**Tender Amendment/ Clarification Document**

**Date:** 26th June, 2023

**Ref.: GIPCL/Solar/BOS/2023-24**

To,
**Prospective Bidder(s),**

**Sub: Amendments/ Clarifications to "Notice Inviting Tender for Balance of System Package for 600 MW Solar PV Project at Great Rann of Kutch, Nr. Vill. Khavda in Gujarat, India."**

Ref.: Tender Enquiry Document No. GIPCL/Solar/BOS/2023-24, dated 23rd May 2023.

(1) GIPCL has floated Notice Inviting Tender for Balance of System Package for 600 MW Solar PV Project at Great Rann of Kutch, Nr. Vill. Khavda in Gujarat, India (GIPCL/Solar/BOS/2023-24).

(2) GIPCL received queries from various potential Bidders in response to the Tender.

(3) Based on the deliberations with participants in the Pre-Bid Meeting, amendments/ clarifications to the Tender Enquiry Documents are being issued (The "Amendment Document").

(4) This Amendment Document shall now be considered as an integral part of the Tender Enquiry Document. All other terms and conditions applicable to the Tender shall now be applicable to this Amendment Document also. Any amendments/clarifications indicated in this Amendment Document shall supersede all relevant terms and conditions/ clauses of the EPC Tender.

(5) The Bidder shall understand, duly sign and seal each page of this Amendment/Clarification Document and submit as per the method / procedure mentioned in the Tender.

Yours faithfully,
For and on behalf of GIPCL

**Sd/-**
General Manager (RE Projects & IT)

Enclosed: 1). Attachment-1 (Amendment-1).
2). Consolidated Response to Bidder's Queries.

# Attachment-1 (Amendment-1)

## Date: 26.06.2023

## IMPORTANT NOTE

Amendment / Addendum / Clarification / Corrigendum issued herein shall form part of Tender Enquiry Document on 23rd May 2023. All Bidders to please note that Amendment/Addendum/Clarification/Corrigendum issued will supersede the respective Clause / Sub-Clause of Original Tender Enquiry Document to the extent for the Clause / Sub-Clause or part thereof the amendment is issued. All other terms and conditions of the original Tender Enquiry Document No: GIPCL/Solar/BOS/2023-24 published on 23rd May 2023 will remain unchanged.

**Amendment to the TED GIPCL/Solar/BOS/2023-24**

**All the Tender Terms & Conditions will remain unchanged other than the below Amended Term**

| Sr. No. | Volume/Section | Clause No. | Page No. | Original Term | | Amended Term | |
|---|---|---|---|---|---|---|---|
| 1. | Volume-I SECTION –1 | TABLE A: IMPORTANT DATES Sr. No. vi | 3 of 13 | Online (e-tendering) Tender/Offer submission last date {This is mandatory} | 27th June, 2023<br>Time: 17:00 hours (IST)<br>On n-procure portal for Bid Submission | Online (e-tendering) Tender/Offer submission last date {This is mandatory} | **11th July, 2023**<br>Time: 17:00 hours (IST)<br>On n-procure portal for Bid Submission |
| 2. | Volume-I SECTION – 1 | TABLE A: IMPORTANT DATES Sr. No. vii | 4 of 13 | Physical receipt of Bid with all the relevant documents last date (By RPAD or Speed Post or By Personal Messenger) {This is mandatory} | 29th June, 2023<br>Venue: GIPCL Corporate Office, PO: Ranoli - 391 350, Dist. Vadodara. | Physical receipt of Bid with all the relevant documents last date (By RPAD or Speed Post or By Personal Messenger) {This is mandatory} | **13th July, 2023**<br>Venue: GIPCL Corporate Office, PO: Ranoli - 391 350, Dist. Vadodara. |
| 3. | Volume-I SECTION – 4 | 3.26.1 | 44 of 105 | ……..Project management practices for power stations of similar size and type (Solar PV Plant) as the Plant that are intended to have a 30 (thirty) year useful life when operated in accordance with the Operating Manuals, all Applicable Laws, all Applicable Permits, all Manufacturer's and vendor's guarantees and Warranties, all applicable insurance policies, the safety precautions set forth in this section and the provisions of Contract including Specifications. | | ……..Project management practices for power stations of similar size and type (Solar PV Plant) as the Plant that are intended to have a **25 (Twenty Five)** year useful life when operated in accordance with the Operating Manuals, all Applicable Laws, all Applicable Permits, all Manufacturer's and vendor's guarantees and Warranties, all applicable insurance policies, the safety precautions set forth in this section and the provisions of Contract including Specifications. | |
| 4. | VOLUME - II PART -1 (Schedule - I and 2) | 7 (Vii) | 7 of 13 | CEA (Measures relating to Safety and Electrical Supply) Regulations,2010 | | **Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2023 Dated 16-06-2023.** | |

