

**Query 163- From Clarification No.3 Query 2- Clarification to Section III. Evaluation and Qualification Criteria, Table 1.0–Eligibility Criteria for Bidders, Point 4.2, Experience in the Development of Solar PV farm (Ground Mounted)**

To clarify whether the experience sought in this clause is for Solar PV plants of 4.0MWp each at two places with the same specified cell technology i.e. Mono- Crystalline PV cells of 340W-385W and 19% cell efficiency?

Reply 2- Please note that Bidder must demonstrate having experience in installation of at least two Solar PV farms each of minimum capacity of 4.0 MWp at one particular location in the last 7 years, starting 01 July 2012.

The technology, module rating and cell efficiency shall be necessarily same as required in Employer's technical requirements.

**The availability modules in this category is fairly recent and non existent 7 years back. Hence the requirement of "firms having done a single 4 MWp project with this new technology in last 7 years" is not reasonable. We request you to keep this clause as per the original tender.**

**Reply 163-**

Please refer to Query No.2 of Clarifications No.3 dated 25<sup>th</sup> September 2019.

Bidders are informed that Query 2 from Clarification No.3 has been amended and that the clause as per the original Bidding Document is maintained and is as follows.

***"Bidders must demonstrate having experience in installation of at least two Solar PV farms each of minimum capacity of 4.0 MWp at one particular location in the last 7 years, starting ~~01 July 2012~~ 01 November 2011. The technology, module rating and cell efficiency shall NOT necessarily be same as demonstration of past experience requirements for this bidding exercise."***

**Query 164- Bid security is being issued by HSBC Bank-Mauritius.**

**Is it ok if we send it directly to CEB Green Energy addressed to you (I will share you contact details to the Bank) so that you can send an acknowledgment of receipt of the same.**

**This can be submitted during bid submission for proof of bid security submission.  
Kindly request you to confirm if this will be accepted and coordinated accordingly.**

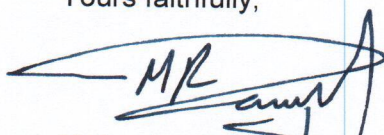
**Reply 164-**

Bidders are hereby informed that the Bid Security shall be submitted along with their Bid as per ITB 25 of the Bidding document.

Kindly acknowledge the receipt of this letter addressed to the Mauritius High Commission New Delhi at mhcnewdelhi@gmail.com at latest by the 9 October 2019.

If you have any query please do not hesitate to contact us,

Yours faithfully,



**Maheshwur Raj Dayal**  
CEng MEng(Hons) MIET RPEM  
General Manager

cc.  
EXIM Bank  
Mauritius High Commission in New Delhi  
SBMIDCL  
SICDC



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MAURITIUS



07 October 2019

**Ref: OAB-CGE-005/Addendum No.3**

Attention: All Bidders

Dear Sir/Madam,

**OAB-CGE-005 – Design, Supply, Installation, Testing and Commissioned of 8MWac Solar PV Farm at Tamarind Falls, Henrietta (Phase II), Mauritius.**

## **Addendum No.3**

We refer to the above mentioned bidding exercise and wish to inform Bidders that the following specification on Appendix A: Employer Requirement, Section 5.2 Electrical Characteristics Table 5.1 has been amended to read as follows:

**"Loss of service continuity category      LSC2B LSC2A"**

Kindly acknowledge the receipt of this letter addressed to the Mauritius High Commission New Delhi at [mhcnewdelhi@gmail.com](mailto:mhcnewdelhi@gmail.com) at latest by the 9<sup>th</sup> October 2019.

Yours faithfully,

**Maheshwur Raj Dayal**  
CEng MEng(Hons) MIET RPEM  
General Manager

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MAURITIUS



07 October 2019

**Ref: OAB-CGE-005/Clarification09**

Attention: All Bidders

Dear Sir/Madam,

**OAB-CGE-005 – Design, Supply, Installation, Testing and Commissioned of 8MWac Solar PV Farm at Tamarind Falls, Henrietta (Phase II), Mauritius.**

## **Clarification No.9**

Please find below CGE's reply to the queries from bidders in respect of the above mentioned bidding exercise.

