

CORRIGENDUM-I

In the light of pre-bid meeting held on **30.08.2019(Friday)** & suggestions received from the prospective bidders, JREDA has decided to make following amendments in the NIB No. **07/JREDA/CANALTOP/19-20** for DESIGN, ENGINEERING, PROCUREMENT & SUPPLY, CONSTRUCTION, COMMISSIONING AND COMPREHENSIVE OPERATION & MAINTENANCE FOR TEN (10) YEARS OF 2 MW GRID-CONNECTED Canal-TOP SOLAR PHOTOVOLTAIC POWER PLANT AT SIKIDIRI CANAL, VILLAGE: SIKIDIRI, DISTRICT: RANCHI, STATE: JHARKHAND:

Section/ Annexure	Original Criteria	Read as/ Amendments/Addendums
e procurement notice	Last date & time for receipt of online bids	11.09.2019 (Wednesday) upto 05:00 PM
	Submission of original copies of Bid fee & EMD (Offline)	11.09.2019 and 12.09.2019 up to 5.00 P.M.
	Technical Bid Opening Date	13.09.2019 (Friday) at 03:00 PM
e procurement notice	Last date & time for receipt of online bids	18.09.2019 (Wednesday) upto 05:00 PM
	Submission of original copies of Bid fee & EMD (Offline)	18.09.2019 and 19.09.2019 up to 5.00 P.M.
	Technical Bid Opening Date	20.09.2019 (Friday) at 03:00 PM
Section-3	<p>Page no. 38 of the NIB/ Instruction To Bidders:</p> <p>3.11.7 (iii)</p> <p>Bank Guarantee against PV Module Warranty: The Successful Bidder who is not able to provide insurance of PV modules as specified in the Tender. (a) shall submit a Bank Guarantee of Rs. 10 Lakh per each megawatt of PV modules (i.e. DC capacity), which shall be valid for a period of twenty five (25) years and 90 days. The minimum validity of the Bank guarantee shall be five (5) years and shall be renewed subsequently every five (5) years prior to thirty (30) days of its expiry. In case the PV module fails to provide power output as per its performance warranty, and if the Contractor fails to rectify, replace or repair the PV module, then the Owner shall carry out the necessary rectification, repair or replacement at its own discretion at the risk and cost of the Contractor. The cost of such rectification, repair or replacement shall be encashed from the Bank Guarantee against PV Module Warranty. The same shall be replenished by the Contractor within thirty (30) day, failing which the entire Bank Guarantee amount shall be encashed and all pending payment shall be withheld by the Owner till such amount is replenished by the Contractor. In another instance, if</p>	<p>Page no. 38 of the NIB/ Instruction To Bidders:</p> <p>3.11.7 (iii)</p> <p>Bank Guarantee against PV Module Warranty: The Successful Bidder who is not able to provide insurance of PV modules as specified in the Tender. (a) shall submit a Bank Guarantee of Rs. 10 Lakh per megawatt of PV modules (i.e. DC capacity), which shall be valid for a period of Fifteen (15) years and 90 days before releasing of PBG & O&M BG. The minimum validity of the Bank guarantee shall be five (5) years and shall be renewed subsequently every five (5) years prior to thirty (30) days of its expiry. In case the PV module fails to provide power output as per its performance warranty, and if the Contractor fails to rectify, replace or repair the PV module, then the Owner shall carry out the necessary rectification, repair or replacement at its own discretion at the risk and cost of the Contractor. The cost of such rectification, repair or replacement shall be encashed from the Bank Guarantee against PV Module Warranty. The same shall be replenished by the Contractor within thirty (30) day, failing which the entire Bank Guarantee amount shall be encashed and all pending payment shall be withheld by the Owner till such amount is replenished by the</p>