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| 5. | VOLUME - II PART -1 (Schedule - I and 2) | 7.0 (e) | 08 of 13 | The preliminary system study input parameters related to the PSS-1(400/33kV, 1200MW) and 400kV transmission line between PSS-1 and KPS-II (CTUIL 400/765kV) substation and all other details pertaining to PSS-1 and transmission line (PSS-1 to KPS-II) shall be provided to the successful Bidder during detail engineering stage. | The preliminary system study input parameters related to the PSS-1(400/33kV, 1200MW) and 400kV transmission line between PSS-1 and KPS-II (CTUIL 400/765kV) substation and all other details pertaining to PSS-1 and transmission line (PSS-1 to KPS-II) shall be provided to the successful Bidder during detail engineering stage.<br><br>**For each 340/170/170 MVA, 400/33/33 kV Power Transformer following parameters may be considered for preliminary system study.**<br><br>**Impedances:**<br>• **HV-LV1 & HV-LV2 = 15.0% +/- 7.5% tolerance (Base 170 MVA, at principal tap).**<br>• **LV1-LV2 = 27% +/-15% tolerance. (Base 170 MVA, at principal tap).**<br>**Losses:**<br>• **No Load Loss at rated voltage and frequency = 135 KW**<br>• **Load Loss at rated current and at 75°C for HV and LV. (LV1+LV2) windings, at principal tap position = 760 KW.**<br>• **$I^2R$ Loss at rated current and at 75°C for HV and LV (LV1+LV2) windings, at principal tap position = 600 KW.** |
| 6. | VOLUME - II PART - 2 (Schedule - III A) | 6-B (i) | 6 of 82 | Type test certificates valid for five years for all equipment/accessories being supplied under this contract. | Type test certificates validity ~~**valid for five years**~~ for all equipment/accessories being supplied under this contract **shall be as per latest CEA Guidelines. However, the type test certificates for the equipment which are not covered in CEA guidelines shall have validity of 5 Years.** |
| 7. | VOLUME - II PART - 2 (Schedule - III A) | 3.1 | 54 of 82 | The cable shall be 1.9/3.3kV Grade, high conductivity stranded compacted circular aluminium conductor, single core, XLPE insulated, Inner PVC ST2 sheathed, galvanized steel strip armoured with overall separate extruded minimum FRLS or as per CEA regulation PVC ST2 outer sheath, conforming generally to IS:7098 (part-II)-1985 and its latest amendment thereof. | The cable shall be 1.9/3.3kV Grade, high conductivity stranded compacted circular aluminium conductor, single core, XLPE insulated, Inner PVC ST2 sheathed, galvanized steel strip armoured with overall separate extruded minimum FRLS or as per CEA regulation PVC ST2 outer sheath, conforming generally to IS:7098 (part-II)-1985 and its latest amendment thereof. **Alternatively, HDPE Outer sheath with UV Resistant property shall also be acceptable.** |
| 8. | VOLUME - II PART - 2 (Schedule - III A) | 3.5 | 55 of 82 | Extruded PVC outer sheath of type ST-2 as per 18: 5831/1984 and its latest amendment shall be applied over armouring with suitable additive to prevent attack by rodent and termite and Its thickness shall be in accordance with clause -17.32 of 18:7098 (Part-III)/1985 and latest amendment thereof. | Extruded PVC outer sheath of type ST-2 as per IS: 5831/1984 and its latest amendment shall be applied over armouring with suitable additive to prevent attack by rodent and termite and Its thickness shall be in accordance with clause -17.32 of IS:7098 (Part-III)/1985 and latest amendment thereof. **Alternatively, HDPE Outer sheath (ST-7) with UV Resistant property as per IEC 60502-1 standards shall also be acceptable.** |

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| 9. | VOLUME - II PART - 2 (Schedule - III A) | 5.0 sr no 8.0 | 58 of 82 | 8.0 \| Outer Sheath \| - \| Minimum FRLS PVC Compound (ST-2) or as per CEA regulation | 8.0 \| Outer Sheath \| - \| Minimum FRLS PVC Compound (ST-2) or as per CEA regulation. **Alternatively, HDPE Outer sheath (ST-7) with UV Resistant property as per IEC 60502-1 standards shall also be acceptable.** |
| 10. | VOLUME - II PART - 2 (Schedule - III A) | 6.0, **Sl. no. 5.0** | 60 of 82 | - | **Acceptance, Routine and Type tests for HDPE outer sheath (ST-7) cables shall be as per IEC 60811 / IS 7098- 2** |
| 11. | VOLUME - II PART - 2 (Schedule - III A) | 7.2 d) | 60 of 82 | d) Type/Routine test certificates for all types of cables included in the order and special tests on FRLS/FS cables in line with applicable standard. | d) Type/Routine test certificates for all types of cables included in the order and special tests on FRLS/**FRLSH** or **HDPE** cables in line with applicable standard. |
| 12. | VOLUME - II PART - 2 (Schedule - III A) | 6.1 (x) | 66 of 82 | Type test certificates valid for five years for all equipment/accessories being supplied under this contract. | Deleted |
| 13. | VOLUME - II PART - 2 (Schedule - III A) | 4.0 | 70 of 82 | Type test certificates as per relevant standards for the tests conducted within five years of the date of order placement shall be available and to be submitted for review and record | Type test certificates as per relevant standards for the tests conducted ~~**within five years of the date of order placement shall be available and**~~ to be submitted for review and record |
| 14. | VOLUME - II PART - 2 (Schedule - III B) | 3.12 | 27 of 179 | Total height of the switchgear panels shall not generally exceed 2500 mm. The height of switches, push buttons and other hand operated devices shall not exceed 1800 mm and shall not be less than 700 mm from bottom of the panel base. All relays, meters, indicating lamps, switches etc. shall be flush mounted on the respective cubicle front door. | Total height of the switchgear panels shall not generally exceed **2700 mm**. The height of switches, push buttons and other hand operated devices shall not exceed 1800 mm and shall not be less than 700 mm from bottom of the panel base. All relays, meters, indicating lamps, switches etc. shall be flush mounted on the respective cubicle front door |
| 15. | VOLUME - II PART - 2 (Schedule - III B) | 5.2 | 56 of 179 | Type test reports for the switchboard panel of similar rating for the following tests shall be submitted along with the Bid (not older than 5 years) | Type test reports for the switchboard panel of similar rating for the following tests shall be submitted along with the Bid ~~**(not older than 5 years)**~~ |
| 16. | VOLUME - II PART - 2 (Schedule - III B) | 3.4 | 59 of 179 | For Other systems like, Battery bank, ACDB, and Bypass Line Transformers, Voltage Stabilizer, static switch, manual bypass switch, other necessary Protective devices and accessories shall have 1x100% configuration. | Deleted. |
| 17. | VOLUME - II PART - 2 (Schedule - III B) | 3.2.4 | 71 of 179 | Short circuit withstand rating of the DCDB shall be min. 25kA for 1 sec or higher as per system study. | Short circuit withstand rating of the DCDB shall be ~~**min. 25kA for 1 sec or higher**~~ as per system study. |
| 18. | VOLUME - II PART - 2 (Schedule - III B) | 6.2 | 93 of 179 | All equipment to be supplied shall be of type tested quality. Certified copies of reports of type tests conforming to IS-7098 (Part-1) carried out on similar type and rating of cables (offered under this contract) within last five years from the date of submission of Bid shall be furnished to the Purchaser for review and approval. Type tests shall also include anti rodent and anti-termite test. The tests should have been either conducted at on independent laboratory or should have been witnessed by a client. In case the bidder is | All equipment to be supplied shall be of type tested quality. Certified copies of reports of type tests conforming to IS-7098 (Part-1) carried out on similar type and rating of cables (offered under this contract) ~~**within last five years from the date of submission of Bid**~~ shall be furnished to the Purchaser for review and approval. Type tests shall also include anti rodent and anti-termite test. The tests should have been either conducted at on independent laboratory or should have been witnessed |

