

LIST OF COMMUNITY/ PUBLIC FACILITIES TO BE SOLARISED - BALOCHISTAN - LOT#2

Sr. No.	Facility Name	Province	District	Coordinates	Sector
1	Sardar Bahadur Khan Women University (SBK) Basic Science and Research Based Departments	Balochistan	Quetta	30.1908° N, 66.9604° E	Education
2	Institute of Biochemistry, University of Balochistan, Quetta	Balochistan	Quetta	30.16444, 66.98840	Education
3	Balochistan University of Information Technology, Engineering and Management Sciences (Sports Complex)	Balochistan	Quetta	30.26969, 66.94380	Education
4	Balochistan University of Information Technology, Engineering and Management Sciences (Central Library)	Balochistan	Quetta	30.26969, 66.94380	Education
5	University of Balochistan (History Department only)	Balochistan	Quetta	30.1640° N, 66.9908° E	Education
6	Government Girls High Mission school	Balochistan	Quetta	30.199856, 67.019309	Education
7	Government Girls High School Ladies Sandeman	Balochistan	Quetta	30.186398, 67.009729	Education
8	Government Boys Model Technical High school	Balochistan	Quetta	30.190855, 67.019473	Education
9	Government Boys High School Sandeman	Balochistan	Quetta	30.194862, 67.011964	Education
10	Government Boys High School Huramzai Pishin	Balochistan	Pishin	30.737335, 66.830132	Education
11	Government Middle School Killi Sayemzai Pishin	Balochistan	Pishin	30.742371, 66.922864	Education
12	Government Boys High School Pishin	Balochistan	Pishin	30.574491, 66.993208	Education
13	Government Girls High School PISHIN	Balochistan	Pishin	30.578231, 66.998344	Education

SOLARIZATION Of Sardar Bahadur Khan Women University (SBK) Basic Science Department Quetta

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 90 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 75 kVA		
3	Lithium Ion Battery: 40 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	90,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Boxes made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 05 Incoming Circuit Breakers and at least 40 Outgoing Circuit Breakers of 10 A & 20 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	2
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	270
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	50
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	3
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single-Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	450
	Providing and Fixing of Single-Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	900
	Providing and Fixing of Single-Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	360
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	270
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper, nails/Screw etc.: Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	40
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	2

SOLARIZATION Of Sardar Bahadur Khan Women University (SBK) Research Base Department Quetta

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 72 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 60 kVA		
3	Lithium Ion Battery: 25 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	72,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Boxes made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 05 Incoming Circuit Breakers and at least 40 Outgoing Circuit Breakers of 10 A & 20 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	2
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	360
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	30
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	3
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single-Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	540
	Providing and Fixing of Single-Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,080
	Providing and Fixing of Single-Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	270
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	360
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects. Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper, nails/Screw etc. : Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	8
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	72
15	Application for Net-Metering and Installation of Bi-Directional Energy Meter		
	Preparation & Submission of Complete Net-Metering Case as per the guidelines of DISCO, AEDB, NEPRA including Supply and Installation of Bi-directional, Extension of Load, Approved Energy Meter with all requisite utility fee on behalf of the Employer and fulfillment of all prescribed formalities, complete in all respect.	Job	1