	<p>the Contractor becomes bankrupt or insolvent, then the Owner shall immediately encash the entire amount of the Bank Guarantee against PV Module Warranty.</p>	<p>Contractor. In another instance, if the Contractor becomes bankrupt or insolvent, then the JREDA shall immediately encash the entire amount of the Bank Guarantee against PV Module Warranty. In case the contractor fails to renew BG every 5 year, the contractor shall be blacklisted.</p>
<p>Section-5</p>	<p>Page no. 54 of the NIB/ Scope of Work:</p> <p>5.1.5 (iii)</p> <p>The following pre-fabricated/engineered /RCC structures are to be planned and constructed by the Contractor for each of the three project sites of the 2 MW Canal-top Solar PV project.</p> <p>(i)</p> <p>Solar PV Module Cleaning System: The Contractor shall plan for washing of all solar PV modules depending upon the dust level basis but maximum limit of this interval shall not exceed 15 days. For this, the Contractor shall construct and operate 0.5 Lakh litre capacity RCC/Sintex water storage tank. The Contractor also has to drill a bore and construct pipeline for carrying water to storage tank, provide electric panel and pump for bore and total water cleaning system. For module cleaning, the contractor shall provide a pipeline network with valves. However, contractor is also free to provide automatic robot based cleaning system.</p>	<p>Page no. 54 of the NIB/ Scope of Work:</p> <p>5.1.5 (iii)</p> <p>The following pre-fabricated/engineered /RCC structures are to be planned and constructed by the Contractor at the project site of the 2 MW Canal-top Solar PV project.</p> <p>(i)</p> <p>Solar PV Module Cleaning System: The Contractor shall plan for washing of all solar PV modules depending upon the dust level basis but maximum limit of this interval shall not exceed 15 days. For this, the Contractor shall construct and operate 10,000 litre capacity RCC/Sintex water storage tank. The Contractor also has to drill a bore and construct pipeline for carrying water to storage tank, provide electric panel and pump for bore and total water cleaning system. For module cleaning, the contractor shall provide a pipeline network with valves. However, contractor is also free to provide automatic robot based cleaning system.</p>
<p>Section-5</p>	<p>Page no. 63 of the NIB/ Scope of Work:</p> <p>5.2.1 (ii)</p> <p>The PV modules to be employed shall be of minimum 72 cell configuration with rated power of module ≥ 320 Wp as certified for solar PV module power performance test as prescribed by latest edition of IEC 61215 and as tested by IEC / MNRE recognized test laboratory. The maximum tolerance in the rated power of solar PV module shall have maximum tolerance of +3%. No negative tolerance in the rated capacity of solar PV module is allowed.</p>	<p>Page no. 63 of the NIB/ Scope of Work:</p> <p>5.2.1 (ii)</p> <p>The PV modules to be employed shall be of minimum 72 cell configuration with rated power of module ≥ 300 Wp as certified for solar PV module power performance test as prescribed by latest edition of IEC 61215 and as tested by IEC / MNRE recognized test laboratory. The maximum tolerance in the rated power of solar PV module shall have maximum tolerance of +3%. No negative tolerance in the rated capacity of solar PV module is allowed.</p>