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| | | | | not able to submit report of the type test(s) conducted within last five years from the data of bid opening, or in case the type test report(s) are not found to be meeting the Specification requirements, the bidder shall conduct all such tests under this contract, free of cost to the Owner and submit the reports for approval | by a client. In case the bidder is not able to submit report of the type test(s) conducted ~~**within last five years from the data of bid opening,**~~ or in case the type test report(s) are not found to be meeting the Specification requirements, the bidder shall conduct all such tests under this contract, free of cost to the Owner and submit the reports for approval |
| 19. | VOLUME - II PART - 2 (Schedule - III B) | 3.1 | 96 of 179 | The cable shall be 19/33kV Grade, high conductivity stranded compacted circular aluminum conductor, Three cores, XLPE insulated, Inner PVC ST2 sheathed, metallic screened suitable for carrying the system earth fault current, conductor and insulation screened galvanized steel strip armoured with overall separate extruded PVC ST2 outer sheath, FLRS/ FRLSH as per CEA regulation, conforming generally to 1S:7098 (part-II)-1985 and lasted amendment thereof suitable for 33kV 3 phase 50 Hz earthed system | The cable shall be 19/33kV Grade, high conductivity stranded compacted circular aluminum conductor, Three cores, XLPE insulated, Inner PVC ST2 sheathed, metallic screened suitable for carrying the system earth fault current, conductor and insulation screened galvanized steel strip armoured with overall separate extruded PVC ST2 outer sheath, FLRS/ FRLSH as per CEA regulation, conforming generally to 1S:7098 (part-II)-1985 and lasted amendment thereof suitable for 33kV 3 phase 50 Hz earthed system. **HDPE Outer sheath (ST-7) with UV Resistant property shall also be acceptable.** |
| 20. | VOLUME - II PART - 2 (Schedule - III B) | 3.8 | 96 of 179 | Extruded PVC outer sheath of type ST-2 as per 18: 5831/1984 and its latest amendment shall be applied over armouring with suitable additive to prevent attack by rodent and termite and Its thickness shall be in accordance with clause -17.32 of 18:7098 (Part-III)/1985 and latest amendment thereof. All the cables shall be protected against rodent and termite attack. Necessary chemicals shall be added into the PVC compound of the outer sheath. The sheath shall be resistant to saline water, UV radiation, fungus, etc. | Extruded PVC outer sheath of type ST-2 as per IS: 5831/1984 and its latest amendment shall be applied over armouring with suitable additive to prevent attack by rodent and termite and Its thickness shall be in accordance with clause -17.32 of IS:7098 (Part-III)/1985 and latest amendment thereof. All the cables shall be protected against rodent and termite attack. Necessary chemicals shall be added into the ~~**PVC**~~ **outer sheath** compound of the outer sheath. The sheath shall be resistant to saline water, UV radiation, fungus, etc. **Alternatively, HDPE Outer sheath (ST-7) with UV Resistant property as per IEC 60502-2 standards shall also be acceptable.** |
| 21. | VOLUME - II PART - 2 (Schedule - III B) | 3.21 d) ix | 99 of 179 | Extruded FRLS PVC outer sheath | Extruded FRLS PVC outer sheath **or HDPE** outer sheath |
| 22. | VOLUME - II PART - 2 (Schedule - III B) | 5.0 sr no 1.9 | 101 of 179 | 1.9 Outer Sheath - FRLS/FRLSH as per CEA regulation PVC Compound (ST-2) | 1.9 Outer Sheath - FRLS/FRLSH PVC Compound (ST-2) as per CEA regulation. **Alternatively, HDPE Outer sheath (ST-7) with UV Resistant property as per IEC 60502-2 standards shall also be acceptable.** |
| 23. | VOLUME - II PART - 2 (Schedule - III B) | 6.0 **Sr No 6** | 103 of 179 | - | **Acceptance, Routine and Type test for HDPE outer sheath (ST-7) cable shall be as per IEC 60811 / IS 7098- 2** |
| 24. | VOLUME - II PART - 2 (Schedule - III C) | 4.1 | 4 of 100 | All solar cables should be aesthetically tied to module mounting structure and no loose loops shall be kept. All solar cables shall be laid in UV rated double wall corrugated HDPE conduits with 50% fill factor for inter row connection and to SCB. HDPE conduits shall be laid on cable trestle or above ground cable racks up to the string combiner box. Solar cables shall | All solar cables should be aesthetically tied to module mounting structure and no loose loops shall be kept. All solar cables shall be laid in UV rated double wall corrugated HDPE conduits with 50% fill factor for inter row connection and to SCB. HDPE conduits shall be laid on cable trestle or above ground cable racks up to the string combiner box. **Positive and** |

