

LIST OF COMMUNITY/ PUBLIC FACILITIES TO BE SOLARISED - PUNJAB - LOT#9

Sr. No.	Facility Name	Province	District	Coordinates	Sector
1	Govt. Girls High School Khayaban e Sir Syed sector I-16 Rawalpindi	Punjab	Rawalpindi	33.639982, 73.047823	Education
2	Govt. Boys Primary School Standard Muslim Sector-II Rawalpindi	Punjab	Rawalpindi	33.637891, 73.044489	Education
3	Govt. Boys Elementary School Bangash colony Pirwadhai Rawalpindi	Punjab	Rawalpindi	33.631853, 73.042916	Education
4	Govt. Girls Primary School Raika Maira Rawalpindi	Punjab	Rawalpindi	33.22237, 72.90774	Education
5	Govt. Girls Elementary School Dhoke Badhal Rawalpindi	Punjab	Rawalpindi	33.349253, 73.014148	Education
6	Govt. Girls High School No. 1 Tehsil Gujjar Khan District Rawalpindi	Punjab	Rawalpindi	33.259111, 73.306091	Education
7	Govt. Girls Primary School Dolatta Tehsil Gujjar Khan District Rawalpindi.	Punjab	Rawalpindi	30.19219, 73.143618	Education
8	Govt. Boys High School Qadria Gujjar khan district Rawalpindi.	Punjab	Rawalpindi	33.253709, 73.303542	Education
9	Govt. Boys High School Taxila Rawalpindi.	Punjab	Rawalpindi	33.737983, 72.80106	Education
10	Govt. Boys High School Bhabrawah Cantt. Rawalpindi	Punjab	Rawalpindi	33.796589, 72.72727	Education
11	Govt. Girls Primary School Jugian taxila Rawalpindi	Punjab	Rawalpindi	33.73449, 72.786965	Education
12	Govt. Girls Primary School Wajjan taxila Rawalpindi	Punjab	Rawalpindi	33.726451, 72.812566	Education
13	Govt. Girls Primary School Ahata Tarbala taxila Rawalpindi.	Punjab	Rawalpindi	33.805403, 72.817054	Education
14	Government Technical Institute - Center of Excellence, G-7 Islamabad	Islamabad	Islamabad	33.673315, 73.049099	Livelihood

SOLARIZATION OF GGHS KHAYABAN E SIR SYED RAWALPINDI			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 44.3 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 40 kVA		
3	Lithium Ion Battery: 39 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	44330
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to DC Combiner box	R.M	150
b	Single Core DC Flexible Copper Cables 35mm sq from DC combiner box to Inverter	R.M	50
c	Single Core DC Flexible Copper Cables 50mm sq for battery connections	R.M	10
d	DC Breakers 100A-4P between DC combiner box and Inverter	Each	1
e	200 Amp/48V 4-P DC Breaker b/w inverter & battery bank	Each	1
f	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	30
g	100 Amp 4-P AC Breaker btw WAPDA & Inverter, Inverter & Load	Each	2
h	10 Amp AC Breaker 1-P b/w inverter & Load	Each	16
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
k	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, 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 GBPS STANDARD MUSLIM RAWALPINNDI			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 5.6 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 5 kVA		
3	Lithium Ion Battery: 7 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	5590
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	50
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 16A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	32 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	6
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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.), Surge Protection Device at DC & AC input, complete in all respect.	Job	1

SOLARIZATION OF GBES BANGASH COLONY RAWALPINDI			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 14 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 12 kVA		
3	Lithium Ion Battery: 12 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	13840
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	80
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 32A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	63 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	10
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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, 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 GGPS RAIKA MAIRA RAWALPINDI			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 4.8 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 5 kVA		
3	Lithium Ion Battery: 6 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	4830
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	50
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 16A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	32 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	6
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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.), Surge Protection Device at DC & AC input, complete in all respect.	Job	1

SOLARIZATION OF GGES DHOKE BADHAL RAWALPINDI			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 7.8 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 5 kVA		
3	Lithium Ion Battery: 11 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	7850
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	50
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 16A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	32 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	6
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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.), Surge Protection Device at DC & AC input, complete in all respect.	Job	1

