

**5 MW GRID INTERACTIVE SOLAR PV POWER PROJECT AT MONARCHAK WEST TRIPURA, INDIA**  
**PRE BID QUERIES of prospective bidder and Clarification / Replies of NEEPCO**

	Volume	Page	Heading	Description	TPS Remarks	NEEPCO's comment
	Vol 1	18		construction power by client and water by contractor		
		30-36	PREPARATION AND SUBMISSION OF BIDS:	Bids should be submitted in 4 (four) sets consisting of the original and 3 (three) copies, each being separately sealed and clearly marked "Original" or "Copy" and duly superscribing, "Design, Engineering, Manufacture, Inspection and Testing at Manufacturer's works before despatch, Supply, Packing, Forwarding and Transportation to site, Insurance from the source of supply till commissioning and handing over, Loading and Unloading, Storage at Site, associated Civil and Structural Works, Erection, Testing and		

				Commissioning and Performance Test of 5 MW PV Solar Cells, Balance of Plant (Electrical & Mechanical), Switchgear, Electrical Controls, Control and Instrumentations, along with supply of Mandatory Spares, for 5 MW PV Solar Power Project at Monarchak, Tripura (West), India.”		
		43-46	EVALUATION AND COMPARISON OF BIDS:	(c) Bidders offering an output of 5 MW, but a total annual cumulative energy less than 8.322 MU ( Million unit) shall not be consider for evaluation and shall be rejected.		
		68	TIME – THE ESSENCE OF CONTRACT:	Supply Programme submitted by him at Datasheet 15A Volume - 6 Section II. Erection programme submitted by the Bidder at Datasheet 15B Volume- 6 Section II.		

				Civil : Datasheet 15C Volume - 6 Section II.		
		88	30.0 TRAININ G OF PERSONN EL:			
		91	33.8 The provision of latent defects shall be applicabl e up to the end of 6 (six) years from the date of successfu l completi on of trial operation of each unit.	Check List : Volume 6 Section IV.		
		94	PROJECT MANAGE MENT, PROGRES S REPORTS AND PHOTOG RAPHS:			
		106	TAKING OVER:	as defined in clause no. 14.0 , Volume-2, Part-I of General Tech Specifi		
	Volume 2					
		Page	Heading	Description		

		3	scope	5 MWp capacity with an annual generation of 8.322 MU (19% CUF) grid interactive solar PV plant		
		3	DETAILED SCOPE OF WORK	c) EXTENSION Of 33 kV LINE (POLE MOUNTED) FROM EXISTING SYSTEM TO 33 kV SWITCHYARD GANTRY The distance will be approx 1 (one) Km from the proposed 33 KV switchyard to the existing system. O&M 1 year	ROW of line and pole will be in the scope of Client	Within Project Area, ROW not required
		4		Formation of roads viz. peripheral, internal roads, bituminous pathway. Providing drainage and sewage system for the area.	OK	Noted
		4		Construction of 4 Nos. of Unit Control Rooms and 1 Nos. Main Control Room to house control, protection, SCADA system and panels. Construction	TPS propose Pre-engineered building with 80 mm Puf insulation sandwiched between metallic walls for control room	Refer Minutes of pre-Bid meeting dtd. 20-12-12
		5		6300 KVA, 11/33KV, 3 Phase, 50 Hz, ONAN Transformer. b) 1250 KVA, 415	TPS is proposing negative grounding for Inveter and Solid ground of neutrals is ok	Refer Minutes of pre-Bid meeting dtd. 20-12-12