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|---|---|---|---|---|---|
| | | | | be terminated at input terminals of SCBs through cable glands of appropriate sizes. Inner sheath / insulation of the cable shall not be exposed to the sun. | **Negative cables shall be laid in separate conduits.** Solar cables shall be terminated at input terminals of SCBs through cable glands of appropriate sizes. Inner sheath / insulation of the cable shall not be exposed to the sun. |
| 25. | VOLUME - II PART - 2 (Schedule - III C) | 4.1 | 13 of 100 | The earthing conductor shall be designed considering the maximum DC system fault current for the solar PV yard and AC system fault current for the remaining AC systems. The net earth resistivity shall also be calculated, and the value of net resistivity shall be as per IS 3043. The soil resistivity data will be furnished by Owner during detailed engineering. The Bidder Shall carry out separate ERT measurement without cost implication to the Owner. Earthing pit shall be 1 Nos. per 1.50 MWp. Nos. of earth pit indicated is valid if all the earth pits are interconnected in single mesh of earth pits | The earthing conductor shall be designed considering the maximum DC system fault current for the solar PV yard and AC system fault current for the remaining AC systems. The net earth resistivity shall also be calculated, and the value of net resistivity shall be as per IS 3043. The soil resistivity data ~~will~~ shall be furnished **~~by~~ to the** Owner by bidder during detailed engineering. The Bidder Shall carry out separate ERT measurement without cost implication to the Owner. Earthing pit shall be 1 Nos. per 1.50 MWp. Nos. of earth pit indicated is valid if all the earth pits are interconnected in single mesh of earth pits |
| 26. | VOLUME - II PART - 3 (Schedule - IV to VI ) | 1 - 21 | 6 of 34 | Auxiliary Transformers<br>1. KAPPA<br>2. Voltech<br>3. TESLA<br>4. DANISH<br>5. CGL<br>6. Voltamp<br>7. Bharat BIJLEE<br>8. ABB<br>9. Inverter OEM Approved make | Auxiliary Transformers<br>1. KAPPA<br>2. Voltech<br>3. TESLA<br>4. DANISH<br>5. CGL<br>6. Voltamp<br>7. Bharat BIJLEE<br>8. ABB<br>9. Inverter OEM Approved make<br>**10 Kalpa Electrikal** |
| 27. | VOLUME - II PART - 2 (Schedule - III B) | 1.17 | 108 of 179 | Provision for remote monitoring shall be provided at least for 3 numbers. | Provision for **Licensed Web based secured** remote monitoring shall be provided at least for **~~3 numbers~~ for 4 simultaneous users.** |
| 28. | VOLUME - II PART - 2 (Schedule - III A) | 3.22 | 25 of 82 | Spare DC input terminals shall be provided in all SCBs. Total number of SCBs shall be calculated accordingly. | **For SCB with less than 25 inputs 2 inputs shall be kept in spare, for SCB with more than 25 inputs 3 inputs shall be kept in spare. ~~Spare DC input terminals shall be provided in all SCBs.~~** Total number of SCBs shall be calculated accordingly. |
| 29. | VOLUME - II PART - 2 (Schedule - III A) | 1.1 | 72 of 82 | The Weather Monitoring Station shall be provided with all the equipment to monitor relevant parameters for the assessment of the performance of the PV Power Plant. The number of sensors shall be as per IEC 61724 – 1. | The Weather Monitoring Station shall be provided with all the equipment to monitor relevant parameters for the assessment of the performance of the PV Power Plant. **~~The number of sensors shall be as per IEC 61724 – 1.~~ There shall be two (02) primary weather stations for 2X300 MW block and seven numbers of secondary weather stations.** |
| 30. | VOLUME - II PART - 2 (Schedule - III A) | 3.1 | 75 of 82 | Seven (7) nos. weather stations shall be placed in representative locations within the plant including measuring instruments and all necessary software & hardware required to integrate with SCADA to enable availability of data in SCADA.<br>Each secondary weather station shall comprise:<br>a) GHI and POA Pyrometer: Calibrated pyrometer to record the solar radiation available on the plane of array of the Modules with a target measurement uncertainty of ± 3%. | Seven (7) nos. **Secondary** weather stations shall be placed in representative locations within the plant including measuring instruments and all necessary software & hardware required to integrate with SCADA to enable availability of data in SCADA.<br>Each secondary weather station shall comprise:<br>a) GHI and POA Pyrometer: Calibrated pyrometer to record the solar radiation available on the plane of array of the Modules with a target measurement uncertainty of ± 3%. |

