor shall involve himself / itself or any of his / its representatives in any price manipulation directly or indirectly with other bidders. If any such practice comes to the notice, RECPDCL shall disqualify the vendor /bidders concerned from the reverse auction process.

22. Bidder shall not disclose details of its bids or any other details concerning Reverse Auction process of RECPDCL to any other third party without specific permission in writing from RECPDCL.

23. Neither RECPDCL nor service provider / auctioneer can be held responsible for consequential damages such as no power supply, system problem, inability to use the system, loss of electronic information, power interruptions, UPS failure, etc. (RECPDCL shall, however, entertain any such issues of interruptions, problems with open mind and fair degree of transparency in the process before deciding to stop or extend the auction.)

24. Any aggrieved vendor / bidder through Reverse Auction process can represent in writing within 24 hours of the Reverse Auction to RECPDCL, failing which no representation/ complaint etc. shall be entertained.

25. RECPDCL decision on award of Contract shall be final and binding on all the Bidders.

ANNEXURE-10

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT
(To be signed and stamped by the bidder)

In a bid to make our entire procurement process more fair and transparent, RECPDCL intends to use the reverse auctions as an integral part of the entire tendering process.

The following terms and conditions are accepted by the bidder on participation in the bid event:

1. RECPDCL shall provide the user id and password to the authorized representative of the bidder. (Authorization Letter in lieu of the same shall be submitted along with the signed and stamped acceptance Form).

2. RECPDCL's decision to award the work would be final and binding on the suppliers/ bidders.

3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of RECPDCL, bid process, bid technology, bid documentation and bid details to any other party.

4. The bidder is advised to fully make aware themselves of auto bid process and ensure their participation in the event of reverse auction, failing which RECPDCL will not be liable in any way.

5. In case of bidding through Internet medium, bidders are further advised to ensure availability of the infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of RECPDCL.

6. In case of intranet medium, RECPDCL shall provide the infrastructure to bidders. Further, RECPDCL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case an auction event is restarted, the best bid as already available in the system shall become the basis for determining start price of the new auction.

7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder’s final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be out rightly rejected by RECPDCL.

8. The bidder shall be prepared with competitive price quotes on the day of the bidding event.

9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR at site.

10. The prices submitted by a bidder during the auction event shall be binding on the bidder.

11. No requests for time extension of the auction event shall be considered by RECPDCL.

12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at Contract amount.

Signature & Seal of the Bidder

ANNEXURE 11

CERTIFICATE FOR SITE VISIT

This is to certify that the bidder has visited the site in person and he is well conversant with all detail and site conditions. The bidder is fully aware and satisfied with site conditions which are required for successful execution of work.

Dated the _____day of _____2021

Thanking you

Yours Faithfully

[Signature, Name and Designation Person Authorized by the board]

SECTION – IV

TECHNICAL SPECIFICATION

TABLE OF CONTENTS

PART-A

PROJECT INFORMATION

PART A: PROJECT INFORMATION

4 SECTION – IV- TECHNICAL SPECIFICATION

4.1 PROJECT INFORMATION

i) Introduction

RECPDCL proposes to implement a **(125 MW (50 MW & 75 MW))** (AC) Solar Photovoltaic Grid Connected Power Plant to harness Solar Energy. The land for the proposed project is located at **KANPUR DEHAT AND JALAUN DISTRICT**. This project shall be implemented in a single EPC package under Domestic/ under Open category

ii) Project Capacity

Name of The Project	**Gujrai & Gurhah**
Project Capacity	**125 MW (50 MW & 75 MW)**
Technology	**SOLAR PV TECHNOLOGY**

iii) Location and Approach

Sl.No.	Name	Capacity (MW_{AC})	Coordinates of Solar Park	Distance from Solar Park to 132 kV Relevant S/S
1	Gujrai, Dist: Kanpur Dehat of Uttar Pradesh	50 MW_{AC}	26°17'54.36"N 79°56'45.92"E	12 KM
2	Gurhah, Dist: Jalaun of Uttar Pradesh	75 MW_{AC}	25°51'0.94"N 79°32'45.11"E	20 KM

iv) Land Availability (Project dependent)

Land Available	**Please refer to the RfS document (Page 94-96) uploaded along with the Tender.**
Plot No.	
Type of Land	

