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Bhutan Power Corporation Limited

(Registered Office, Thimphu)

(An ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified Company)

Distribution Services

Distribution Construction Department

Thimphu: Bhutan



08/BPC/RED/DCD/2020/Vol-I/52

September 30, 2020

To,

All Bidders

Sub: Amendment to the tender document for Supply, Install, Testing and Commissioning of 180kW Grid-tied Ground Mounted Solar Power Project at Rubessa Under Wangduephodrang District, Bhutan

Dear Sir,

Please find enclosed herewith the **Addendum No. 2** to the subject cited tender document pursuant to the clarification sought by prospective bidders and BPC's assessment of the tender/project requirements.

The Addendum-2 consists of the following:

- a) The main text (2 Pages)
- b) Annexure covering the replies to the queries received from the prospective bidders (3 pages)

This addendum forms the part of the Bidding Document.

Kindly acknowledge the receipt.

Thanking you,

Yours sincerely,


(Drukchu Dorji)
General Manager

Copy to: Director, Distribution Services, BPC, Thimphu for kind information.

Addendum -2 to the Bidding Document for Supply, Install, Testing and Commissioning of 180kW Grid-tied Ground Mounted Solar Power Project at Rubessa under Wangduephodrang District, Bhutan (Identification N0. 08/BPC/RED/DCD/2020/Vol-1/46 dated 07/09/2020).

This addendum -2 to the above tender is being issued pursuant to the queries received from prospective bidders till September 29, 2020 and BPC's assessment of the tender/project requirements. The response to the queries sought are provided in the **Annexure** to this **Main Text** of the Addendum. Except for changes indicated herein, there are no changes to the Bidding Documents. The relevant clauses in the original Bidding Document stands amended to the extent indicated herein. BPC shall not entertain any further queries from the bidders after the issue of this Addendum-2.

Table of Amendment

S.NO	Reference Clause/Para of Bidding Document	Details of Amendment/Changes
1.	Section-2B (Technical Specification), Page No.3, Point No-1.	If the SPDs are provided in the String Combiner Boxes, the same shall not be required in the Module Junction Box.
2.	Section -2B, Technical Specification, String Combiner Boxes(SCBs)	Keeping the number of solar array same, different string configuration shall be allowed. 6IN-6 OUT and 4IN-4OUT SCBs can be used other than 4IN-1OUT and 6IN-1OUT as stipulated in the tender document.
3.	Section-2B(Technical Specification), Clause no.4(C) (Inverter), Page no.6	The dimension of the inverter stands deleted and shall depend on the inverter make selected by the bidder.
4.	Volume 2 Part 2 – Schedule of Prices(Page no.3 of 3) Schedule 1: Supply and Delivery of Electrical Equipment)	The length of the 4sq.mm DC cable shall be increased to 1800m from 1200m as stipulated. The 6sq.mm Double core DC cable shall stand deleted and replaced by 4sq.mm. The 70sq.mm and 240sq.mm 1.1kV Grade Four Core Copper PVC Insulated cable shall be replaced with 35sq.mm and 120sq.mm cables of the same type.
5.	Section -2B(Technical Specification), Clause no.11 (Transformer) Page no. 21	The enclosure protection degree of the transformer shall be IP54 or better with adequate cooling provision for the transformer. The IP65 or better protection degree stands replaced with IP54 or better. The design and engineering of the enclosure shall be in the scope of the bidder.

This addendum consists of the following:



- a) This Main Text (2 pages)
- b) Annexure covering to the replies to the queries from the prospective bidders (3 pages)

This addendum forms the part of the Bidding Document.