				V/11000V, 3 Phase, 50 Hz with NGR. c) 250KVA, 11/.415 V, 3 Phase 50 HZ transformer	instead of NGR	
		5	4	4.0 GRID CONNECTING EQUIPMENT:		
			SCADA SYSTEM	Supply, erection, testing and commissioning of SCADA system for the remote monitoring and automatically operate and shall be controlled the plant.	TPS proposes to provide SCADA system for Monitoring and reporting for whole plant and controlling of AC equipments only as DC system and inverters control will be difficult and not advisable from remote.	Agreed
		5		battery banks with main and standby and battery chargers		Noted
		7	spares	5 yrs	ok	Noted
		7		XLPE cable and Rabbit conductor shall be tested as per IS.	ok	XLPE Cable and 'DOG' conductor shall be as per relevant IS
		8	energy	the net energy exported at the 33kV outgoing feeder shall be taken into account.		Refer Minutes of pre-Bid meeting dtd. 20-12-12
		17		2. SPV Power Plant i. Output : 5 MWp ii. No. of modules : 16660 iii. No. of modules in series : 20 iv. No. of parallel combination : 833	The no. of modules will depend on power rating of modules and TPS will provide Module rating within range of 240 Wp to 260 Wp .TPS proposes to use 24	Refer Minutes of pre-Bid meeting dtd. 20-12-12

					modules in series and parallel combination will be decided as per mutually agreed design.	
				3. Technical details of a SPV Module a) PV Module type : Poly crystalline b) Electrical Parameter i. Maximum Power Rating : around 300 Wp		Refer Minutes of pre-Bid meeting dtd. 20-12-12
				5. Inverter/ Power Conditioning Unit (PCU) i. Number of units :9 ii. Rated Capacity :500 kW	TPS proposes to use 8 Nos. of 630 Kw Ac rated Inverter.	Refer Minutes of pre-Bid meeting dtd. 20-12-12
		35	MMS	Minimum thickness of galvanization should be at least 90 microns	OK	Noted
		35	6.04 ARRAY FOUNDATION BASE	The base columns made with reinforced cement concrete as per design based on site related data keeping in mind local conditions	TPS proposes faster and reliable method of Grouting the Foundation rod with special chemical. The depth and grouting thickness will be decided as per actual pull out strength matching to the wind uplift and earthquake zone criteria for the proposed location	As per Specification

		35	6.05.2	6.05.2 Each SMU will have Suitable Reverse Blocking Diodes of maximum DC blocking voltage of 1000 V	complied	Noted
		36	6.05.8	Grid Voltage tolerance -20 % and + 15 %	TPS proposes Inverter suitable to take GRID voltage variation of tolerance $\pm 10$ %	Refer Minutes of pre-Bid meeting dtd. 20-12-12
		37	7	vi) Wide range of Grid voltage & frequency parameters for synchronization xvi) Remote control via telephone modem or mini web server	TPS proposes Inverter suitable to take GRID Frequency variation tolerance of $\pm 2$ %	As per Specification
		39	10.05	i) (XIII) Total Current Harmonic distortion in the AC side. (XIV) Total Voltage Harmonic distortion in the AC side	Less than 3 %	As per Specification
		40	11.03	Cables in the array yard shall be laid in High Density Polyethylene pipes at a depth of 500mm in the excavated trenches along the approved route. The cables shall be laid inside class-B, GI pipes of suitable size under	ok	Noted

				road crossings, drains, sewerage lines, entry		
		41		from SMUs, two runs 95 sq.mm copper or 240 sq.mm aluminium cable will be provide to connect to Inverter.	TPS proposes 2 runs of 120 Sqmm Copper XLPE cable for SMU	Agreed
		44		II MOUNTING STRUCTURE : Foundation PCC (1:2:4)		
		49		11) Vector group Dyn11 12) Neutral Earthing LV neutral shall be solidly earthed	TPS proposes 3 wdg YnY0Y0, Galvanically isolated windings for transformer.	Refer Minutes of pre-Bid meeting dtd. 20-12-12
		55		Transformers with lower losses shall be preferred	Losses will be considered as per IS2026	As per Specification
		56		vi) With combined voltage variation of +12.5% and frequency variation of -5%, the flux density shall not exceed 1.9 Tesla.	combined voltage variation of +10% and frequency variation of -3%	As per Specification
		70		II) Type test, Special Test and Additional tests	For Type tests certificate will be provided and routine test will be performed for each transformer . For any special test can be done on mutual agreement	As per Specification
		77		i) DC supply 48 Volts + 10% / - 15% ii) AC supply 415	ok	