Details of land in possession	

v) **Power Evacuation System**

Details of Power Evacuation Arrangement	**Please refer to the RfS document (Page 91-92) uploaded along with the Tender.**

vi) **Other Details**

Water Requirement during operation & construction	**Please refer to the RfS document (Page 56) uploaded along with the Tender.**
Power Requirement during construction	
Any other Project Specific Details to be specified	

PART-B

SCOPE OF SUPPLY AND SERVICES

4.2 SCOPE OF SUPPLY AND SERVICES

4.2.1 Intent of specification

4.2.1.1 The scope of the proposal for the Design, Engineering, Supply, Erection, Testing, Commissioning of (**125 MW (50 MW & 75 MW)**) (AC) Grid connected Solar Power Project at **KANPUR DEHAT AND JALAUN DISTRICT** and **Three (03)** years Comprehensive Operation & Maintenance thereafter shall be on turnkey basis covering the activities & services as described in this specification.

4.2.1.2 All Works to be carried out as per the Scope detailed in this specification shall be in accordance with the requirements, conditions, appendices etc. given in Technical Specifications (Section-IV) together with those stated in other Sections/Sub-sections of Bid Documents, which shall be considered as a part of this volumes completely as if bound herewith. Further, all the works to be carried out under the scope should also comply all the technical requirements of RfS document issued by the **UPNEDA**/Implementing Agency for this project.

4.2.1.3 It is not the intent to specify herein all aspects of design and construction nevertheless, the equipment and civil works shall conform to all aspects to high standard of engineering, design and workmanship and shall be capable of performing in continuous commercial operation in a manner acceptable to the Employer, who will interpret the meaning of the Technical Requirements/ specification and drawings and shall have a right to reject or accept any work or material which in his assessment is not complete to meet the requirements of this specification and/or applicable Indian / International standards mentioned elsewhere in this specification.

4.2.1.4 The Contractor shall be responsible for providing all materials, equipment and services, specified or otherwise (unless specifically excluded) which are required to fulfil the intent of ensuring operability and the reliability of the complete Solar PV Plant covered under this specification.

4.2.1.5 Bidders are requested to carefully examine and understand the specifications /Technical requirements and seek clarifications, if required, to ensure that they have understood the specifications. Such clarifications should be sought within the time period as stipulated in section ITB. Bidder's offer should not carry any sections like clarifications, interpretations and/or assumptions.

4.2.1.6 Before submitting his bid, the Bidder should inspect and examine the site and its surroundings and should satisfy himself as to the nature of soil, the quantities and nature of work, materials necessary for completion of the work and their availability, means of access to site and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect his offer. No consequent extra claims on any misunderstanding or otherwise shall be allowed by the Employer.

4.2.2 Scope of Supply and Services

The scope of Supply & Services shall include all Development of Land, Design, Engineering, Manufacture, Procurement of Equipment and material, Testing at Manufacturer's Works, Packing & Forwarding, Transportation, Supply, Receipt and Unloading at site, storage , Insurance at all stages , associated Civil, Electrical Works, Services, Permits ,Licenses, Installation, Erection, Testing, Commissioning, Performance Demonstration and Operational Acceptance of **125 MW (50 MW & 75 MW)** (AC) Grid

Interactive Solar PV Power Plant on turnkey basis along with **THREE (03) year**s Comprehensive Operation & Maintenance thereafter.

The scope of the contractor shall be deemed to include all equipment, materials and services which although are not specifically mentioned in the bid documents and/or in contractor's proposal but are necessary for the satisfactory operation of the Solar PV system and its integration with evacuation system provided by State Electricity Authority(s)/ CTU.