**Query 165-** The bidder shall be PV cell Manufacturers or EPC Contractors and must demonstrate having experience in installation of at least two Solar PV farms each of minimum capacity of 4.0 MWp at one particular location in the last 7 years, starting 01 July 2012.

- To clarify whether the experience sought in this clause is for Solar PV plants of 4.0MWp each at two places with the same specified cell technology i.e. mono-crystalline PV cells of 340W-385W and 19% cell efficiency.

- Please note that bidder must demonstrate having experience in installation of at least two solar PV farms each of minimum capacity of 4.0 MWp at one particular location in the last 7 years, starting 01 July 2012. The technology, module rating and cell efficiency shall be necessarily same as required in this bidding exercise.

- Kindly clarify that the bidder should have experience of installation of specified cell technology i.e. mono-crystalline PV cells of 340W-385W and 19% cell efficiency.

## **Reply 165-**

Kindly refer to Clarification No.8 Reply 163

**Query 166-** The Technical Proposal shall include a Bid Security issued by a Commercial Bank operating in Mauritius as per format enclosed.

*N.A.D.*



-Will the bank guarantee accepted if it is issued by the Bank and same bank operational in Mauritius or issuing bank from Mauritius only. Same concern with PBG as well. Kindly elaborate.

- Bid security and performance security shall be issued by a bank operating in Mauritius.
- Kindly clarify whether it should be issued from bank operating in Mauritius or can be issued from any bank, but same bank should be operational in Mauritius.

**Reply 166-**

Bid Security and Performance Security shall be issued by a bank operating in Mauritius.

**Query 167- We offer to ....., in conformity with the bidding document, the following plant and installation services:**

- .....
- Kindly suggest what should be filled in the blanks provided.
  - This query is not relevant bidders to read the sentence and filled accordingly.
  - Kindly confirm what details to be mentioned in these blank sentences.

**Reply 167-**

It is suggested the following should fill in the first blank and second blank accordingly.

Setup a 8MWac PV Farm at Tamarind Falls, Henrietta (Phase-II).

Include services such as design, supply of equipment, installation, testing and commissioning, etc...

**Query 168- Bid Security (Bank Guarantee)**

1. Bank Name
2. Address
3. Account Number
4. IFSC code

- CEB (Green Energy) Co. Ltd. Bank details required.
- Please submit the bid security in the format provided in the bidding document.
- As per the Bank requirement, kindly provide CEB Green Energy Ltd. bank details for issuing BG from bank.

**Reply 168-**

As per form of Bid Security there is no requirement to provide the CEB (Green Energy) Co. Ltd bank detail. Kindly submit Bid Security as per form enclosed in the Bidding document.

**Query 169- Design, supply, install, test and commissioning of the Compact Solar Stations, complete with civil works. Each Compact Solar Station shall not exceed 2.5 MVA.**

- With Max. Rating of each inverter of 1.5 MVA @ 1.5 kV DC, there shall be very limited manufacturer for the same.

*M.R.D.*



Hence, we propose following inverter rating options to minimize the power losses as well as BOS cost of Plant.

Option-1: single central inverter rating 2.5 MVA and transformer rating 2.5 MVA and 500KVA with string inverter.

( $3 \times 2.5 + 0.5 = 8$  MWac).

Option-2: in Single CSS Two central inverter rating 2.5 MVA, one CSS with central inverter 2.5 MVA and 500KVA with string inverter

( $2 \times 2.5 \text{ MVA} + 1 \times 2.5 \text{ MVA} + 0.5 = 8$  MWac).

Option-3: Inverter type string and compact substation rating 500KVA to 2.5 MVA.