				Volts +/- 10% Three phase 4 wire system		
				VCB	(ABB/L&T/Siemens / any other standard make)	As per Specification
		135		HT CABLES 11 KV cables will be unearthed grade suitable for use in medium resistance earthed system, with stranded & compacted aluminium conductors, extruded semi-conducting compound screen, extruded XLPE insulated, extruded semi-conducting compound with a layer of nonmagnetic metallic tape for insulation screen, extruded PVC (Type ST-2) FRLS inner sheath, Aluminum / galvanized steel round wire armored extruded PVC (Type ST-2) FRLS outer sheathed, single / multicore conforming to IS 7098 (Part II) IEC-60502 for constructional details and tests.	ok	Refer Minutes of pre-Bid meeting dtd. 20-12-12

		156	SCADA SYSTEM	<p>The Solar plant will be automatically operated and shall be controlled by microprocessor based control system SCADA. Remote system access software, secured transmission of data and control from a central PC facility provided</p>	<p>TPS donot propose of controlling through SCADA for DC system and inverters. Some equipments in AC side controll can be done from SCADA .</p>	Agreed
		156	Energy meter	<p>PCU and lines will be provided with microprocessor based ABT compliant trivector meters to record energy. The accuracy class of energy meters will be of suitable class.. The lines will be provided with main and check meters. The meter will be capable of metering active &amp; reactive energies both import and export.</p>	Complied. For PCU and lines	Noted
		160		<p>D.C. SUPPLY-- BATTERIES (i) Momentary load for 1 minute (ii) Emergency load for 2 hours (iii) Continuous load for 10 hours</p>	<p>We are considering UPS with Battery back up- Full load for 4 hours, no load for 10hours</p>	As per Specification

		Vol 2 part III - Civil Works				
		8		<p>The main approach road which runs all around the periphery of the plant shall be 5 m wide with the main inner roads of 4 m width. All peripheral roads shall be initially of water bound macadam type and shall be provided with bitumen topping. Finished top (crest) of roads shall be 150mm above the surrounding grade level</p> <p>Beside above areas, RCC paving shall be given in other areas, where easy and quick movement is necessary. The detail of RCC paving will be 200 mm thick M20 grade concrete having 8 mm dia. HYSD bars with spacing 300 mm centre to centre both ways in top and bottom layers. The paving</p>	ok	Refer Minutes of pre-Bid meeting dtd. 20-12-12

				slab will be laid on 75 thick lean concrete (1:3:6) underlain by 230 mm thick rubble soling. A 50 mm thick floor finish with metallic hardener will be laid over RCC paving.		
		8	WATER & ARRANGEMENT FOR MODULES WASHING	and laying network of GI/PVC pipe in each row of SPV panels	ok	
		9	WATER SEWAGE & DRAINAGE SYSTEM	The drains shall normally be in RCC construction and trapezoidal in shape with concrete pipe culverts provided at road crossings.	TPS proposes open drains with block work/ stone pitching	
		10	UNIT CONTROL ROOM & MAIN CONTROL ROOM	There will be 4 number of Unit Control Rooms and 1 number of Main Control Room.. The Main Control Room shall be adequate enough to accommodate one Unit Control Room, Switchyard Control Room, main control panel, etc. All Control Room	TPS proposes Pre-engineered Building having sanwiched panelled wall with 80 mm Thick insulation in between panels warranted for 25 years.	Refer Minutes of pre-Bid meeting dtd. 20-12-12

				buildings shall be constructed with relevant standards. The buildings shall be reinforced concrete framed structure on concrete foundations with infill masonry walls and RCC roof slabs.		
				11kv/33kv switchyard with two trafo bay and 2 line bay	TPS proposes direct 33kv step up to minimise losses. Power evacuation through 33kv DP Structure in place of Switchyard.	Refer Minutes of pre-Bid meeting dtd. 20-12-12
		11	Others	Soil Bearing capacity	TPS request Soil investing report	As per Specification
				Power Termination point clarity	TPS request SLD of termination point of 33 KV power evacuation line	Refer Minutes of pre-Bid meeting dtd. 20-12-12
				Fencing	TPS proposes 2 meter height chain link fence to cover the 5 MWp installation area	Refer Minutes of pre-Bid meeting dtd. 20-12-12