4.2.3 Scope of Supply: The equipment and materials for Grid Interactive Solar PV Power Plant with all the associated system but not be limited to the Supply of the following :

4.2.3.1 DC System

a) Solar PV Module
b) Module Mounting Structure (MMS) including all necessary accessories
c) String Combiner Box with String Monitoring System ,String Fuses, Surge Protection System including all necessary accessories with String Monitoring capabilities
d) DC Array field Lightning Arrestors
e) Power Conditioning Unit (PCU) including all necessary accessories
f) Solar Cables along with lugs, glands, ferrules, straight/Y- connectors and other materials required for proper cable termination at both the ends.
g) Junction Boxes & all necessary accessories
h) DC Earthing system including all necessary accessories

4.2.3.2 AC Systems

a) Power Transformers/Inverter Transformers, Auxiliary Transformers including all necessary accessories
b) HT Switchgear
c) LT Switchgear
d) AC Cabling System-LT Power & Control, HT Cables, Cable Support System along with cable termination kits.
e) Protection System
f) **All equipments including HT/LT cables, Transformers, Inverters and associated equipments/accessories required for evacuation of power from PV module to 33/132 kV Switchyard shall be provided by the Contractor.**
g) Energy Metering System
h) Earthing System & Lightning Protection System with all necessary accessories
i) Plant illumination system
j) Auxiliary Power Supply System
k) Battery System including all necessary accessories
l) UPS with battery bank of sufficient capacity.
m) SCADA System with all necessary accessories
n) Telemetry & Grid interfacing for data transmission from Main Control Room to SLDC/RLDC along with communication system so as to meet statutory

requirements and comply with CERC code. All required hardware, Gateway Modem, Radio Link etc. required for data compliance with Regional Load Dispatch Centre (RLDC)/SLDC/STU/CTU.

4.2.3.3 General System

a) Weather Monitoring Station

b) Fire Detection and fire protection system in buildings, transformer yard, switchyard and pooling sub-station

c) Module Cleaning system

d) CCTV System for entire Solar PV Plant

e) **The contractor shall make their own necessary arrangements for water supply for construction. However, during operations and maintenance of the Solar Power Plant, internal water supply arrangement from Bore Well is to be arranged by the Bidder. Further, charges if any claimed by any competent authorities in future for usage of water shall be payable by the contractor.**

4.2.3.4 Tools & Tackles

The Contractor shall supply all necessary tools and tackles and other instruments required for the erection, assembly, disassembly, Commissioning, testing, operation and proper maintenance of the plant and equipment and systems (including software). These tools will also include special material handling equipment, jigs and fixtures for maintenance and calibration / readjustment, checking and measurement aids etc. The price of each tool / tackle shall be deemed to have been included in the total bid price. **The bidder shall provide the same alongwith bid in attachment-19.**

4.2.3.5 Spares

The Contractor shall supply and maintain adequate inventory of all the spares (including softwares) required for safe, reliable and trouble free operation & maintenance of the complete Solar PV Plant during the period of contract. The price of these spares shall be deemed to be included in the contract price. List of Mandatory Spares to be provided by Contractor along with Bid is mentioned in Clause No. 4.4.9 of the Technical Specifications.

4.2.4 Scope of Services

The scope of services shall include all associated works & services in respect of above supplies that are needed to make the system complete in all respect for its safe, reliable, efficient and trouble free operation and shall not be limited to the following:

4.2.4.1 Arrangement of Land

Solar park developer SPIA shall make available the land and RECPDCL will enter into Right to Use / Lease Agreement with SPIA after allotment of the Project.

4.2.4.2 Assessment of site

The contractor is required to measure the Solar Radiation and other climatic conditions relevant to predict the plant performance. This is necessary to study solar parameters and Guaranteed Performance of the Solar Power Plant. The satellite-based analysis is to be combined with direct ground based measurement equipment in order to achieve the necessary accuracy and level of detail in the assessment of solar, parameters and climatic conditions.

4.2.4.3 Design & Engineering

Basic Engineering, Detailed Design and Engineering of Grid Interactive Solar PV Plant and its associated Civil, Electrical & Mechanical auxiliary systems including preparation of foundation drawings, single line diagrams, installation drawings, electrical layouts, design calculations etc. Design memorandum and other relevant drawings and documents required for engineering of all facilities within the scope to be provided under this contract, are covered under contractors scope of work.

a) The Contractor shall submit to the Employer necessary documents, drawings, data design and engineering information in 3 (three) Hard & Soft copies from time to time as per the Engineering Information Schedule. The Engineering Information Schedule shall be finalized with the Employer prior to signing of Contract Agreement. The indicative list of documents to be submitted in the Engineering Information Schedule is mentioned in the Clause No 4.4.10.

b) **Design Memorandum/Design Basis Report**

The Contractor shall prepare and submit to the Employer a "Design Memorandum/ Design basis Report" of the Plant fulfilling the contract specification/requirement. The memorandum shall include the design philosophy, methodology, system description, input parameters for design, major technical features, basic arrangement/ layout etc. The observations /comments of the Employer (if any) should-be duly incorporated by the contractor.