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<tr><th>Sr. No.</th><th>Volume/Section</th><th>Clause No.</th><th>Page No.</th><th>Original Term</th><th>Amended Term</th></tr>
<tr><td></td><td></td><td></td><td></td><td>b) Resistance thermometers (e.g., Pt100, Pt1000) or equivalent to measure ambient temperature and the temperature of Modules (on the back of the cells).</td><td>b) Resistance thermometers (e.g., Pt100, Pt1000) or equivalent to measure ambient temperature and the temperature of Modules (on the back of the cells).</td></tr>
<tr><td>31.</td><td>VOLUME - II PART - 2 (Schedule - III A)</td><td>3.10</td><td>77 of 82</td><td>A compact station with all the measurements integrated (except pyranometer & module temperature sensor) can be provided. Each instrument shall provide separate 4-20 mA output (soft link RS-485) to SCADA system. Battery voltage monitor signal (4-20mA) shall be provided to SCADA.</td><td>A compact station with all the measurements integrated (except pyranometer & module temperature sensor) can be provided. <s>Each instrument shall provide separate 4-20 mA output (soft link RS-485) to SCADA system</s>. Battery voltage monitor signal (4-20mA) shall be provided to SCADA.</td></tr>
<tr><td>32.</td><td>VOLUME - II PART - 2 (Schedule - III A)</td><td>4.0</td><td>78 of 82</td><td>The general BOM for WMS system is as below:
<table>
<tr><th>SNO</th><th>Material Description</th><th>Units</th><th>QTY</th></tr>
<tr><td>1</td><td>Datalogger</td><td>No's</td><td>7</td></tr>
<tr><td>2</td><td>Cloud sensor</td><td>No's</td><td>7</td></tr>
<tr><td>3</td><td>Diffused irradiance pyranometer and ring</td><td>No's</td><td>7</td></tr>
<tr><td>4</td><td>Direct irradiance pyranometers</td><td>No's</td><td>7</td></tr>
<tr><td>5</td><td>Ethernet Interface with extended data storage module</td><td>No's</td><td>7</td></tr>
<tr><td>6</td><td>Pyranometer</td><td>No's</td><td>7</td></tr>
<tr><td>7</td><td>Ambient Temperature and RH Sensor</td><td>No's</td><td>2</td></tr>
<tr><td>8</td><td>Module Temperature Sensor</td><td>No's</td><td>7</td></tr>
<tr><td>9</td><td>Anemometer and Wind vane</td><td>No's</td><td>2</td></tr>
<tr><td>10</td><td>Rain Gauge</td><td>No's</td><td>2</td></tr>
<tr><td>11</td><td>Barometric Pressure sensor</td><td>No's</td><td>2</td></tr>
<tr><td>12</td><td>Power Supply</td><td>No's</td><td>As per requirement</td></tr>
<tr><td>13</td><td>Mounting Hardware & Enclosure</td><td>No's</td><td>As per requirement</td></tr>
</table></td><td>The general BOM for WMS system is as below:
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<tr><td>1</td><td>Datalogger</td><td>No's</td><td>As per requirement</td></tr>
<tr><td>2</td><td>Cloud sensor</td><td>No's</td><td>2</td></tr>
<tr><td>3</td><td>Diffused irradiance pyranometer and ring</td><td>No's</td><td>2</td></tr>
<tr><td>4</td><td>Direct irradiance pyranometers</td><td>No's</td><td>2</td></tr>
<tr><td>5</td><td>Global horizontal irradiance Pyranometer</td><td>No's</td><td>9</td></tr>
<tr><td>6</td><td>Incident irradiance Pyranometer</td><td>No's</td><td>9</td></tr>
<tr><td>7</td><td>Anemometer</td><td>No's</td><td>2</td></tr>
<tr><td>8</td><td>Wind vane</td><td>No's</td><td>2</td></tr>
<tr><td>9</td><td>Ambient Temperature</td><td>No's</td><td>9</td></tr>
<tr><td>10</td><td>Module Temperature Sensor</td><td>No's</td><td>9</td></tr>
<tr><td>11</td><td>RH Sensor</td><td>No's</td><td>2</td></tr>
<tr><td>12</td><td>Rain Gauge</td><td>No's</td><td>2</td></tr>
<tr><td>13</td><td>Barometric Pressure sensor</td><td>No's</td><td>2</td></tr>
<tr><td>14</td><td>Power Supply</td><td>No's</td><td>As per requirement</td></tr>
<tr><td>15</td><td>Mounting Hardware & Enclosure</td><td>No's</td><td>As per requirement</td></tr>
<tr><td>16</td><td>Ethernet Interface with extended data storage module</td><td>No's</td><td>As per requirement</td></tr>
</table></td></tr>
<tr><td>33.</td><td>VOLUME - II PART - 2 (Schedule - III A)</td><td>5.0</td><td>80 of 82</td><td>5. Resistance thermometer (Dry bulb temperature) Duplex type, PT – 100/1000, with accuracy of ± 0.25 deg C, response time 1-2 seconds, Range: 0-100 deg C, operating temperature: 0 to 100 deg C; Spring loaded mineral insulated three (3) wires RTD. IP 65 or equivalent degree of protection for enclosure. Material of accessories (name plate, etc.)</td><td>5. <s>Resistance thermometer (Dry bulb temperature)</s> Ambient Temperature Sensor Duplex type, PT – 100/1000, with accuracy of ± 0.25 deg C, response time 1-2 seconds, Range: 0-100 deg C, operating temperature: 0 to 100 deg C; Spring loaded mineral insulated three (3) wires RTD. IP 65 or equivalent degree of protection for enclosure. Material of accessories (name plate, etc.) shall be SS. Element lead size</td></tr>
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| | | | | shall be SS. Element lead size shall be 18 AWG. The insulation resistance at 540 Deg C shall not be less than 5M ohms. Repeatability over Full range shall be better than 0.02%. | shall be 18 AWG. The insulation resistance at 540 Deg C shall not be less than 5M ohms. Repeatability over Full range shall be better than 0.02%. |
| 34. | VOLUME – I & SECTION – 4 | 12.2.1 | 74 OF 105 | The Contractor must 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.<br>The mechanical structures, electrical works and overall workmanship of the Solar Power Plant must be warranted for a minimum of 2(two) years from the date of commencement of the O&M.<br>Power Conditioning Unit (PCU)/Inverter shall be warranted for the period of minimum 8 (eight) years from the date of commencement of the O&M.<br>Transformers shall be warranted for the period of minimum 5(five) years from the date of commencement of the O&M. | The Contractor must 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.<br>The mechanical structures, electrical works and overall workmanship of the Solar Power Plant must be warranted for a minimum of 2(two) years from the date of commencement of the O&M.<br>Power Conditioning Unit (PCU)/Inverter shall be warranted for the period of minimum **5 (five)** ~~**8 (eight)**~~ years from the date of commencement of the O&M.<br>Transformers shall be warranted for the period of minimum 5(five) years from the date of commencement of the O&M. |
| 35. | VOLUME - II PART - 2 (Schedule - III A) | 5.11 | 64 of 82 | Battery capacity of Robotic system shall be sufficient for at least 3 cleaning cycles without need of any recharge. | Battery capacity of Robotic system shall be sufficient for at least ~~3~~ **1 (one)** cleaning cycles without need of any recharge. |
| 36. | VOLUME - II PART - 2 (Schedule - III A) | 6.25 - i | 15 of 82 | SS304 Fasteners (nuts, bolts, washers, and U-bolts) shall be of corrosion-resistant austenitic steel. SS 304 Fasteners shall have a good anti-seize finish with proper wax coating for better durability and firm resistance to all types of failure including seasonal removal and re-fixing of bolts. | SS304 Fasteners (nuts, bolts, washers, and U-bolts) shall be of corrosion-resistant austenitic steel. SS 304 Fasteners shall have a good anti-seize finish with proper wax coating for better durability and firm resistance to all types of failure ~~including seasonal removal and re-fixing of bolts~~. |
| 37. | VOLUME - II PART - 2 (Schedule - III D) | 24.4 | 38 of 47 | At Inverter yard PVC coated chain link fence of height minimum 1.8 m shall be provided. All fence post shall be placed at 2.5 m c/c. Details of fencing, post and other details shall be same as boundary fencing. The transformer yard fencing work shall conform to applicable regulation and codes. | At Inverter **duty transformer** yard PVC coated chain link fence of height minimum 1.8 m shall be provided. All fence post shall be placed at 2.5 m c/c. Details of fencing, post and other details shall be same as boundary fencing. The transformer yard fencing work shall conform to applicable regulation and codes. |
| 38. | VOLUME - II PART - 2 (Schedule - III C) | 3.4.1 - a | 88 of 100 | Establish power (Wp): Prior to conducting any tests, the Bidder must establish the total installed power of the plant. power measurement shall be carried out at string level for the entire plant using an industry accepted PV analyser. power obtained during test conditions shall be extrapolated to STC conditions to arrive at the plant installed capacity. Accepted deviation in extrapolated power and module nameplate power should always be in the range of ±5%. For negative deviations each module in the string shall be checked and any damaged module shall be replaced. | Establish power (Wp): Prior to conducting any tests, the Bidder must establish the total installed power of the plant. **Total DC installed capacity of the Plant shall be calculated and established as the sum of the nameplate rating(s) of the installed modules, which shall be checked to arrive at peak power at STC (Irradiance: 1000 Watt/m$^2$, AM: 1.5, cell temperature: 25°C).** ~~power measurement shall be carried out at string level for the entire plant using an industry accepted PV analyser. power obtained during test conditions shall be extrapolated to STC conditions to arrive at the plant installed capacity. Accepted deviation in extrapolated power and module nameplate power should always be in the range of ±5%. For negative deviations each module in the string shall be checked and any damaged module shall be replaced.~~ |