Section-5	Page no. 64 of the NIB/ Scope of Work: 5.2.1 (xi) All materials used for manufacturing solar PV module shall have a proven history of reliability and stable operation in external applications. It shall perform satisfactorily in relative humidity up to 95% with temperature between -40°C to +85°C and shall withstand adverse climatic conditions, such as high speed wind, blow with dust, sand particles, saline climatic / soil conditions and for wind 170 km/hr on the surface of the panel.	Page no. 64 of the NIB/ Scope of Work: 5.2.1 (xi) All materials used for manufacturing solar PV module shall have a proven history of reliability and stable operation in external applications. It shall perform satisfactorily in relative humidity up to 85% with temperature between -40°C to +85°C and shall withstand adverse climatic conditions, such as high speed wind, blow with dust, sand particles, saline climatic / soil conditions and for wind 180 km/hr on the surface of the panel.																																										
Section-5	Page no. 67 of the NIB/ Scope of Work: 5.2.3 (iv) Capacity of single unit of inverter shall be min. 500 kW. This plant shall be divided into multiple identical Solar PV arrays "sections", wherein the capacity of each section varies depending upon supplier's product capacity.	Page no. 67 of the NIB/ Scope of Work: 5.2.3 (iv) Capacity of single unit of inverter shall be min. 50 kW . This plant shall be divided into multiple identical Solar PV arrays "sections", wherein the capacity of each section varies depending upon supplier's product capacity.																																										
Section-5	Page no. 71 of the NIB/ Scope of Work: <u>xxxvii. Standards and Compliances</u> <table border="1" data-bbox="254 911 1108 1404"> <thead> <tr> <th>Sr.</th> <th>Particulars</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>PCU Mounting</td> <td>As per the design</td> </tr> <tr> <td>2</td> <td>Nominal AC Output Power</td> <td>≥ 500 kW</td> </tr> <tr> <td>3</td> <td>Nominal AC Output Voltage</td> <td>415 Volts +15%/-10% AC / 270 V / As per design</td> </tr> <tr> <td>4</td> <td>Maximum Voltage</td> <td>Input 800 V DC Extendable up to 1000 V</td> </tr> <tr> <td>5</td> <td>Wave Form</td> <td>Pure Sine wave</td> </tr> <tr> <td>6</td> <td>DC voltage range,</td> <td>450 to 800 volts DC</td> </tr> </tbody> </table>	Sr.	Particulars	Details	1	PCU Mounting	As per the design	2	Nominal AC Output Power	≥ 500 kW	3	Nominal AC Output Voltage	415 Volts +15%/-10% AC / 270 V / As per design	4	Maximum Voltage	Input 800 V DC Extendable up to 1000 V	5	Wave Form	Pure Sine wave	6	DC voltage range,	450 to 800 volts DC	Page no. 71 of the NIB/ Scope of Work: <u>xxxvii. Standards and Compliances</u> <table border="1" data-bbox="1157 911 2011 1404"> <thead> <tr> <th>Sr.</th> <th>Particulars</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>PCU Mounting</td> <td>As per the design</td> </tr> <tr> <td>2</td> <td>Nominal AC Output Power</td> <td>≥ 50 kW</td> </tr> <tr> <td>3</td> <td>Nominal AC Output Voltage</td> <td>415 Volts +15%/-10% AC / 270 V / As per design</td> </tr> <tr> <td>4</td> <td>Maximum Voltage</td> <td>Input 800 V DC Extendable up to 1500 V</td> </tr> <tr> <td>5</td> <td>Wave Form</td> <td>Pure Sine wave</td> </tr> <tr> <td>6</td> <td>DC voltage range,</td> <td>450 to 800 volts DC</td> </tr> </tbody> </table>	Sr.	Particulars	Details	1	PCU Mounting	As per the design	2	Nominal AC Output Power	≥ 50 kW	3	Nominal AC Output Voltage	415 Volts +15%/-10% AC / 270 V / As per design	4	Maximum Voltage	Input 800 V DC Extendable up to 1500 V	5	Wave Form	Pure Sine wave	6	DC voltage range,	450 to 800 volts DC
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MPPT		MPPT	
7	Minimum Efficiency at 100% load The rated European efficiency (Euro Eta Efficiency) and peak efficiency	> 98% as IEC-61683(Efficiency) ≥ 98%, measured as per IEC 61683 standard for measuring efficiency. * Inverter No Load / Full Load Loss Calculation must be submitted by the Bidder.	> 98% as IEC-61683(Efficiency) The rated European efficiency (Euro Eta Efficiency) and peak efficiency ≥ 98%, measured as per IEC 61683 standard for measuring efficiency. * Inverter No Load / Full Load Loss Calculation must be submitted by the Bidder.
8	Output frequency	50 Hz +3% to - 5% Hz	50 Hz +3% to - 5% Hz
9	Power Factor	0.8 lag- 0.8 lead	0.8 lag- 0.8 lead
10	Max. THD at rated power	Less than 3 %	Less than 3 %
11	Ambient dry bulb temperature range	0 to 50° deg C	0 to 50° deg C
12	Humidity	15% to 95 % non- condensing	15% to 95 % non- condensing
13	Enclosure	IP 21 / IP 65 (Indoor/ Outdoor rated) IEC-60068-2 (environmental)	IP 21 / IP 65 (Indoor/ Outdoor rated) IEC-60068-2 (environmental)
14	Protection rating (as per IEC-60721-3-3)	Classification of chemically active substances: 3C2 Classification of chemically active substances: 3S2	Classification of chemically active substances: 3C2 Classification of chemically active substances: 3S2
15	Grid Specifications	IEC 61727, VDE 0126	IEC 61727, VDE 0126
16	Nominal Voltage & Frequency	415 Volts & 50 Hz	415 Volts & 50 Hz