- The Original requirement of the bid document shall be maintained.

- Since Original required we have to maintained, so we would like to propose the solution as:

Option-1: With 1500V - 1 Central Inverter for each SCS of rating of 2MW with 2 modules of 1000KW to meet the modular criteria ( $4 \times 2 = 8$  MWac) - Since in 1500V System we can overload the Inverter up to 40% to meet the required criteria of 8 MWac at STC and in other condition.

Option-2: With 1000V system - We can go for 2 Central Inverter of 1000KW Each in each SCS ( $4 \times 2 \times 1000 \text{ KW}$ ) with 3 Winding Oil Type Transformer. However at 1000V system we can go for maximum overloading of around 28% and at STC  $25^{\circ}\text{C}$  the maximum output of the Inverter shall be 1200KW Only. So we can get maximum output at STC is 9.6MWac.

Option-3: Please provide us if there is any other solution so that we can quote the project accordingly.

#### Reply 169-

Given it is a design and built project, Bidders are required to make their own design and to setup a 8MWac PV farm in line with the requirements of the Bidding documents.

**Query 170- The supporting structures shall be able to withstand gusts of at least 280 km/hr.**

- PV Module Supporting structure can be design up to 280km/hr, but the module frame take max. Wind speed up to 225 km/hr as per standard PV module with frame available in industry. Kindly accept the same.

- The Original requirement of the bid document shall be maintained.

- As per IEC 61215, the modules must withstand 2400Pa weight on the first 5 Cycles (i.e. 130 KMPH) and in the last cycle the load is increased from 2400 Pa to 5400 Pa. As per IEC we are complying this criteria, However to meet tender criteria of wind speed please assist us to which other IEC code should we follow.

#### Reply 170-

The PV mounting structure (supporting Structure) shall be design to withstand gust of 280km/h.

*MED*



**Query 171- The PV module shall perform satisfactorily in humidity up to 100%**

- As per IEC 61215 module Humidity freeze test & Damp heat type test max. relative humidity is 85 % and same has been confirmed by module manufacturer. So request CEB to amend the same as per availability.

- Mauritius has a relative humidity above 95% as per section 1.2 of the Employer Requirement. In this respect the PV Module shall perform satisfactorily for the relative humidity in Mauritius.

- As per IEC 61215-1, it is clearly specified that relative humidity shall be of 85% and according to IEC code we are complying the same.

We request you to please accept the same or please let us know which other SPV Modules IEC Code we should follow to meet your requirement or please provide us the name of the manufacturer of SPV Panels which are meeting the required criteria of 100% Humidity. We have looked all around the corners but unable to find the same, please assist us.

**Reply 171-**

Bidders are required to comply with the original requirement of the bidding documents

**Query 172- The Contractor shall ensure that the new earth system shall provide safe touch and step voltages designed in accordance with the latest edition of IEEE 80.**

- According to IEEE-80 touch and step voltages calculation to be designed for AIS/GIS outdoor AC substations only but not for Solar power Plant Yard. In case indoor system to be provided, the floor rubber mat shall assure an effective insulation from earth potentials. So, we propose earthing in DC yard and AC Side CSS equipment protective earthing as per BS7430 and IS 3043 code. Kindly Accept the request.

- The Original requirement of the bid document shall be maintained.

- As mentioned in Tender document to design the earthing as per IEEE80 and explained earlier that designing of Solar Yard is not possible through IEEE80, and furthermore the maximum short circuit current of Solar yard shall be of around few KAmp (6 to 7 KA Amp), so we again suggesting please accept the request to Design the Earthing as per BS7430 and IS 3043 or in absence of the same please assist us from which other code we do the designing of Solar Yard, since in IEEE80 earthing of Solar Power Plant is not mentioned.

**Reply 172-**

The Original requirement of the bid document shall be maintained.

