

**Annexure-D+2**

**Rehabilitation of Govt Girls High School Pakha Ghulam, UC Pakha Ghulam, Tehsil Chamkani, District Peshawar.**

**Water Supply System Rehabilitation including New Bore Well digging and Installation of solar PV system**

S.No	Description	Unit	Qty	Brand Offered	Rate	Total Amount
<b>1</b>	<b>Solar Panel Installation</b>					
	Supply and Erection of Solar PV Module Solar Panel Mono-crystalline A-Grade (per Watt) (As per KP Govt Approved Specifications)	Watt	8000.00			
<b>2</b>	<b>Inverter (8 kW Of-grid Three phase) without battery back up</b>					
	Type: Off-Grid Solar Inverter Operation Mode: Solar PV Direct Operation without Battery Backup, Configuration: Single Unit or Parallel Compatible, Phase: Single Phase or Three Phase (as required), Technology: Pure Sine Wave Mounting: Wall Mounted, Outdoor Rating: IP65 Minimum. Minimum 3 years repair/replacement warrenty and 5 year service warrenty Electrical Specifications: Rated Output Power: Minimum 8 kW, Recommended PV Capacity: 10–12 kWp, Maximum PV Input Power: ≥ 12 kW, AC Output Voltage 230V AC (Single Phase) / 400V AC (Three Phase) Frequency: 50/60 Hz, Output Waveform: Pure Sine Wave, Inverter Efficiency: ≥ 96% min, Peak Efficiency ≥ 98%, Total Harmonic Distortion (THD) < 3% MPPT Quantity: Minimum 2 Independent MPPTs, MPPT Voltage Range: 200–850 V DC, Maximum DC Input :Voltage 1000 V DC, Maximum Input Current: ≥ 25 A per MPPT Capacity: Minimum 2x rated load Protection Features The inverter shall include but not limited to:, Over-voltage protection, Under-voltage protection, Over-current protection, Short circuit protection, Reverse polarity protection, Over-temperature protection Earth fault protection, Surge protection, Anti-islanding protection, Arc Fault Circuit Interruption (AFCI), DC isolation switch Communication & Monito+ring Communication Ports: RS485 / CAN / Ethernet / Wi-Fi, Monitoring Mobile App & Web Portal Data Logging Minimum 1 Year, Monitoring Parameters Voltage, Current, Power, Frequency, Energy, Faults, Remote Monitoring Mandatory Environmental Conditions Operating Temperature -25°C to +60°C, Humidity 0–95% Non-Condensing, Cooling Method Smart Forced Air Cooling, Noise Level < 55 dB, Protection Class IP65 Minimum Certifications & Standards IEC 62109-1 / IEC 62109-2, IEC 61727, IEC 61683, IEC 62116, CE Certification, RoHS Compliance, EMC Compliance, UL 1741 (if applicable)	No	1			
3	Supply and Erection 1x16 sq.mm Copper cable Green and Blue	Rft	200.00			
4	Supply and Erection 1x10 sq.mm flexible copper cable Green and Blue	Rft	200.00			
5	Supply and Erection 1x6 sq.mm single core (XPPE/XPLO insulated/PCV sheathed) flexible copper cable Green and Blue.	Rft	200.00			
6	Supply and Erection 1x4 sq.mm double insulated flexible copper cable Green and Blue	Rft	50.00			
7	Supply and Erection PVC flexible pipe : 1" i/d	Rft	150.00			
8	Supply and Erection PVC flexible pipe : 2" i/d	Rft	200.00			

9	Supply and Erection MC4 connector (TUV Approved)	Pair	4.00			
10	Supply and Erection MC4 Branch connector	Pair	3.00			
11	Supply and Installation of 20 to 63A DC Circuit 2breaker 2P - MCB Type	No	1.00			
12	Supply and Installation of AC surge protection device 2P, 385V, In = 20kA & I <sub>max</sub> = 40kA	No	1.00			
13	Supply and installation of distribution board (for DC & AC system)	No	1.00			
14	Supply and Installation of 70 to 80A DC Circuit breaker 2P - MCB Type	No	1.00			
15	Supply and Erection of hot dipped galvanized steel of minimum thickness of 14 SWG Channel or 16 SWG rectangle Pipe size 3"x1.5" for solar plates (Purlin) support and Support beam/ Cross beam/ Runner holding purlin size 3"x 1.5" x 16SWG at 6-7 ft, Column / Post 4"x4"x 16SWG at 6-7 ft . Structure shall include all necessary clamps, nuts, bolts, washers, base plates and anchoring arrangement. Complete in all respects as per direction of the Engineer incharge.	No	14.00			
16	Supply and Erection of Copper Conductor of 10 AWG	Meter	6.00			
17	Supply and erection of 10 ft long, 16mm (5/8") diameter, Copper Bonded Earth Rod complete with Bentonite/ Chemical Backfill compound, 25x3mm Copper Tape, Brass Clamps, and installation by digging, driving rod to required depth, backfilling, and connecting to main earthing busbar. complete in all respects.	Each	1.00			
18	Supply & Erection of Change over switch 100 Amp	Each	2.00			
19	Supply and Installation of The AC energy-efficient ceiling fan shall have a rated power between 45 watts and a sweep size of 54" to 56", operating at 220–230 VAC (±10V). It must deliver a service value of = 4.5 m <sup>3</sup> /min/W, with an insulation class of at least 155 (F-Class) and noise levels within acceptable comfort limits. A ±10% variation in power consumption is permissible as per PSQCA/NEECA standards. The motor core shall be made of electrical steel sheet, and the winding wire shall consist of 99.9% super enameled copper (CA wire) or 99.9% pure copper wire. The fan must be NEECA certified and clearly marked with the manufacturer's model number, rated voltage, and wattage in accordance with NEECA guidelines. complete in all respect.	Each	23.00			
20	Supply and fixing of steel Inauguration Plaque, size 24" x 24" with standard text and Logo's as per approved design and instruction of Engineer Incharge.	No	1.00			
<b>Grand Total (Inclusive of All Govt. Applicable Taxes, labour, material supply, loading/unloading, Transportation and Installation, if any)</b>						