	17 Voltage Tolerance + 10% and -10%	17 Voltage Tolerance + 10% and -10%												
Section-5	<p>Page no. 139 of the NIB/ Scope of Work:</p> <p>5.3.17</p> <p>(ii) The bottom level of MMS from the top of canal bank should be minimum 800mm to facilitate the safe working of the heavy machineries like JCB/Excavators.</p> <p>(iv) At every 500 mtr, gap of 25 mtr shall be kept between module mounting structures for equipment access in canal for operation and maintenance purpose.</p>	<p>Page no. 139 of the NIB/ Scope of Work:</p> <p>5.3.17</p> <p>(ii) The bottom level of MMS from the top of canal bank should be minimum 2000 mm to facilitate the safe working of the heavy machineries like JCB/Excavators.</p> <p>(iv) At every 500 mtr, suitable gap of shall be kept between module mounting structures for equipment access in canal for operation and maintenance purpose.</p>												
Section-5	<p>Page no. 141 of the NIB/ Scope of Work:</p> <p>5.3.17 (xx)</p> <p>The Contractor should design the structure height considering highest flood level at the site. The minimum clearance between the lower edge of the module and the ground shall be the higher of (i) above highest flood level at the site and (ii) minimum 500 mm.</p>	<p>Page no. 141 of the NIB/ Scope of Work:</p> <p>5.3.17 (xx)</p> <p>Deleted</p>												
Section-6	<p>Page no. 149 of the NIB / 6.9 Timeline/General Terms and Conditions</p> <table border="1" data-bbox="262 1193 1098 1373"> <thead> <tr> <th data-bbox="262 1193 367 1312">Sr.</th> <th data-bbox="367 1193 913 1312">Stage</th> <th data-bbox="913 1193 1098 1312">Reference from Zero Date ("D")</th> </tr> </thead> <tbody> <tr> <td data-bbox="262 1312 367 1373">1.</td> <td data-bbox="367 1312 913 1373">Issue of Letter of Intent</td> <td data-bbox="913 1312 1098 1373">D</td> </tr> </tbody> </table>	Sr.	Stage	Reference from Zero Date ("D")	1.	Issue of Letter of Intent	D	<p>Page no. 149 of the NIB / 6.9 Timeline/General Terms and Conditions</p> <table border="1" data-bbox="1171 1193 1995 1373"> <thead> <tr> <th data-bbox="1171 1193 1276 1312">Sr.</th> <th data-bbox="1276 1193 1816 1312">Stage</th> <th data-bbox="1816 1193 1995 1312">Reference from Zero Date ("D")</th> </tr> </thead> <tbody> <tr> <td data-bbox="1171 1312 1276 1373">1</td> <td data-bbox="1276 1312 1816 1373">Issue of Letter of Intent</td> <td data-bbox="1816 1312 1995 1373">D</td> </tr> </tbody> </table>	Sr.	Stage	Reference from Zero Date ("D")	1	Issue of Letter of Intent	D
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Section-6	<p>Page no. 151 of the NIB / General Terms and Conditions /6.11 Liquidated Damages for Delay and Underperformance</p> <p>6.11.3</p> <p>The maximum time period allowed (with penalty) delay for Commissioning of the Project shall be six (06) months from the date of issue of LoI. In case of delay for more than six (06) months, JREDA may terminate the Contract and get the Project complete by other suitable agency at the risk and cost of the Contractor.</p>	<p>Page no. 151 of the NIB / General Terms and Conditions /6.11 Liquidated Damages for Delay and Underperformance</p> <p>6.11.3</p> <p>The maximum time period allowed (with penalty) delay for Commissioning of the Project shall be five (05) months from the date of schedule date of commissioning. In case of delay for more than five (05) months, JREDA may terminate the Contract and get the Project complete by other suitable agency at the risk and cost of the Contractor.</p>																																																						