QUERIES RECEIVED FROM BIDDERS AND CLARIFICATIONS BY BPC

SN	Bidder's Query	Reference	BPC's Clarifications
1	We understand that we have to put password on each and every file uploaded under technical bid and financial bid. Should we mention the both password(Technical +financial) in mail body or how we will inform password to BPC tendering authorities? What is the maximum mail size accepted by BPC Server or Can we send all documents Via Google link. Pls. Clarify online bidding process in details for hassle free submission.	NIT Sr. No.-3	As per our addendum no.1 dated September 17,2020, we accept bids both online and in hard copy. In case of online, you are required to send the bid through email with password protected. All document must be signed, sealed and scanned in pdf format. As the bid is single stage single envelope system, you can submit the bid in one document with one password. BPC will ask the password from the bidders during bid opening time (14:30 Hrs) as reflected in ITB. Refer clause 12 and 20 of Instructions to Bidders for bid submission in hardcopy.
2	Retention amount@10% read as on services portion and not on full contract value, clarification required.	SCC Clause Sub Clause 33.7 (Pg. no. 105)	The Retention amount shall be 10 % of the Final Contract amount. Please refer sub clause 33.1 and 33.2 of SCC for more details.
3	As per ITB it was mentioned 5 months from handing over of site, but SCC overrides.	SCC Sub Clause 25.1 (Pg. no. 102)	SCC would prevail over ITB. Refer Cl. 25.1 of SCC "Time for completion shall be five (5) months from the date of contract signing".
4	It should be 0.5% per week of the unexecuted contract price and maximum upto 10% of the unexecuted contract price.	SCC Sub Clause 27.1 (Pg. no. 102)	There is no change to the tender stipulations. "The liquidated damages for the whole of the Works are 0.1% of the contract price per day. The maximum amount of liquidated damages for the whole of the Works is 10% of the Contract Price" as mentioned in sub clause 27.1 of SCC.
5	Proposed monthly basis instead of quarterly.	SCC Clause Sub Clause 33.2 (Pg. no. 104)	There is no change to the tender stipulations.
6	As per the Manufacturer standard, Module Junction of which is fixed/pasted behind the modules have inbuilt low by-pass diode. As per our understanding, MOV/SPD should be installed in String Combiner boxes, not in module junction box. Please clarify.	Section- 2B (Technical Specification), Page No-3, Point No-1	If SPDs are provided for every strings in String Combiner Boxes as proposed in the Technical Specifications, the purpose is fulfilled and the same shall not be required in the Module Junction Box.
7	As we are Indian bidder, India is promoting BIS / IS certified modules. Kindly allow BIS certified modules (Equivalent to IEC codes) also	Section- 2B (Technical Specification), Page No-3, Clause no 1.4	It is clearly mentioned in the bid stating "Equipment and material conforming to any other standards, which ensures equal or better quality may be accepted subject to approval of the Employer. In such case, copies of the English version of the standards adopted shall have to be submitted along with the bid."
8	b) Imbalancing in Voltage (i.e. 18 Nos in one string and 21 nos in other string) of string may cause damage of Inverters internal circuits and reduce life of Inverter. Voc of 21 modules at 5-10 degree may go beyond specified system voltage of panel & Inverter (Max operating voltage) i.e 1000V. Suggestions: consider 19 nos modules in one series total 18 strings. And 18 Nos modules in one string total 10 strings. Out of 18 strings, 9-9 strings can be placed in two inverters and 10 strings of 18 modules can be placed in 3rd inverter. In this case there is no imbalancing of DC voltage. Kindly clarify/ amend. c) Refer Inverter Manufacturer (Like Schneider/ABB/Delta/ Hitachi etc), there are 10-12 strings input available in inverter. As per your design, there are 2 different types of SCB's shall be used (i.e. 6 IN-1OUT & 4 IN-1 OUT). as per our understanding it should be 6IN-6OUT & 4 IN - 4OUT	String Combiner Boxes (SCBs)	Keeping the same solar array size, different string configuration shall be allowed. The 6IN-6OUT and 4IN-4OUT String Combiner Boxes (SCBs) can also be used other than 6IN-1OUT and 4IN-1OUT as stipulated in the tender document. The same shall be incorporated in the drawing with SLD diagram for verification and approval from Employers end.
9	Dimension of Inverter can be change depends on different manufacturer of Inverter. If BPC needs same dimension, kindly mention make of Inverter.	Section- 2B (Technical Specification), Clause no 4 (C) (Inverter) Page No- 6	The dimension of the inverter stands deleted and shall depend on the inverter make selected by the bidder.