**Query 173- The Contractor shall design, supply, install and commission a lightning protection system, materials and components fully in compliance with IEC 62305**

**Adequacy of the lightning protection system coverage shall be demonstrated by the rolling sphere method using a proprietary software package.**

- We propose ESE type lightning protection NFC 17-102, to cover the entire Lightning protection of plant. Kindly accept the same.

- Rolling Sphere shall cover only a radius of 10 meters which means to cover entire SPV Plant from Lightning we need to install LA almost at each structure which is almost 700 numbers of LA. Further to avoid shadow of each 700nos. of LA we need to provide space higher than that



of required space for 8MWac Plant due to which plant area shall be increased by more than twice (Instead of 40 Acres it will required 80 Acres of land) as of now, so this will not feasible to work with. We suggest to use ESE type lightning protection as per NFC 17-102 code with Radius of 107 meter with Protection Class IV , and to cover entire plant we need only 8 to 10 LA.

#### Reply 173-

The Original requirement of the bid document shall be maintained.

**Query 174- The inverters in a given Solar Compact Substation shall be of modular type to ensure redundancy and continuity of supply. Each Solar Compact Substation shall be designed in such a way that the loss of 30% of the inverter modules in a given Solar Compact Substation shall not affect the guaranteed delivered powered at the POD i.e. 8MWac , without overloading any of the healthy inverter modules.**

- Kindly suggest the inverter Manufacturer with same Technical Specification.
- The Inverter in given Compact Substation shall be designed such that it continues to give 100% output even if 30% of the inverter modules are faulty.
- When 30% of Modules get faulty the output AC power shall be  $= 8 \times 0.7 = 5.6\text{MWac}$ , but as per Tender we have to provide 8MWac in this case also.

Option-1: With 1500V - We can select 1 Central Inverter for each SCS of rating of 2MW with 2 modules of 1000KW each to meet the modular criteria ( $4 \times 2 = 8\text{MWac}$ ) - Since in 1500V System we can overload the Inverter up to 40% to meet the required criteria of 8 MWac but even though after overloading of 40%, Inverter Output shall be only 2000KW which is maximum output so in this case we can't meet the required criteria to maintain the 8MWac at 30% faulty modules condition.

However spare Inverters shall be kept there for immediate replacement in faulty condition.

Option-2: With 1000V system - We can go for 2 Central Inverter of 1000KW Each in each SCS ( $4 \times 2 \times 1000\text{KW}$ ) with 3 Winding Transformer since hard paralleling is quite impossible. However at 1000V system we can go for maximum overloading of around 28% and at STC  $25^{\circ}\text{C}$  the maximum output of the Inverter shall be 1200KW only, so we can get maximum output at STC is around  $9.6\text{MWac}$ . However with 30% of failure of Inverter module, Out Put Power of Inverter  $= 1200 \times 0.7 = 8.4\text{MWac}$ . In this case also we cannot meet the required tender criteria. However some spare Inverter modules shall be kept there for immediate replacement in faulty condition.

Option-3: CEB (Green Energy) CO. Ltd. Allow us to Install 10MWac capacity to meet the requirement of 8MWac at failure of 30% of Inverter Modules. In case of 10MWac we will get 12MWac Output at STC and in case of failure of 30% of Modules still our output shall be  $= 12 \times 0.7 = 8.4\text{MWac}$  which shall meet the requirement. However configuration shall be -  $5 \times 2 \times 1000\text{KW}$  system.



Option-4: We request you to in absence of solution mentioned above Please provide us if there is any other solution so that we can quote the project accordingly.

We request you to please look in to this issues and assist us how to proceed further.

**Reply 174-**

Given it is a design and built project, Bidders are required to make their own design and to setup a 8MWac PV farm in line with the requirements of the Bidding documents.