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| 39. | VOLUME - II PART - 3 (Schedule - IV to VI ) | PART A: OPERATIONAL ACCEPTANCE TEST (OAT) PROCEDURE - 3 | 27 of 34 | The test will consist of guaranteeing the correct operation of the plant over 30 days, by the way of the efficiency rate (performance ratio) based on the reading of the energy produced and delivered to the grid and the incident solar radiation (Average of all the pyranometers shall be considered for calculation of PR). During this period of 30 days, any 5 (five) instances preferably during 11:00 to 14:00 hrs. of 15 (fifteen) minutes shall be taken to calculate the instantaneous Performance Ratio of 15 minutes block as per the formula given below in Point No. 5. If the PR of these fives instances is above 75%, then Operational Acceptance Test (OAT) shall be considered successful. | The test will consist of guaranteeing the correct operation of the plant over 30 days, by the way of the efficiency rate (performance ratio) based on the reading of the energy produced and delivered to the grid and the incident solar radiation (Average of all the pyranometers shall be considered for calculation of PR). During this period of 30 days, any 5 (five) instances preferably during 11:00 to 14:00 hrs. of 15 (fifteen) minutes shall be taken to calculate the instantaneous Performance Ratio of 15 minutes block as per the formula given below in Point No. 5. **During the 15-minute measurement period(s), minimum availability of the plant shall be 99%.** If the PR of these fives instances is above 75%, then Operational Acceptance Test (OAT) shall be considered successful. |
| 40. | VOLUME - II PART - 2 (Schedule - III C) | 4 | 54 of 100 | Average LUX level to be maintained in various areas shall be as under:<br>Sl. No. Area — Average Lux<br>1. SCADA cum Office Room and Meeting Room, etc. — 300<br>2. 33kV Sub-pooling station (PEB) — 250<br>3. Inverter Station (Outdoor area) — 150<br>4. Battery Room — 200<br>5. Kitchen cum Pantry — 150<br>6. Spares Room — 100<br>7. Toilets — 50<br>8. Transformer Yard — 50<br>9. Periphery — 10 | Average LUX level to be maintained in various areas shall be as under:<br>Sl. No. Area — Average Lux<br>1. SCADA cum Office Room and Meeting Room, etc. — 300<br>2. 33kV Sub-pooling station (PEB) — 250<br>3. Inverter Station (Outdoor area) — 150<br>4. Battery Room — 200<br>5. Kitchen cum Pantry — 150<br>6. Spares Room — 100<br>7. Toilets — 50<br>8. Transformer Yard — 50<br>9. Periphery — 10-**(excluding Periphery Road Lighting)** |
| 41. | VOLUME 1 Section 6 (APPENDICES) | APPENDIX -31 | 57 OF 70 | i) OEM/Sub-Vendor has to be a 'Class-I local supplier' as defined under Public Procurement (Preference to Make in India) Order, 2017 issued by Department for promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, Government of India vide order dated 15/06/2017, its revision dated 16/09/2020 (PPP-MII Order) read in conjunction with 'Public Procurement (Preference to Make in India) to provide for Purchase Preference (linked with local content) in respect of Power Sector' order dated 16/11/2021 issued by Ministry of Power (MoP Order) and subsequent modifications/ amendments if any.<br>Presently, the local content requirement to categorize a supplier as 'Class-I local supplier' is minimum 60%.<br>ii) OEM/Sub-Vendor who are not 'Class-I local supplier' shall not be eligible to bid. | Total APPENDIX - 31 stands deleted. |
| 42. | Volume -1 Section - 3 | 4.2 (cc) | 3 of 8 | Form of Declaration of the compliance To Public Procurement To Provide For Purchase Preference (Linked With Local Content) as per Appendix-31 | Deleted. |
| 43. | VOLUME - II PART - 3 (Schedule - IV to VI ) | Approved Vendor List (1.1) | 3 of 34 | Inverters<br>1. ABB (String)<br>2. Sungrow<br>3. Ingeteam<br>4. SMA<br>5. TMEIC/ TOSHIBA | Inverters<br>1. ABB (String **& Central**)<br>2. Sungrow<br>3. Ingeteam<br>4. SMA<br>5. TMEIC/ TOSHIBA |