SOLARIZATION OF INSTITUTE OF BIOCHEMISTRY, UNIVERSITY OF BALOCHISTAN, QUETTA			
BILL OF QUANTITIES (BOQ)			
S.#	Description	Unit	Qty
1	PV System Capacity: 68.3 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 56 kVA		
3	Lithium Ion Battery: 32 kWh		
4	PV Mounting Structure		
a	Hot dipped (80 microns Average) Galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	per Watt	68350
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to DC combiner box to Inverter	R.M	300
b	Single Core DC Flexible Copper Cables 50mm sq from DC combiner box to Inverter	R.M	60
c	Single Core DC Flexible Copper Cables 50mm sq for battery connections	R.M	10
d	DC Breakers 200A-4P between DC combiner box and Inverter	Each	1
e	150 Amp/48V 4-P DC Breaker b/w inverter & battery bank	Each	1
f	AC Cables 50 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	30
g	80 Amp 4-P AC Breaker btw WAPDA & Inverter, Inverter & Load	Each	2
h	10 Amp AC Breaker 1-P b/w inverter & Load	Each	21
i	Changeover Switches 100 Amp	No	1
j	Lightening Arrestor having 1" dia & 1m long rod with 5 spikes ball & base, Earthing Plate 1x1ft, Earthing Rod 5 Feet Long 16 mm Dia, and Earthing Cable conductor, all made of Copper material, and Earthing powder.	Each	2
k	Inauguration/Sign Board	No	1
l	Civil foundation work, stainless steel nuts & bolts for PV structure, HDPE Pipe, Flexible PVC Pipe, PVC Duct Patti etc. for cable ducting, Switches 10/15 Amp : On/Off Switches, Distribution Board, Copper Thimbles, Sleeves, Butt Joint Connectors, Ring Thimbles, PVC Shrouds, Heat Shrink Tubes for all termination, connection and jointing as per International Practices. Inverter, Batteries and Protective Devices must be Labelled Properly along with detail user manual, Cabinet for Complete System (Inverter, Breakers, changeover etc.), DC Combiner box, Surge Protection Device at DC & AC input, complete in all respect.	Job	1
6	Application for Net-Metering and Installation of Bi-Directional Energy Meter		
a	Preparation & Submission of Complete Net-Metering Case as per the guidelines of DISCO, AEDB, NEPRA including Supply and Installation of Bi-directional, Extension of Load, Approved Energy Meter with all requisite utility fee on behalf of the Employer and fulfillment of all prescribed formalities, complete in all respect.	Job	1

SOLARIZATION Of The Balochistan University of Information Technology, Engineering and Management Sciences (Sports Complex) Quetta BILL OF QUANTITIES (BOQ)			
Sr. No	Description	Unit	Qty
1	PV System Capacity: 36 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 30 kVA		
3	Lithium Ion Battery: 43 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	36,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Combiner Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 25 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section etc., AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	180
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	10
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single-Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	450
	Providing and Fixing of Single-Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	900
	Providing and Fixing of Single-Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	360
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	180
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper, nails/Screw etc.: Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	3
	Additional electrical works	No	1
	Installation and transportation of equipment to site	Per kW	36
15	Application for Net-Metering and Installation of Bi-Directional Energy Meter		
	Preparation & Submission of Complete Net-Metering Case as per the guidelines of DISCO, AEDB, NEPRA including Supply and Installation of Bi-directional, Extension of Load, Approved Energy Meter with all requisite utility fee on behalf of the Employer and fulfillment of all prescribed formalities, complete in all respect.	Job	1

SOLARIZATION Of The Balochistan University of Information Technology, Engineering and Management Sciences (Central Library) Quetta			
BILL OF QUANTITIES (BOQ)			
Sr. No	Description	Unit	Qty
1	PV System Capacity: 72 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 60 kVA		
3	Lithium Ion Battery: 77 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	72,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 50 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	360
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	20
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	810
	Providing and Fixing of Single Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,620
	Providing and Fixing of Single Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	90
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	360
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bare type earth having similar specification can also be installed as per the permission/direction of the Employer/Engineer	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper , nails/Screw etc. : Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	5
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	72
15	Application for Net-Metering and Installation of Bi-Directional Energy Meter		
	Preparation & Submission of Complete Net-Metering Case as per the guidelines of DISCO, AEDB, NEPRA including Supply and Installation of Bi-directional, Extension of Load, Approved Energy Meter with all requisite utility fee on behalf of the Employer and fulfillment of all prescribed formalities, complete in all respect.	Job	1

SOLARIZATION Of University of Balochistan (History & Arts Department) Quetta

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 12 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 10 kVA		
3	Lithium Ion Battery: 10 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	12,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 34 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	130
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	10
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	540
	Providing and Fixing of Single Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,080
	Providing and Fixing of Single Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	90
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	130
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper , nails/Screw etc. : Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	2
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	12