**Query 175- The type-test evidence shall show that the circuit-breakers have been tested in their cubicles and that all current carrying parts of these cubicles (busbars, isolating connections, current and voltage transformers, cable termination chambers, etc.) have been included for all tests required by IEC 62271-200 Clause 6 and IEC 60694 Clause 6.**

- The availability of the same is rare. So, request you to kindly suggest the manufacturer.
- Please clarify the same.

**Reply 175-**

The Original requirement of the bid document shall be maintained.

**Query 176- In the case of solidly earthed neutral systems, the design shall be such that in the case of an earth fault current of 65 kA for 1 second the final temperature shall not exceed 150 °C.**

- It is difficult to design the MV cable to withstand earth fault shortcircuit current up to 65 kA for 1 second. As per tender the fault current of system is 25 kA. Hence, the earth fault current not exceeding 200 A in Armoured.
- Kindly Clarify the same.

**Reply 176-**

Bidders are hereby informed that the system shall be design to withstand a fault current of 25KA for 1 second in case of solidly earthed neutral system.

**Query 177- Conductors shall be constructed of either compacted, plain annealed copper strands conforming to IEC 60228 (Class 2).**

- Kindly confirm MV cable voltage grade 22kV solid earthed or 22kV unearthed cable.
- As per ICE 60502-2, Design of HT Cable. The voltage grade of the cable is  $U_0/U (U_m) -12/20 (24), 18/30 (36) KV$ , Please specify which cable shall we select.

**Reply 177-**

It is the responsibility of the Bidder to make its own design to comply with the requirements of the bidding documents.



**Query 178- The module junction boxes shall be in compliance with IEC 60670 and be of class Insulation of material able to withstand heat and fire up to 960°C.**

- Kindly clarify the temperature rating of junction box whether it shall be 90°C or 960°C.
- Please clarify the same.

**Reply 178-**

Junction box shall be designed to resist heat and fire upto 960°C

**Query 179- The transformer insulation system shall have temperature class F and transformer shall be designed for temperature rise class B.**

- Kindly clarify the design of transformer shall be temperature class F or temperature class B.
- Please clarify the same.

**Reply 179-**

Bidders are hereby informed that the transformer insulation system shall have temperature class F and transformer shall be designed for temperature rise class B.

**Query 180- Switchgear shall be type tested in accordance with the requirements of relevant IEC standards. A summary of type test shall be submitted with the tender.**

- Kindly clarify whether type test need to perform on new panel or old and valid type test report of same type of panel of same rating or of higher rating shall be accepted.
- Please clarify the same.

**Reply 180-**

Type test certificate for the same model of same rating or higher shall be accepted.

**Query 181- Power transfer capacity of 22KV Cable shall be 20MW.**

- We suggest to use the MV cable for 8 MWac which shall be sufficient to cater the requirement. Designing of cable for use of 20MWac at 22KV is not viable. Kindly clarify.

- The Current for 8MWac at 22KV = 209.95Amp - Cable Required- 1Run/ Phase shall be sufficient

The Current for 20MWac at 22 KV = 524.88Amp - 2Runs/Phase required

We suggest to design the cable for 8MWac Instead of 20MWac at 22KV which is sufficient to cater the requirement while designing of cable at 20MWac at 22KV is not viable. We request you to please clarify the same.

**Reply 181-**

The Original requirement of the Bid document shall be maintained.

**Query 182- The creepage distance across the weathershed of an external termination shall not less than 42mm/KV based on highest system voltage.**

- Kindly clarify for the creepage distance whether it should be 31mm/KV or 42m/KV. For pollution category class IV - Creepage of 31mm/KV is standard value.



- Please clarify the same.

**Reply 182-**

The Original requirement of the Bid document shall be maintained.

**Query 183- Loss of Service Continuity Category - LSC2B**

- As per IEC - 62271-200 - in LSC2B if one compartment is under service condition then other functional units and all cable compartments shall be in energized position. But in the current RMU design if cable compartment is energised then servicing of any other compartment section is quite impossible.

