Annexure-IV

5MW Grid Interactive Solar PV Power Project, Monarchak
Pre Bid Queries of prospective bidder and Clarifications/ replies of NEEPCO

Sl. No.	Clause No.	NEEPCO Tender Description	Shan Solar's Query	NEEPCO's Reply
1	Vol-2, Part-II, Sec-II Clause 4.0	Solar PV plant shall consist of around 09 nos. 0f 500 KWp capacity solar arrays.	The Solar PV plant can be designed with 4 blocks of approx. 1275 kWp (DC) capacity solar to make the Inverter design more optimum and cost effective with modular Inverter blocks.	Refer minutes of pre-bid meeting dtd 20-12-12
2	Vol-2, Part-II, Sec-II Clause 4.02	Inverters are connected in parallel to the common utility bus. Depending on the magnitude of the Solar power generated, (which depends on solar radiation) sequentially inverters are switched ON automatically. This ensures better conversion efficiency (>96%) as the solar power generation increases.	Two Inverters (PCU) cannot be connected in parallel directly and hence Isolation transformer has to be used for each Inverter to connect in parallel for safety and protection. The usage of 2 Isolation transformer will reduce the efficiency of the Inverter from >98% to 96% or lesser at each Inverter. With 96% efficiency attaining of 8.322 MU generation is not possible. The Inverter selection and design will also not be optimum and cost effective.	Refer minutes of pre-bid meeting dtd 20-12-12
3	Vol-2, Part-II, Sec-II Clause 5.0 (i), 5.02)	There will be 9 grid connecting inverters of around 500 KW each . These will be indoor type.	We propose to use 4 Nos. of 1200 kW Inverter with modular blocks for optimum design and redundancy and high AC power to achieve the required generation as per the Bid. We can also use only one small Isolation transfer at all the 4 blocks only for the Aux. power and for lighting loads. This will be more efficient and cost effective system.	Refer minutes of pre-bid meeting dtd 20-12-12
4	Vol-2, Part-II, Sec-II Clause 6.05.6 Vol-2, Part-II, Sec-II Clause 6.05.7	Specifically, the PCU should be three phase power conditioning unit using static solid state components. Both AC & DC lines shall have suitably rated isolators to allow safe start up and shut down of the system. The PCU shall have provision for galvanic isolation. Each	We can avoid connecting 2 Inverters in parallel. Instead the single Central Inverter can be modular in nature for redundancy and protection.	Refer minutes of pre-bid meeting dtd 20-12-12

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		solid state electronic device shall have to be protected to ensure long life of the inverter as well as smooth functioning of the inverter.		
5	Vol-2, Part-II, Sec-II Clause 6.05.8 Clause 7.00 (XIV)	Enclosure IP 20 (indoor rated) Degree of protection – IP31	All the Indoor Inverter will be IP 20 and hence the changes has to be made in Clause 7.00(XIV)	Refer minutes of pre-bid meeting dtd 20-12-12
6	Vol-2, Part-II, Sec-II Clause 7.00	The solar PV inverter converts DC power into three phase AC power. The output of the inverter is synchronized at the LT level and stepped up to 11KV and 33KV with suitably rated HV transformers. The power is transmitted to 33KV line using 11/33KV transformer and at 33KV voltage level.	The Inverter output can be 330-360V AC and this can be directly stepped upto 33KV using 0.33/33KV transformer. This will avoid the transformer loss in 2 stage step up of voltage from 0.4KV to 11 KV and to 33KV. By using this design the expected generation can be made achievable by reducing the losses. This will also make the project costing very optimum by reducing the 11KV switchgears and additional 11/33KV transformer.	Refer minutes of pre-bid meeting dtd 20-12-12
7	Vol-2, Part-II, Sec-III Clause 1.00.00 (a)	The scope of this part of the specification shall include the following as detailed in this section as well as in the other relevant volumes/sections of this specification. (1) 5 Nos, 1250 KVA, */11kV, 3 phase, 50 Hz, ONAN, outdoor type transformers and accessories.(*: The LV shall be suitable for the Rated output of the inverter with a minimum of 390V) (2) 2Nos, 6300 KVA, 11kV/33kV , 3 phase, 50 Hz, ONAN Transformer	If the design of each Inverter block is changed to 1200KW AC and the voltage level is stepped up in one stage from 0.33/33KV, then the requirement of overall transformers will be 4 Nos of 0.33/33KV, 1500KVA. This will make project more cost effective and the design very optimum with better generation and less losses with one stage voltage transformation.	Refer minutes of pre-bid meeting dtd 20-12-12