SOLARIZATION Of Government Girls High Mission School Quetta

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 36 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 30 kVA		
3	Lithium Ion Battery: 43 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	36,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 36 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	130
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	10
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with Jugs	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	540
	Providing and Fixing of Single Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,080
	Providing and Fixing of Single Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	90
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	130
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper , nails/Screw etc. : Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	4
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	36

SOLARIZATION Of Government Girls High School Ladies Sandeman Quetta

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 36 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 30 kVA		
3	Lithium Ion Battery: 42 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	36,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 55 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	360
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	20
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single-Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	900
	Providing and Fixing of Single-Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,800
	Providing and Fixing of Single-Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	180
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	360
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper, nails/Screw etc: Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	3
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	36
15	Application for Net-Metering and Installation of Bi-Directional Energy Meter		
	Preparation & Submission of Complete Net-Metering Case as per the guidelines of DISCO, AEDB, NEPRA including Supply and Installation of Bi-directional, Extension of Load, Approved Energy Meter with all requisite utility fee on behalf of the Employer and fulfillment of all prescribed formalities, complete in all respect.	Job	1

SOLARIZATION Of Government Boys Technical High School Quetta

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 30 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 25 kVA		
3	Lithium Ion Battery: 33 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	30,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 45 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	270
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	20
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single-Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	720
	Providing and Fixing of Single-Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,440
	Providing and Fixing of Single-Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	90
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	270
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper, nails/Screw etc: Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	4
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	30

SOLARIZATION Of Government Boys High school Sandeman Quetta

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 72 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 60 kVA		
3	Lithium Ion Battery: 63 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	72,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 50 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	360
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	20
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single-Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	810
	Providing and Fixing of Single-Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,620
	Providing and Fixing of Single-Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	180
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	360
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) complied with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper, nails/Screw etc: Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	5
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	72
15	Application for Net-Metering and Installation of Bi-Directional Energy Meter		
	Preparation & Submission of Complete Net-Metering Case as per the guidelines of DISCO, AEDB, NEPRA including Supply and Installation of Bi-directional, Extension of Load, Approved Energy Meter with all requisite utility fee on behalf of the Employer and fulfillment of all prescribed formalities, complete in all respect.	Job	1

SOLARIZATION Of Government Boys High School Huramzai Pishin

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 12 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 10 kVA		
3	Lithium Ion Battery: 18 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	12,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 34 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPPE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	130
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPPE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	10
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	540
	Providing and Fixing of Single Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,080
	Providing and Fixing of Single Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	90
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	130
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper , nails/Screw etc. : Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	3
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	12

SOLARIZATION Of Government Model school Killi Sayemzai Pishin

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 12 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 10 kVA		
3	Lithium Ion Battery: 10 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	12,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 15 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	90
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	10
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single-Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	270
	Providing and Fixing of Single-Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	540
	Providing and Fixing of Single-Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	90
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	90
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect.	Job	1
	6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects		
	Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer		
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper, nails/Screw etc.: Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	3
	Additional Electrical works	No	50
	Installation and transportation of equipment to site	Per kW	12

SOLARIZATION Of Government Boys High School Pishin

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 24 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 20 kVA		
3	Lithium Ion Battery: 30 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	24,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 50 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	270
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	20
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	810
	Providing and Fixing of Single Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,620
	Providing and Fixing of Single Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	90
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	270
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer.	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper , nails/Screw etc. : Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	5
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	24

SOLARIZATION Of Government Girls High School PISHIN

BILL OF QUANTITIES (BOQ)