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| | | | | 6. Schneider<br>7. Huawei (String)<br>8. Sineng | 6. Schneider<br>7. Huawei (String)<br>8. Sineng |
| 44. | Vol. 1 & Section 4 | 3.9.2.(b) | 29 OF 105 | Module storage: The PV modules which are ordered by the Owner shall be received unloaded and stored on-site in closed facilities. | Module storage: The PV modules which are ordered by the Owner shall be received**,** unloaded, and stored on-site ~~in closed facilities~~ **on a flat, raised platform and as per OEM recommendations.** |
| 45. | Vol. 1 & Section 4 | 3.9.3 - a | 29 OF 105 | Closed storage facility for PV modules and inverters, SCADA equipment. The facility shall be totally enclosed with adequate storage capacity capable of providing safety from weather elements, well ventilated, energy conserving, fireproof, secure against theft and vandalism and situated and constructed to prevent flooding. Drainage shall be provided to intercept and divert storm or surface water. Stored equipment and materials shall be placed on pallets or shoring to permit air circulation under the stored item. Access doors shall be adequate to accommodate the movement and handling of materials and equipment and equipped with secure locks. | Closed storage facility for ~~**PV modules and**~~ indoor inverters **(if applicable)**, **All other equipment which require closed storage and SCADA equipment shall be provided**. The facility shall be totally enclosed with adequate storage capacity capable of providing safety from weather elements, well ventilated, energy conserving, fireproof, secure against theft and vandalism and situated and constructed to ~~prevent~~ **avoid** flooding. Drainage shall be provided to intercept and divert storm or surface water. Stored equipment and materials shall be placed on pallets or shoring to permit air circulation under the stored item. Access doors shall be adequate to accommodate the movement and handling of materials and equipment and equipped with secure locks. |
| 46. | Vol. 1 & Section 4 | 20.1 - b | 95 OF 105 | An act of war, (whether declared or undeclared) hostilities invasion, armed conflict or an act of foreign enemies, blockade, embargo, revolution, military action, or sabotage, quarantines. | An act of war, (whether declared or undeclared) hostilities invasion, armed conflict or an act of foreign enemies, blockade, embargo, revolution, military action, or sabotage, **epidemic and** quarantines. |
| 47. | VOLUME - II PART - 2 (Schedule - III A) | 3.7 | 70 of 82 | No shadow shall fall on PV Modules due to ESE LA structures. Appropriate care shall be taken while designing PV array layout. | No shadow shall fall on PV Modules **between 09:00 AM to 04:30 PM** due to ESE LA structures. Appropriate care shall be taken while designing PV array layout. |
| 48. | VOLUME - II PART - 3 (Schedule - IV to VI ) | TABLE 2 – (4) | 31 of 34 | Solar PV module characteristic*<br>2274 mm x1134 mm<br>33 kg (weight)<br>13.72 A (Isc)<br>28 modules in series | Solar PV module characteristic*<br>2274 mm x1134 mm<br>33 kg (weight)<br>13.72 A (Isc)<br>28 modules in series<br>**The pig tail cable length(s) shall be 300mm to 500mm. Bidder shall consider daisy chain stringing arrangement only.** |
| 49. | VOLUME - II PART - 2 (Schedule - III A) | 3.16 | 25 of 82 | SCB shall have provision for earthing connection with copper cable to dedicated earthing pit. | SCB shall have provision for earthing connection with copper cable to **DC Earth grid**. ~~dedicated earthing pit.~~ |
| 50. | VOLUME - II PART - 2 (Schedule - III D) | D27 | 40 of 47 | PIPING FOR MODULE CLEANING AND TRENCHES | Cable Trenches and Civil works for Module cleaning system |
| 51. | VOLUME - II PART - 2 (Schedule - III D) | 27.2 | 40 of 47 | Outdoor Cable Trenches: RCC cable trenches shall be constructed in the switchyard and pre-cast RCC removable covers with lifting arrangement, edge protected with suitable galvanized angle iron designed to withstand self-weight of top slab + concentrated load of 150 kg at centre of span on each panel. The trench shall be designed for surcharge of 10kN/Sq. m unless noted. | Outdoor Cable Trenches: RCC cable trenches **with** ~~shall be constructed in the switchyard and~~ pre-cast RCC removable covers **and** ~~with~~ lifting arrangement, edge protected with suitable galvanized angle iron designed to withstand self-weight of top slab + concentrated load of 150 kg at centre of span on each panel. The trench shall be designed for surcharge of 10kN/Sq. m unless noted. |