10	Please clear is it 5 spike Copper clad aluminum type of ESE type LA. Details provided by you is not clear.	Section- 2B (Technical Specification), Clause no 6 (LA) Page No-7 (Lightning Arrestor)	Yes, the Lightning Arrestor shall be 5 spike copper clad aluminum, Early Streamer Emission (ESE) type.
11	As per MNRE guidelines Resistance should be less than 5 Ohm. Please provide Soil resistivity report it will help us to calculate earthing resistance values. Please define copper strip size.	Section- 2B (Technical Specification), Clause no 7 (Earthing) Page No-8	In Bhutan, the earth resistance for power generating plants are maintained less than 2 Ohms and the same shall be maintained for this plant. The design, engineering, supply, installation, testing and commissioning of the earthing system is entirely in the scope of the bidder.
12	Please mention procedure of Testing/Commissioning/ToC. Or We have to just show Performance Ratio i.e. 75% (Minimum) at the time of Commissioning/TOC. Please clarify.	Test & Commissioning (Taking Over Certificate)	The checklists for the Testing and Commissioning shall be provided during the execution of work. The Performance Ratio needs to be carried out and its shouldn't be less than 75%.
13	As described in Sr. No 14, 15, 16, 17, Cable should be Copper. Size selected for AC evacuation is too high. Suggestions: Sr No- 14: 4sq.mm, 1.1kV Grade, Single Core Copper DC Cable - Kindly Increase required length upto 1800 Mtrs. Sr. No-15: 6sq.mm, 1.1kV Grade, Double Core Copper DC cable : No need of this size cable, as all the strings has only 10 A max current. Sr. No-16: 70 sq.mm, 1.1kV Grade, Four Core, Copper PVC Insulated Cable: - 35 Sq.mm copper cable 4C will be sufficient to carry 60 kw output from inverter. (Inverter do not have sufficient gland to connect 70sq.mm cable) Sr No-17: 240sq.mm, 4Core, Copper/ PVC Insulated, Armored 1.1kV Grade Cable: 120 Sq.mm 4C will be sufficient to carry 180 kW power.	Volume 2 Part-2 – Schedule of Prices (Page no 3 of 3) (SCHEDULE 1: SUPPLY AND DELIVERY OF ELECTRICAL EQUIPMENTS)	All suggestions relating to the DC and AC cable are accepted. The length of the 4sq.mm DC cable shall be increased to 1800m from 1200m as stipulated. The 6sq.mm Double Core DC cable shall stand deleted and the same shall be replaced with 4sq.mm DC cable. The 70sq.mm and 240sq.mm 1.1kV Grade Four Core Copper PVC Insulated cable shall be replaced with 35sq.mm and 120sq.mm cables of same type respectively.
14	The horizontal bar of the proposed structure design has not shown the clamp for Solar Module. A preferred horizontal bar could be a slotted Aluminium section with slot to clamp Aluminium mid-clamp and end clamp.	Civil Drawings	The quantity for clamps are included in item no. 19 (Price Schedule 4). Steel clamps can either be welded or bolted to the horizontal members of mounting structure.
15	Can the support structure be redesigned with two supports instead of one? This will minimize the civil works and will be stable as well	Civil Drawings	No, there is no change to the drawings. The support structure has been properly designed as per BPC's requirement and it's safe/stable for execution.
16	The alignment of access road to project site is not clear.	Civil Drawings	There is an access road to the project site.
17	If we could get the layout of water pipeline and location of pump.	Civil Drawings	The location of pump and water pipeline shall be determined during the execution of the project.
18	Site preparation for solar panel grid foundation – benching of area or layout as per land profile (Discrepancy in drawing #3/13 and drawing #5/13)	Civil Drawings	There is no discrepancy in drawing #3/13 & #5/13. As clearly mentioned in drawing #3/13 of Civil Drawings, benching shall be done only if required during the implementation of works and drawing #5/13 is for showing the section of the mounting structure and not the slope.
19	Dry-type Transformer: If the enclosure is completely airtight to prevent dust ingress, the cooling of transformer is not possible. The preferred IP rating is IP43. IP43 rating enclosure with tin roof is a better choice. Normally, dry type transformers are installed indoor.	Section- 2B (Technical Specification), Clause no 11 (Transformer) Page No-21	The transformer will be installed outdoor. The degree of protection for the enclosure shall be minimum of IP54 or better with adequate cooling provision for the transformer. IP65 protection stands replaced with IP54.
20	Foundation of the PV panel mount structure - We found that the foundation size should be a few times larger if we calculate according to Japanese standard with the reference wind speed of upward direction as 30m/s (instant wind speed of 42m/s)	Civil Drawings	We have considered basic wind speed of 30m/s (design wind speed of 36.96m/s) for designing the mounting structure. (Reference : IS 875 (Part 3) - 1987) (Software : STAAD Pro). No changes to the foundation design.
21	Fence Specification - The design (dimension) of the fence is precisely defined in the technical drawing, but we wonder if you would allow minor modification while keeping the function of the fence.	Civil Drawings	Minor modification shall be allowed with respect to the site terrain and condition. However, this change shall not affect the technical specification provided in Price Schedule 4. (Prior approval from Employer will be required)



22	Size of power converter/inverter: Size of power converter/inverter is defined as $60\text{kW} \times 3 = 180\text{kW}$, which is almost the same with the capacity of solar PV panel. We usually design so that the panel capacity is larger (for example 10%) than the capacity of the power converter, since it will enhance the project economy.	Section- 2B (Technical Specification), Clause no 4 (C) (Inverter)	Yes, the inverters are usually designed with additional 10% capacity. The maximum capacity that the 60kW inverter can carry is 66kW(maximum power).
23	No. of MPPT depends upon inverter model. Only 2 MPPT asked, our proposed inverter has 6 MPPT with an option to connect 2 strings to each MPPT	Section- 2B (Technical Specification), Clause no 4 (C) (Inverter)	Our requirement is minimum of 2 MPPTs. More MPPT can be used depending upon the make of the inverter selected by the bidder and string configuration.
24	The location of the inverter are along the solar module array. As this is a small solar array, all inverters can be housed together in one location. The DC wire length shall be bit long but it can be still sized with less than 2% voltage drop	Electrical Drawings	There is no changes to the bid stipulations and drawings.