Section-6

Page no. 164 of the NIB / General Terms and Conditions /6.37 Terms of Payment

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

Sr.	Payment Milestones	Amount
1.	On Dispatch of PV Modules from manufacturer's works on production of invoices and satisfactory evidence of shipment which shall be original Goods Receipt or receipted GR / Rail Receipt, etc. including Material Dispatch Clearance Certificate (MDCC) issued by the JREDA.	45% of EPC Contract Price of supply
2.	Submission of invoice and receipt of material (other than PV module) at site	25% of EPC Contract Price of Supply
3.	Upon achieving Installation of the Plant Against PV Module Bank Guarantee	10% of EPC Contract Price of Supply
4.	Upon complete delivery of Balance of Systems including transformers, cables etc. at site	10% of EPC Contract Price of Supply

Page no. 164 of the NIB / General Terms and Conditions /6.37 Terms of Payment

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

Sr.	Payment Milestones	Amount
1	On Receipt of PV Modules from manufacturer's works to the canal top site on production of invoices and satisfactory evidence of shipment which shall be original Goods Receipt or receipted GR / Rail Receipt, etc. including Material Dispatch Clearance Certificate (MDCC) issued by the JREDA.	45% of EPC Contract Price of supply
2	Submission of invoice and receipt of material (other than PV module i.e. MMS Structure, Inverters ,DC Cable, Junction boxes etc.) at site	25% of EPC Contract Price of Supply
3	Upon achieving Installation of the Plant Against PV Module	10% of EPC Contract Price of Supply
4	Upon complete delivery of Balance of Systems including transformers, AC cables ,other AC side Components(i.e. RMU, Control	10% of EPC Contract Price of Supply

5.	Upon achieving Completion of the Facilities and completion Operational Acceptance Test (OAT), whichever is later	10% of EPC Contract Price of Supply
	Total	100%

Note:

1. All works shall be considered for payment on pro-rata basis of payment milestones per approved billing break up to be approved after award of contract.
2. The Contractor shall submit all the invoices related Project and invoices of the O&M to The Director, JREDA, Ranchi. All material shall be consigned to Director, JREDA, Ranchi, Jharkhand.
3. The payment for works shall be released on monthly basis.
4. For payment against Milestone 3, the joint recording of work done at site shall be attached with the invoices.
5. EPC Contract Price of Supply means the Supply part of the EPC Contract Price.

	panels, CT & PT etc at site	
5	Upon achieving Completion of the Facilities and completion Operational Acceptance Test (OAT), whichever is later	10% of EPC Contract Price of Supply
	Total	100%

Note:

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Section-6

Page no. 169 of the NIB / General Terms and Conditions/ Warranty/ Guarantee

6.39.10 Insurance or Bank Guarantee

A) Bank Guarantee:

Bank Guarantee against PV Modules Warranty: The Successful Bidder shall provide security in form of Bank Guarantee for an amount as specified in Clause No. 3.11.7 (iii) from the start date of O&M Period. However, the Bidder can submit BG valid for 5 years and further extend it for another 5 years. The BG shall be submitted prior to the return of SD under the subject package.