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| 52. | VOLUME - II PART - 2 (Schedule - III A7) | 6.1 (x) | 66 of 82 | Type test certificates valid for five years for all equipment/accessories being supplied under this contract. | Type test certificates valid for five years for all equipment/accessories being supplied under this contract **(If available).** |
| 53. | Volume -1 | ACRONYMES | 0 of 13 | NIT : Notice Inviting Tender<br>IFB : Invitation for Bids<br>ITB : Instructions to Bidders<br>BDS : Bid Data Sheet<br>GCC : General Conditions of Contract<br>SCC : Special Conditions of Contract<br>TS : Technical Specifications and Drawings<br>BOP : Balance of Plant<br>BOS : Balance of System<br>CIF : Cost, Insurance and Freight<br>CIP : Carriage and Insurance paid to (place)<br>CPM : Critical Path Method<br>EDI : Electronic Data Interchange<br>EXW : Ex-factory, ex works or ex warehouse<br>FCA : Free Carrier<br>FOB : Free on Board<br>FP : Forms & Procedures<br>ICC : International Chamber of Commerce<br>INCOTERMS : International Rules for International Trade Law.<br>NEETG : Net Electrical Energy Targeted Generation/Targeted Generation during O&M Period. | NIT : Notice Inviting Tender<br>IFB : Invitation for Bids<br>ITB : Instructions to Bidders<br>BDS : Bid Data Sheet<br>GCC : General Conditions of Contract<br>SCC : Special Conditions of Contract<br>TS : Technical Specifications and Drawings<br>BOP : Balance of Plant<br>BOS : Balance of System<br>CIF : Cost, Insurance and Freight<br>CIP : Carriage and Insurance paid to (place)<br>CPM : Critical Path Method<br>EDI : Electronic Data Interchange<br>EXW : Ex-factory, ex works or ex warehouse<br>FCA : Free Carrier<br>FOB : Free on Board<br>FP : Forms & Procedures<br>ICC : International Chamber of Commerce<br>INCOTERMS : International Rules for International Trade Law.<br>NEETG : Net Electrical Energy Targeted Generation/ Targeted Generation during O&M Period.<br>**STC : Standard Test Conditions (Irradiance: 1000 Watt/m$^2$, AM: 1.5, cell temperature: 25°C)** |

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| 54. | VOLUME - II PART - 2 (Schedule - III A) | 6.8 | 11 of 82 | Top of concrete/ height of collar for MMS foundation shall be minimum 400 mm above NGL. The minimum plan area of MMS foundation collar shall be 700 sq. cm. | Top of concrete **or height of Pile cap**/ height of collar for MMS foundation shall be minimum 400 mm above NGL **and anticorrosive paint shall be applied up to 600mm above NGL (400 mm Pile cap + 200 mm Column Post)**. The minimum plan area of MMS foundation collar shall be 700 sq. cm. |

55. ANNEXURE - 4 OVERALL PLANT LAYOUT(2X300MW) WITH PERIPHERAL FENCING

| Tentative Plot Co-ordinates | | | | Tentative Plot Co-ordinates | | | |
|---|---|---|---|---|---|---|---|
| Sr. No. | Plot | Easting | Northing | Sr. No. | Plot | Easting | Northing |
| 1 | Plot-1 | 559191.546 | 2662357.167 | 1 | Plot-1 | **559191.546** | **2661722.962** |
| 2 | | 562065.160 | 2662357.167 | 2 | | **559191.546** | **2662357.167** |
| 3 | | 562065.160 | 2661722.962 | 3 | | **562065.160** | **2662357.167** |
| 4 | | 559191.546 | 2661722.962 | 4 | | **562065.160** | **2661722.962** |
| 5 | | 559191.546 | 2662357.167 | 1 | Plot-2 | **562126.275** | **2661231.943** |
| 1 | Plot-2 | 559191.546 | 2662369.167 | 2 | | **562126.275** | **2661875.261** |
| 2 | | 562065.160 | 2662369.167 | 3 | | **564953.345** | **2661875.261** |
| 3 | | 562065.160 | 2661734.962 | 4 | | **564961.928** | **2661241.924** |
| 4 | | 559191.546 | 2661734.962 | 5 | | **564950.415** | **2661231.943** |
| 5 | | 559191.546 | 2662369.167 | 1 | Plot-3 | **559191.546** | **2662357.167** |
| 1 | Plot-3 | 559191.546 | 2662991.373 | 2 | | **559191.546** | **2662991.373** |
| 2 | | 562065.160 | 2662991.373 | 3 | | **562065.160** | **2662991.373** |
| 3 | | 562065.160 | 2662357.167 | 4 | | **562065.160** | **2662357.167** |
| 4 | | 559191.546 | 2662357.167 | 1 | Plot-4 | **562126.275** | **2661875.261** |
| 5 | | 559191.546 | 2662991.373 | 2 | | **562126.275** | **2662520.465** |
| 1 | Plot-4 | 559191.546 | 2663003.373 | 3 | | **564944.319** | **2662520.465** |
| 2 | | 562065.160 | 2663003.373 | 4 | | **564953.345** | **2661875.261** |
| 3 | | 562065.160 | 2662369.167 | 1 | Plot-5 | **559191.546** | **2662991.373** |
| 4 | | 559191.546 | 2662369.167 | 2 | | **559191.546** | **2663625.579** |
| 5 | | 559191.546 | 2663003.373 | 3 | | **562065.160** | **2663625.579** |
| 1 | Plot-5 | 559191.546 | 2663625.579 | 4 | | **562065.160** | **2662991.373** |
| 2 | | 562065.160 | 2663625.579 | 1 | Plot-6 | **562126.275** | **2662520.465** |
| 3 | | 562065.160 | 2662991.373 | 2 | | **562126.275** | **2663167.924** |
| 4 | | 559191.546 | 2662991.373 | 3 | | **564935.785** | **2663167.924** |
| 5 | | 559191.546 | 2663625.579 | 4 | | **564944.319** | **2662520.465** |
| 1 | Plot-6 | 559191.546 | 2663637.579 | | | | |
| 2 | | 562065.160 | 2663637.579 | | | | |
| 3 | | 562065.160 | 2663003.373 | | | | |
| 4 | | 559191.546 | 2663003.373 | | | | |
| 5 | | 559191.546 | 2663637.579 | | | | |