4.2.4.4 Finalization of Sub-Contractors/Sub-vendors

The Contractor shall be responsible for the finalization of sub-contractors/Sub-vendors for all the Supplies & services as required to make the system complete in all respect for its safe, reliable, efficient and trouble-free operation. The list of such sub-contractors /Sub vendors shall be provided by the Contractor for the approval of Engineer-in-Charge before finalization.

The vendors/Suppliers for Modules & PCUs shall be finalized by the contractor complying the requirements of respective provisions of Technical Specifications (Section-IV). The Contractor shall finalize the Vendors/ Suppliers of major Equipment including Modules, Inverters and MMS Material after the approval of Engineer-in-Charge and prior to signing of Contract Agreement.

4.2.4.5 Mobilization at site

Workforce: Accommodation for the workforce required for construction is in the contractor's scope.

Electricity: Arrangement of Power requirement during project construction is in contractor's scope.

Water: Arrangement of Water requirement during operation & construction phase of the project is in contractor's scope.

4.2.4.6 Packaging, Transportation, Unloading and Storage

Packing and Transportation from the manufacturer's works to the site including customs clearance & port clearance, payment of port charges, (if any), Receipt, Unloading, storage, preservation and conservation of equipment at the site shall be in the scope of the Contractor.

4.2.5 Civil Works

The scope of civil construction work shall include all Works required for the Solar PV Project but not limited to the following:

a) Geotechnical Investigation at site

b) Soil Investigation at the site

c) Site Preparation: Site grading including slope protection, ground preparation/ filling/ levelling (if required) of the identified area and cutting, clearing and transporting of bushes/ vegetation/ trees etc.

d) Foundation: Construction of foundation and Mounting structures as required for the equipment

e) Rooms/Cabins: Construction of Control room, Inverter room, Store Room, security room /Cabins, Gate complex, Equipment Rooms etc., as required along with requisite furniture, workstations, Air Conditioning and other equipment as per specifications

f) Roads & Pathways: Construction of service roads and pathways **(Main roads shall be provided by Solar Park developer i.e SPIA)**

g) **Contractor shall make their own necessary arrangements for water supply for construction. However, during operations and maintenance of the Solar Power Plant, internal water supply arrangement from Bore Well is to be arranged by the Bidder.**

h) **Drains: SPIA shall lay and maintain the main drains along the main road. Design and construction of internal plant drainage system and its interface/connection with the Main Drainage System shall be in the scope of the contractor.**

i) **Fencing: Fencing along the periphery of the allocated land for 125 MW (50 MW & 75 MW) .The fencing work shall be completed within time frame as specified in clause no 3.17.2.**

j) Cable Routing: Requisite cable routing through cable trenches/trestle and/ or cable tray, where ever required.

k) Power cables laying with proper cable tray arrangements.

Construction of Switchyard for **33/132 kV** system including all equipments, panels and other accessories etc.

4.2.6 Installation, Erection, Testing, Commissioning

The scope of the contractor shall deemed to include Design, Engineering, Supply, Erection, Testing, Commissioning of all the equipment including successful completion of **Performance Guarantee Test** of Solar PV Project. The synchronization shall be done in accordance with the then applicable Grid Code and the state & central authority regulations.

4.2.7 Performance Guarantee Test

Bidder has to quote the first year annual generation in the relevant section of the bidding document. The same has to be demonstrated during the performance guarantee test.

The performance guarantee tests shall be carried out as specified elsewhere in the Technical Specification. All special equipment, tools and tackles instruments, measuring devices required for the successful conductance of PG test shall be provided by the bidder, free of cost. All costs associated with the PG tests shall be included in bid price.

The performance guarantee tests shall be carried out as specified in 4.4.6 of the Technical Specification/Requirement (Section- IV).