SOLARIZATION OF GGHS NO 1 GUJJAR KHAN			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 32.3 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 30 kVA		
3	Lithium Ion Battery: 23 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	32390
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to DC Combiner box	R.M	150
b	Single Core DC Flexible Copper Cables 25mm sq from DC combiner box to Inverter	R.M	50
c	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	10
d	DC Breakers 63A-4P between DC combiner box and Inverter	Each	1
e	100 Amp/48V 4-P DC Breaker b/w inverter & battery bank	Each	1
f	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	30
g	63 Amp 4-P AC Breaker btw WAPDA & Inverter, Inverter & Load	Each	2
h	10 Amp AC Breaker 1-P b/w inverter & Load	Each	6
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	1
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, 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 GGPS DOLTALA GUJJAR KHAN			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 13.6 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 10 kVA		
3	Lithium Ion Battery: 13 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	13610
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	80
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 32A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	63 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	10
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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, 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 GBHS QADRIA GUJJAR KHAN			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 42.3 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 35 kVA		
3	Lithium Ion Battery: 24 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	42290
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to DC Combiner box	R.M	150
b	Single Core DC Flexible Copper Cables 35mm sq from DC combiner box to Inverter	R.M	50
c	Single Core DC Flexible Copper Cables 50mm sq for battery connections	R.M	10
d	DC Breakers 100A-4P between DC combiner box and Inverter	Each	1
e	200 Amp/48V 4-P DC Breaker b/w inverter & battery bank	Each	1
f	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	30
g	100 Amp 4-P AC Breaker btw WAPDA & Inverter, Inverter & Load	Each	2
h	10 Amp AC Breaker 1-P b/w inverter & Load	Each	16
i	Changeover Switches 200 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, 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 GBHS TAXILA			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 37 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 30 kVA		
3	Lithium Ion Battery: 29 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	37060
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to DC Combiner box	R.M	150
b	Single Core DC Flexible Copper Cables 35mm sq from DC combiner box to Inverter	R.M	50
c	Single Core DC Flexible Copper Cables 50mm sq for battery connections	R.M	10
d	DC Breakers 100A-4P between DC combiner box and Inverter	Each	1
e	200 Amp/48V 4-P DC Breaker b/w inverter & battery bank	Each	1
f	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	30
g	100 Amp 4-P AC Breaker btw WAPDA & Inverter, Inverter & Load	Each	2
h	10 Amp AC Breaker 1-P b/w inverter & Load	Each	16
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, 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 GBHS BHABRA WAH CANTT			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 13 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 10 kVA		
3	Lithium Ion Battery: 15 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	12990
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	80
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 32A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	63 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	10
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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, 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 GGPS JUGIAN TAXILA			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 4 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 5 kVA		
3	Lithium Ion Battery: 4 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	3910
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	50
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 16A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	32 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	6
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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.), Surge Protection Device at DC & AC input, complete in all respect.	Job	1

SOLARIZATION OF GGPS WAJJAN RAWALPINDI			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 4.7 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 5 kVA		
3	Lithium Ion Battery: 5 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	4700
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	50
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 16A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	32 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	6
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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.), Surge Protection Device at DC & AC input,complete in all respect.	Job	1

SOLARIZATION OF GGPS AHATA TARBALA TAXILA			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 5 kW	TO BE PROVIDED BY UNHCR	
2	OFF-GRID HYBRID INVERTERS: 5 kVA		
3	Lithium Ion Battery: 5 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	4970
5	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to Inverter	R.M	50
b	Single Core DC Flexible Copper Cables 35mm sq for battery connections	R.M	6
c	DC Breakers 16A-2P between PV Modules and Inverter	Each	1
d	50 Amp/48V 2-P DC Breaker b/w inverter & battery bank	Each	1
e	AC Cables 25 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	100
f	32 Amp AC Breaker 2-P in Main Distribution Box	Each	1
g	10 Amp AC Breaker 1-P b/w inverter & Load	Each	6
h	Changeover Switches 30 Amp	No	1
i	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	1
j	Inauguration/Sign Board	No	1
k	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.), Surge Protection Device at DC & AC input,complete in all respect.	Job	1

SOLARIZATION OF GOVT TECHINCAL INSTITUTE ISLAMABAD			
BILL OF QUANTITIES (BOQ)			
S. #	Description	Unit	Qty
1	PV System Capacity: 95 kW	TO BE PROVIDED BY UNHCR	
2	ON-GRID HYBRID INVERTERS: 80 kVA		
3	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	95240
4	Misc Items		
a	Single Core DC Flexible Copper Cables 6mm sq from PV module to DC Combiner box	R.M	300
b	Single Core DC Flexible Copper Cables 35mm sq from DC combiner box to Inverter	R.M	60
d	DC Breakers 150A-4P between DC combiner box and Inverter	Each	1
f	AC Cables 50 mm sq (4 core) from Main Distribution Box (MDB) to inverter then back to MDB	R.M	50
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	30
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
5	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, 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