- We suggest you to please accept LSC2A switchgear instead of LSC2B, since in case of LSC2B cable section shall be energised and in energised cable section servicing of other sections/compartment is quite impossible.

**Reply 183-**

Bidder are hereby requested to refer to Addendum No.3

**Query 184- Query - 18 - As per ITB 4.3 & 4.5, As per the GOI guidelines, goods and services for minimum 75% value of the contract covered under the Line of Credit, must be sourced from India.**

- Does this means the components have to be manufactured in India or Just sourced from India Registered company but manufactured anywhere in the world, e.g. - China, Spain Germany, Italy etc.

- Reply-18: As per the GOI guidelines, goods and services for minimum 75% value of the contract covered under the Line of Credit, must be sourced from India. Applicants are advised to refer the GOI-LOC guidelines mentioned above for details available.

<https://www.eximbankindia.in/assets/pdf/loc/GOI-Guidelines-on-LOC.pdf>

Certificates of the Origin issued at the time of shipment will be required to confirm the Origin of the machine and the equipment.

- As per Reply 18 what we understand that materials shall be sourced from any company which is registered in India but it could be manufactured anywhere in the world.

- As per Reply 37 we understand that Inverters, PV Panels and Electrical Switchgear shall be Indian manufactured and rest other items shall be manufactured anywhere in the world but sourced from Indian registered company.

As per Reply 18 we request you to please clarify what is meant by sourced from India.

As per reply 37 if we go for Indian manufactured Inverters and PV Panels and Electrical switchgear we would not be able to meet your required design criteria so we request you to allow other companies outside India which have their registered branch in India. We request you to please clarify the issues so that we can quote the project rightfully.



**Reply 184-**

Bidders are hereby informed that the clarifications provided in reply 18 and reply 37 are maintained and are advised to refer the GOI-LOC guidelines for more details available on the following link:-

<https://www.eximbankindia.in/assets/pdf/loc/GOI-Guidelines-on-LOC.pdf>

**Query 185- Query - 37:- Manufacturer's Authorisation**

- Kindly specify the list of Equipment for arranging manufacturer's Authorisation.
- Reply-37: The Manufacturer's Authorisation Form shall be obtained for major equipment manufactured in India such as Inverters, PV Panels and Electrical Switchgear.
- As per Reply 18 what we understand that materials shall be sourced from any company which is registered in India but it could be manufactured anywhere in the world.
- As per Reply 37 we understand that Inverters, PV Panels and Electrical Switchgear shall be Indian manufactured and rest other items shall be manufactured anywhere in the world but sourced from Indian registered company.

As per Reply 18 we request you to please clarify what is meant by sourced from India.  
As per reply 37 if we go for Indian manufactured Inverters and PV Panels and Electrical switchgear we would not be able to meet your required design criteria so we request you to allow other companies outside India which have their registered branch in India. We request you to please clarify the issues so that we can quote the project rightfully.

**Reply 185-**

Kindly refer to Reply no. 184 from Clarification No.9

**Query 186- Allow for the provision of reinforced concrete retaining wall as and where required (near rivers and stream) to protect against flash floods. Concrete grade 30 to be used for all concrete works.**

- Request you to provide the details of concrete retaining walls - Length, Height etc.
- The Original requirement of the bid document shall be maintained.
- Request you to please clarify the retaining wall Length & Height as same is not mentioned in the tender documents.

**Reply 186-**

Bidders are hereby informed that following a preliminary survey an estimated 500m (length) by 1m (height) of retaining wall shall be included in the Bids submitted for plots B and C. The length and height given are approximate figures. The Bidder shall determine the exact extent of works involved by making his own survey. The works have been described in as much detail as possible, but the description is not limitative. Therefore the Bidder will not be able to take advantage of the brevity of the specification. He shall use his professional competence to compensate for any lack of precision or omissions. In no case shall he be able to claim additional payment based on omissions.