Page no. 169 of the NIB / General Terms and Conditions/ Warranty/ Guarantee

6.39.10 Insurance or Bank Guarantee

A) Bank Guarantee:

Bank Guarantee against PV Modules Warranty: The Successful Bidder shall provide security in form of Bank Guarantee for an amount as specified in Clause No. 3.11.7 (iii) **before releasing of PBG & O&M BG**. However, the Bidder can submit BG valid for 5 years and further extend it for another 5 years. The BG shall be submitted prior to the return of SD under the subject package.

Appendix 5

Appendix 5: Format of Disclosure of PV Technology Proposed

PV MODULE	
Type	: Select One: <input type="checkbox"/> Poly-crystalline Silicon <input type="checkbox"/> Mono-crystalline Silicon <input type="checkbox"/> Other variant of the above. Please specify
Manufacturer	:
Model Number	:
Module Capacity	: W
No. of Cells per Module	:
No. of Modules	:
PV INVERTER	

Appendix 5: Format of Disclosure of PV Technology Proposed

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Model Number	:
Module Capacity	: W
No. of Cells per Module	:
No. of Modules	:
PV INVERTER	

Type	:	Select One: <input type="checkbox"/> Central Inverter <input type="checkbox"/> String Inverter (NOT ALLOWED) <input type="checkbox"/> Micro Inverter (NOT ALLOWED) <input type="checkbox"/> Other, Please specify (NOT ALLOWED)
Configuration	:	Select One: <input type="checkbox"/> Independent Operation <input type="checkbox"/> Master-Slave Operation <input type="checkbox"/> Other, Please specify.....
Manufacturer	:	
Model Number	:	
Inverter Capacity	: kW
Number of Inverters	:	
MODULE TRACKING		
Type	:	Select One: <input type="checkbox"/> Fixed <input type="checkbox"/> 1-Axis Manual Seasonal <input type="checkbox"/> 1-Axis, Fixed Tilt, Automatic, Daily Tracking <input type="checkbox"/> 1-Axis, Azimuth, Automatic, Daily Tracking <input type="checkbox"/> 2-Axis, Automatic, Tracking <input type="checkbox"/> Other, Please specify

Note: Name of 4 (four) PV module Manufacturers and Inverter Manufacturers is to be provided by the Bidder and if the Bidder is awarded the Contract then out of these Manufacturers of PV modules and Inverters, the Contractor has to supply the material.

Type	:	Select One: <input type="checkbox"/> Central Inverter <input type="checkbox"/> String Inverter (ALLOWED) <input type="checkbox"/> Micro Inverter (NOT ALLOWED) <input type="checkbox"/> Other, Please specify (NOT ALLOWED)
Configuration	:	Select One: <input type="checkbox"/> Independent Operation <input type="checkbox"/> Master-Slave Operation <input type="checkbox"/> Other, Please specify.....
Manufacturer	:	
Model Number	:	
Inverter Capacity	: kW
Number of Inverters	:	
MODULE TRACKING		
Type	:	Select One: <input type="checkbox"/> Fixed <input type="checkbox"/> 1-Axis Manual Seasonal <input type="checkbox"/> 1-Axis, Fixed Tilt, Automatic, Daily Tracking <input type="checkbox"/> 1-Axis, Azimuth, Automatic, Daily Tracking <input type="checkbox"/> 2-Axis, Automatic, Tracking <input type="checkbox"/> Other, Please specify

Note: Name of 4 (four) PV module Manufacturers and Inverter Manufacturers is to be provided by the Bidder and if the Bidder is awarded the Contract then out of these Manufacturers of PV modules and Inverters, the Contractor has to supply the material.

Addendum

- **JREDA shall facilitate in getting permissions for cutting / trimming (if any) of trees at the canal top site.**
2. Changes made as above in NIB may be read accordingly for similar changes in related technical specification.
 3. The Corrigendum shall form the integral part of the tender documents.

Sd/-

**Director,
JREDA, Ranchi**