INPUT FOR LIQUIDITY DAMAGE FOR SHORTFALL IN PERFORMANCE DURING PERFORMANCE GURRANTTEE TEST AND O&M PERIOD

Global Solar Insolation of the Site **(125 MW (50 MW & 75 MW)) (AC) .**

Month	***Month wise Solar Insolation (kWhr/m^2)***
January	118
February	135
March	179
April	187
May	202
June	165
July	138
August	135
September	143
October	138
November	114
December	106
Year	**1760**

Tariff for determination of Liquidated Damages for shortfall in generation during Performance Guarantee Test: Rate (Rs/ kWh) x 10.6454

Tariff for determination of Liquidated Damages for shortfall in generation during O&M Period: Rate (Rs/ kWh)

'Rate (Rs/ kWh)' to be read as Rs 2.69 for (125 MW (50 MW & 75 MW)) Solar Project.

4.2.8 Testing

a) During detailed engineering, the contractor shall submit to the Employer the valid type tests reports for approval/review. These tests should have been conducted on the equipment similar to those proposed to be supplied under this contract at an independent laboratory or should have been witnessed by a client. However if the contractor is not able to submit valid type test report(s) or in the case of type test report(s) are not found to be meeting the specification requirement, the contractor shall conduct all such tests under this contract at no additional cost to the employer.

b) All the acceptance tests and Routine Tests, inspection at manufacturer's works as well as at site shall be carried out strictly as per specifications, relevant standards and in accordance with the Quality Assurance Plan and reports shall be submitted to Employer.

4.2.9 Warranty

The contractor shall provide the warranty for the equipment as mentioned below:- -

PV modules used in grid connected solar power plants must be warranted for peak output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

a) The modules shall be warranted for at least 10 years for failures due to material defects and workmanship.

b) The mechanical structures, electrical works and overall workmanship of the grid connected solar power plants must be warranted for a minimum of 3 years.

c) The Inverters/PCUs installed in the solar power plant must have a warranty for 5 years.

d) In addition to above, the contractor shall also provide warranty for the equipment/systems as per provisions of RfS (if any).

e) All warranties shall be in the name of RECPDCL.

4.2.10 Approvals and Licenses

I. The Contractor, on behalf of the Employer, shall obtain all **applicable** statutory approvals / clearances required from Government Departments/regulatory Authority including but not limited to the following:-

a) Pollution control board clearance, if required.
b) CEIG
c) Connectivity with State Transmission Company, Central Transmission Company
d) System Studies (if any)
e) Power Evacuation
f) Environment Clearance
g) Construction Power

h) CT, PT and Metering System testing at Authorized lab as per Requirement of the concerned Agencies.
i) Application for Open Access or as applicable
j) Application for Connectivity
k) SLDC Data Transmission/Integration at SLDC
l) Any other approvals and permissions not specifically mentioned but may be required for smooth Construction and Operation & Maintenance of the Plant.
m) **Payment to concerned agency for Connectivity Charges, Solar Park land cost, System Study Charges, Registration Charges and Statutory Charges (if any) shall be in the scope of the Employer. However, all required assistance and documentation shall be in the scope of the EPC Contractor.**

I. All Construction and O & M of the Plant shall be carried out through appropriate relevant Standards, regulations and procedures laid by SPIA/IMPLEMENTING AGENCY/MNRE/ CEA/CERC/SERC/ CEIG/ SPIA and other statutory and regulatory authorities as and when applicable. Further, this shall comply the applicable labour laws. The Contractor shall make himself aware of the same and shall not solely depend upon the Employer.

II. The Contractor shall make all required Laisioning /co-ordination with the concerned agencies for obtaining such approvals including Solar Power Park Developer (SPIA), Chief Electrical Inspector General, STU, Statutory Authorities, concerned power utilities etc for interconnection/synchronization of the solar power plant with the State Grid, so as to commence utilization of power generated from solar power plant soon after its commissioning.

III. The Employer will obtain approvals and other necessary clearances from the concerned authorities related to land including allotment of land, its possession etc., for the project.

IV. The Contractor, in its own interest, is advised to get fully acquainted with the approvals and clearances within the state where the Solar Power Project is to be developed and obtain for himself on its own all information that may be necessary for such approvals and clearances.