Sr. No	Description	Unit	Qty
1	PV System Capacity: 24 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 20 kVA		
3	Lithium Ion Battery: 30 kWh		
4	Elevated PV MOUNTING STRUCTURE with Foundation, Pedestals and Allied Civil Works		
	Supply and Erection of hot dipped (80 microns Average) galvanized steel of minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG / 4.06 mm Angle	Per Watt	24,000
5	AC DISTRIBUTION BOX		
	Supply, Installation and Commissioning of AC Distribution Box made of 16 SWG, Galvanized Iron with Digital Multimeter (Voltmeter and Ammeter), Selectable Switches showing Current and Voltage of Phase and, if required, Separate Bus Bars for Phase, Neutral and Earth Connection and having 5 Incoming Circuit Breakers and at least 60 Outgoing Circuit Breakers of 10 A rating for connection of critical and non-critical load specified in electrical load section, AC Voltage Protection device, complete in all aspects. Note: All outgoing circuits must be properly tagged as per site installations	No.	1
6	DC Flexible Copper Cable from PV Module to DC Combiner and Inverter		
	Supply and Erection 1x6 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	180
7	DC Flexible Copper Cable from Inverter to Batteries		
	Supply and Erection 1x25 sq.mm single core (XPLE/XPLO insulated/PVC sheathed) flexible copper cable	Meter	20
8	DC Disconnect Switch Box		
	Supply, Installation and Commissioning of Hot Dipped Galvanized IP-65 DC Combiner Box including at least three (03) 32 A, one (01) 63 A, & one (01) 125 A DC Circuit Breakers, DC Surge Protective Devices, Neutral Busbar and Grounding Busbar with lugs, shrouds, thimbles etc..	No	1
9	AC Wiring for Internal Circuits		
	Providing and Fixing of Single Phase Wiring of Size 2.5 mm sq in PVC Duct Patti (where required) from main power access point to Critical and Normal Loads on Each Floor as per the directions/instructions of The Employer/Engineer	Meter	900
	Providing and Fixing of Single Phase Wiring of Size 4 mm sq in PVC Duct Patti (where required) from inverter to main power access points on each floor as per the directions/instructions of The Employer/Engineer	Meter	1,800
	Providing and Fixing of Single Phase Wiring of Size 6 mm sq in PVC Duct Patti (where required) from main power access points to air conditioning units on each floor as per the directions/instructions of The Employer/Engineer	Meter	90
10	HDPE Pipe for DC Cable Laying		
	Providing, laying, cutting, jointing, testing and disinfecting High, Density Polyethylene Pipe (HDPE) Din-8074/Din- 8075/ISO-4427 in trenches, complete in all respects except excavation. (75 mm diameter) PN-8	Meter	180
11	Power System Earth		
	Providing & fixing of Plate type Earthing compressed with excavated hole 6"up 63 feet, GI pipe 2"(50mm)with Tees , Sockets , Endcap of 60 (RFT) Copper Plate of 1/2"x 2" x 48", 2x 70mmsq S/Core copper bare conductor 125 (Ft) Earth Connection Point of 1200 x 50 x 50mm (L x W x T) Inspection Pit of 300 x 300 x 450 mm (L x W x D) compiled with all respect. 6 mm sq (Bare Copper Conductor) 99% Pure Copper for earthing of PV Modules including grounding nuts (imported) made of pure copper (tin coated) complete in all respects Note: Bore Type Earth having similar specification can also be installed as per the permission/direction of The Employer/Engineer	Job	1
12	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - COPPER TAPE		
	Supply and Erection copper tape, including copper staple & copper , nails/Screw etc. : Size 1.5"x1/8" copper Tape 1.5"x1/8" Staple & Nails	Meter	20
13	SUPPLY, INSTALLATION OF LIGHTNING PROTECTION SYSTEM - LIGHTENING ROD		
	Supply and Erection 1" diameter & 1m long lightening conductor copper rod with 5 spikes ball & base etc.	Meter	0.4
14	Miscellaneous		
	Protection cages for inverters and batteries placed under staircases made of mild steel 16 SWG powder coated paint and should ensure proper mechanism for ventilation and proper locking arrangement suitable for housing backup Battery.	No	5
	Additional Electrical Works	No	1
	Installation and transportation of equipment to site	Per kW	24