4.2.11 Training of Employer's Personnel

The contractor shall provide training free of cost to the personnel of Employer for 7 man-days on Design/manufacturing/erection/testing/commissioning and O&M. Expenses towards travel, lodging, and boarding and other expenses for the personnel shall be borne by the Employer.

4.2.12 Insurance Coverage

The Contractor shall provide all the adequate insurances during EPC and O&M period to cater all Construction and O&M of the plant to indemnify the Employer in accordance with Clause No. 3.56 of Bid Documents.

4.2.13 Scope of Operation & Maintenance (O&M)

Comprehensive O&M of the solar PV plant (s) for a period **of Three (03)** years from the date of operational acceptance is in the scope of the Contractor. The Detailed scope of O&M Services has been specified in 4.4.8 of this section.

4.2.14 Energy estimation and scheduling

The work regarding the Estimation, Scheduling & Forecasting on daily basis in form of day ahead schedule as per applicable guidelines shall be in the scope of contractor without any additional cost to Employer during period of O & M Contract. Coordination with concerned Agencies (SLDC/RLDC etc.) for the above shall also be in the scope of the contractor. The Contractor shall be required to Schedule its power as per the applicable regulations /requirements / guidelines of CERC / SERC /SLDC / RLDC or any other competent agency and same being recognized by the SLDC or any other competent authority /agency as per applicable regulation/ law / direction and maintain compliance to the applicable Codes/ Grid Code requirements and directions, if any, as specified by concerned SLDC/RLDC from time to time. Any deviation from the Schedule will attract the provisions of applicable regulation / guidelines / directions and any financial implication on account of this shall be borne by the contractor.

4.2.15 Performance Monitoring

The performance monitoring of the system shall be as per the terms & requirements of RfS.

a) The Contractor shall maintain the list of Module IDs along with performance characteristic data for each module (information stored in RF Identification Tags). This data shall be submitted to SPIA/MNRE/RECPDCL.

b) The Contractor must install necessary equipment to continuously measure solar radiation on module plane, ambient temperature, wind speed and other weather parameters and simultaneously measure the generation of DC power as well as AC power generated from the plant. They will be required to submit this data to SPIA and MNRE on line and/or through a report on regular basis every month for the entire duration of O&M Period.

c) The Contractor shall provide access to SPIA/MNRE/RECPDCL or their authorized representatives for installing any additional monitoring equipment to facilitate on-line transfer of data. All data shall be made available as mentioned above for the entire duration of the O&M Period.

d) The SCADA System shall be built over Industrial IoT architecture with integrated Analytics, secure web access, enterprise software and Database in accordance with Clause No. 4.4.3.11. It shall be able to provide real time online data (including but not limited to irradiance, plant generation (instantaneous/daily/monthly/yearly), daily peak generation, temperature, wind speed etc.) to SPIA/MNRE/RECPDCL or any other Regulatory Agency as per requirement.

4.2.16 Handing over of the Plant

At the end of the contract period, the contractor shall hand over the plant and equipment back to the Employer in completely safe and healthy condition and without any pending defect. The items supplied by the Employer on returnable basis, such as spares parts, consumables, tools and plants, documents etc. shall be returned back to the Employer, else, suitable recoveries shall be made from the Contractor's bills.

4.2.17 Terminal point for the EPC Project

a) Complete EPC work for **(125 MW (50 MW & 75 MW)) (AC)** Solar PV Project up to interconnection point /evacuation point as per the power evacuation plan indicated in **the RfS Document.**

b) SPIA will construct/ provide transmission line from the Project up to interconnection point/delivery point as per SPIA agreement with RECPDCL. However, all coordination, work execution, paper work shall be carried out by the EPC Contractor. However, contractor shall be responsible for overall co-ordination with SPIA for construction of Transmission line. The maintenance of Transmission system up to the Inter-connection Point shall be adhered to as per the Terms and Conditions of SPIA & contractor shall be wholly responsible for the same.

c) Solar Park Land cost will be paid by RECPDCL to SPIA.

d) RECPDCL will directly pay to State Transmission authority for development of bay(s) at State Transmission authority end substation.

e) Solar Park-O&M Annual Charges to SPIA will be paid by RECPDCL

4.3 PART C: GENERAL TECHNICAL REQUIREMENTS

4.3.1 Introduction

This part covers general technical requirements, which will form an integral part of the Contract. The following provisions shall supplement all the detailed technical requirements brought out in this section.

4.3.2 Completeness of the Facilities

Contractors may note that this is a contract inclusive of the scope as indicated elsewhere in the specification. Each of the plant shall be engineered and designed in accordance with the specification requirement. All engineering and associated services are required to ensure that a completely engineered plant is provided.

All equipment furnished by the Contractor shall be complete in every respect, with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/or those needed for erection, completion and safe operation & maintenance of the equipment and for the safety of the operating personnel, as required by applicable codes, though they may not have been specifically detailed in the respective specifications, unless included in the list of exclusions.

All similar standard components/ parts of similar standard equipment provided, shall be interchangeable with one another.

4.3.3 Codes and Standards

4.3.3.1 All the works shall be carried out as per the standards/codes (IEC, IS etc.) referred in the Technical requirements/ specification. All the standards and codes of practice referred to shall be the latest editions including all applicable official amendments and revisions. In case of conflict between this specification and those codes/standards referred the later shall prevail**.**

Unless covered otherwise by Indian codes & standards and in case nothing to the contrary is specifically mentioned elsewhere in the specifications, the latest editions (as applicable as on date of Issue of NIT), the International/ National standards such as JIS, DIN, VDI, ISO, SEL, SEW, VDE, IEC & VGB shall also be considered as far as applicable for Design, Manufacturing and Testing of the respective equipment.

4.3.3.2 In addition to the codes and standards specifically mentioned in the relevant technical specifications for the equipment / plant / system, all equipment parts, systems and works covered under this specification shall comply with all statutory regulations and safety codes as applicable in India as well as of the locality where they will be installed including the following:-

a) Bureau of Indian Standards (BIS)

b) Indian electricity act

c) Indian electricity rules

d) Indian Factories Act and State Factories Act

e) Regulations of the Central Pollution Control Board, India

f) Regulations of the Ministry of Environment & Forest (MoEF), Government of India

g) Pollution Control Regulations of Department of Environment, Government of India

h) State Pollution Control Board.

i) Rules for Electrical installation by Tariff Advisory Committee (TAC).

j) Indian Electricity Grid Code (IEGC), CEA/CERC /SERC Regulations and other statutory regulations as applicable.

k) Any other statutory codes / standards / regulations, as may be applicable

4.3.4 Instruction Manuals

The Contractor shall submit to the Employer, Instruction Manuals for all the equipment covered under the Contract. The manuals shall be specifically compiled for this project. The Contract shall not be considered to be completed for purposes of taking over until the Instructions manuals have been supplied to the Employer. The Instruction Manuals shall include (but not limited to) the following: -

4.3.4.1 Erection & Commissioning Manuals/Checklists

The erection & Commissioning Manuals/Checklists shall be submitted prior to the commencement of erection activities of particular equipment/system. The Erection Manual should include Erection strategy, Sequence of erection, Erection instructions, Critical checks and permissible deviation/tolerances, Bill of Materials, Procedure for erection, General safety procedures, Procedure for initial checking after erection, testing and acceptance norms , Procedure / Check list for pre-commissioning & Commissioning activities.

4.3.4.2 Operation & Maintenance Manuals

The operating and maintenance instructions together with drawings (other than shop drawings) of the equipment, as completed, shall be in sufficient detail to enable the Employer to operate, maintain, dismantle, reassemble and adjust all parts of the equipment. These shall give a step by step procedure for all operations likely to be carried out during the life of the plant / equipment including, operation, maintenance, dismantling and repair including periodical maintenance activities to be carried out for smooth functioning of the plant. List of spare parts along with their drawings and catalogues shall also be provided in the Manuals.

4.3.5 Progress Reports

The Contractor shall furnish to the Employer, Progress Reports with periodicity as decided by the Employer detailing out the progress achieved in the execution of the project including status of supply of material, progress on all erection activities as compared to the schedules. Colour photographs and video in VCD/DVD indicating various stages of erection and the progress of the work done at Site shall supplement this. The report shall also indicate the reasons for the variance between the scheduled and actual progress and the action proposed for corrective measures, wherever necessary.

4.3.6 Project Completion Report

The Contractor shall submit a Project Completion Report at the time of handing over the plant. Before the final acceptance of individual equipment /system by the Employer, the Contractor will update all original drawings, documents and BOM for the equipment/ system to "as built" conditions and submit these as built drawings/documents to the

Employer. The Works shall not be considered complete for purposes of taking over under the terms of the General Conditions of the Contract until the Contractor has supplied the above documents.

4.3.7 Technical/Contract Co-ordination Meeting

The Contractor shall organize and attend progress Meetings (at least one monthly or as decided by the Employer) with the Employer/Employer's representatives during the period of Contract at mutually agreed venues for review of progress & resolving technical clarifications, if any. The Contractor shall attend such meetings at his own cost and fully co-operate with such persons and agencies involved during the discussions. The Contractor shall ensure availability of the concerned experts / consultants/ personnel who are empowered to take necessary decisions during these meetings.

4.3.8 Design of Facilities/Maintenance & Availability Considerations

The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in-accordance with good engineering practice.

The Contractor shall be responsible for the selection and design of appropriate equipment to provide the best coordinated performance of the entire system. The basic requirements are detailed out in various clauses of the Technical Requirements/ Specifications. The design of various components, assemblies and subassemblies shall be done so that it facilitates easy field assembly and dismantling. All the work shall be done while complying fully to or above minimum standards specified in this specification.

4.3.9 Design of Facilities, Specifications and Drawings

All the design procedures, systems and components proposed shall have already been adequately developed and shall have demonstrated good reliability under similar conditions elsewhere.

The Contractor shall be responsible for the selection and design of appropriate equipment to provide the best coordinated performance of the entire system. The basic requirements are detailed out in various clauses of the Technical Specifications. The design of various components, assemblies and subassemblies shall be done so that it facilitates easy field assembly and dismantling.

The Contractor shall furnish engineering data/drawings for entire equipment covered under this specification in accordance with the schedule of information as specified in Technical Specification and Data sheets.

The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared and ensure that the discrepancies are removed, before their submission to the employer.

Any changes of the design of any part of the Works, which may become necessary after signing the Contract, have to be submitted in writing to the Engineer in-Charge for approval, being sufficiently substantiated and justified. However, there shall not be any cost implication due to these deviations on the employer

4.3.10 Standardization of Works:

Every effort shall be made to standardize parts and spares so as to minimize costs

throughout the Works in order to facilitate keeping stocks, maintenance, replacement, inter changeability, etc.

4.3.11 Availability and reliability:

The Contractor shall design each equipment, system or subsystem to provide 99 % availability, reliability, low maintenance and ease of maintenance. The Contractor shall optimize the various systems and subsystems to minimize the number of different components and associated spare parts. The Contractor shall also furnish details of availability records in the reference plants stated in his experience list

4.3.12 Material of Construction:

All materials used for the construction of the equipment shall be new and shall be in accordance with the requirements of this specification. Materials utilized for various components shall be those, which have established themselves for use in such applications.

4.3.13 Safety

Handling provision: Lifting lugs, brackets, eyes, and other items required for attaching lifting devices shall be provided on all the major components of the equipment for safe handling. Lifting devices like lifting tackles, slings, etc. to be connected to hook of the hoist / crane shall be provided by the contractor for lifting the equipment and accessories covered under the specification

Safety of operation: All equipment and services provided under this contract shall abide **by commonly accepted standards for safety of operation.**

4.3.14 Rating Plates, Name Plates & Labels:

Each main and auxiliary item of plant including instruments shall have permanently attached to it in a conspicuous position, a rating plate of noncorrosive and non-hygroscopic material upon which shall be engraved manufacturer's name, equipment, type or serial number together with details of the ratings, service conditions under which the item of plant in question has been designed to operate, and such diagram plates as may be required by the Employer.

4.3.15 Protection and preservative shop coating

i.

ll coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with either metallic or a non-metallic protection device. All primers/paints/coatings shall take into account the hot humid, corrosive & alkaline, subsoil or over ground environment as the case may be. The Contractor's scope of work includes painting of all equipment and structures. The quality and finish of paints shall be as per standards of BIS or approved equivalent.

ii.

reservative Shop Coating: All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces which will not be easily accessible after the shop assembly, shall be treated beforehand and protected for the life of the equipment. The surfaces that are to be finish-painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer.