

REQUEST FOR PROPOSAL

For The Project

230 KW SOLARIZATION OF GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT (FATIMA JINNAH CAMPUS) ON ESCO MODEL



GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT

March, 2024

Disclaimer Notice

This Request for Proposal (**RFP**) is provided for use in preparing and submitting their Technical and Financial Bids in connection with the competitive bidding process for sale of electricity generated by solar power plant having **230kwp** capacity to be designed, financed, and installed by the Successful Bidder at GCWU Sialkot, under Power Purchase Agreement (**PPA**) arrangement.

This RFP is being issued by GCWU Sialkot solely for use by ESCOs (Energy service companies) interested in the sale of electricity under a PPA arrangement.

The assumptions, assessments, statements, and information contained in this RFP may not be complete, accurate, adequate, or correct for the purposes of Bidders. Each Bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements, and information contained in this RFP. The Bidders are required to undertake their independent assessment and to seek independent professional advice on any or all aspects of this RFP. No decision should be based solely based on the information provided in this RFP. Neither any of these entities, nor their employees, personnel, agents, consultants, advisors, and contractors etc. will be liable to reimburse or compensate the recipient for any costs, fees, damages, or expenses incurred by the recipient in evaluating or acting upon this RFP or otherwise in connection with this transaction as contemplated herein.

All information submitted in response to this RFP becomes the property of the GCWU Sialkot and GCWU Sialkot does not accept any responsibility for maintaining the confidentiality of the material including any trade secrets or proprietary data submitted to the GCWU Sialkot.

The Bids submitted in response to this RFP shall be on the full understanding and agreement of all terms of the RFP and such submission shall be deemed an acceptance to all the terms and conditions stated in this RFP. Any Bid in response to this RFP shall be construed based on the understanding that the Bidder has done complete and careful examination of the RFP, has visited sites of GCWU Sialkot and has independently verified and satisfied itself regarding all the information received (whether written or oral) from GCWU Sialkot.

This RFP does not constitute a guarantee or commitment of any manner on the part of the GCWU Sialkot or Consultants or any of its advisors or consultants that the Bidder shall be selected or agreement for purchase of electricity will be concluded. Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of any Bid by GCWU Sialkot. GCWU Sialkot is under no obligation to award a contract to any Bidder as a result of this RFP.

GCWU Sialkot reserves right in its full discretion, to modify this RFP and/or its terms and conditions at any time, or to revoke the bidding process at any stage, including after the award to the successful Bidder, in each case with or without assigning any reason and without incurring any liability to reimburse or compensate the recipient or any Bidder for any costs, taxes, expenses or damages incurred by the recipient or any Bidder in such event.

Nothing contained in any other provision of this Bidding Document, nor any statements made orally or in writing by any person or party shall have the effect of negating or suspending any of the disclaimers set forth in this disclaimer.

March, 2024

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Abbreviations

1. PV - Photovoltaic
2. kWh - Kilowatt-hour
3. kWp - Kilowatt peak (refers to the maximum power output of a solar panel or system under standard test conditions)
4. MW - Megawatt
5. GW - Gigawatt
6. BIPV - Building Integrated Photovoltaics
7. MPPT - Maximum Power Point Tracking (a technology used to optimize the power output of solar panels)
8. DC - Direct Current
9. AC - Alternating Current
10. PVDC - Photovoltaic Direct Current
11. PVAC - Photovoltaic Alternating Current
12. BOS - Balance of System (refers to all components of a PV system other than the solar panels)
13. DC/AC - Direct Current to Alternating Current (refers to the process of converting DC power from solar panels to AC power for use in electrical grids)
14. I-V Curve - Current-Voltage Curve (a graphical representation of the electrical characteristics of a solar panel)
15. ROI - Return on Investment
16. LCOE - Levelized Cost of Electricity
17. PPA - Power Purchase Agreement
18. FIT - Feed-in Tariff
19. DER - Distributed Energy Resource
20. EPC - Engineering, Procurement, and Construction
21. O&M - Operations and Maintenance
22. RE - Renewable Energy
23. CIGS - Copper Indium Gallium Selenide (a type of thin-film solar cell material)
24. CdTe - Cadmium Telluride (another type of thin-film solar cell material)
25. BIPV - Building Integrated Photovoltaics

- 26. NEM - Net Energy Metering
- 27. PTC - Performance-Based Incentive (used in the United States)
- 28. ITC - Investment Tax Credit (used in the United States)
- 29. REC - Renewable Energy Certificate
- 30. TMY - Typical Meteorological Year (used for modeling solar energy production)

1. Glossary

Capitalized terms used in this RFP shall bear the meaning ascribed to them in the following glossary or in the body of this RFP or in the PPA appended with this RFP. In absence of availability of definitions in the foregoing references, the capitalized terms shall be interpreted in accordance with the NEPRA Act, 1997, NEPRA Grid Code or any relevant electricity law, rule, or regulations prevalent in Pakistan, as amended or re-enacted from time to time, in that order.

Base Date	As defined in section 2.3 of the RFP.
Bid	The Technical and Financial Bid submitted by a Bidder in response to this RFP.
Bid Price	The price per kWh offered in the Financial Bid, as per the terms of this RFP, for the Debt Period, and the Post-debt Period
Bid Security	As described in Tender Notice/ section 4.2 of the RFP.
Bidder	Who submits or intends to submit a bid in response to this RFP. A Bidder can be an entity or a lead partner in a Consortium/Joint Venture that submits a compliant Bid in accordance with this RFP.
Consortium or Joint Venture (JV)	A group of companies or entities that has collectively submitted requisite documents in response to the Request for Proposal.
Bidding Documents	As defined in section 3.1 of the RFP.
Calendar	The calendar with tentative key dates for the bidding process provided in section 2.6 of the RFP.

Commercial Operations Date (COD)	Commercial Operations Date (COD) is set at six (06) months, with the possibility of extension based on justification.
Consents, Clearances and Permits	All authorizations, licenses, approvals, registrations, permits, waivers, privileges, acknowledgements, agreements, or concessions required to be obtained or provided by any concerned authority for the purpose of setting up of the generation facilities and /or to supply and deliver energy under the PPA.
Debt Period	A period of up to 10 (ten) years, after achievement of COD during which the Seller repays debt procured for the development or construction of the Plant.
Energy Price	The Bid Price, as escalated, indexed or adjusted from time to time, under the PPA.
Evaluation Committee	As defined in section 5.1 of the RFP.
Exchange Rate	TT & OD selling rate as notified by National Bank of Pakistan or State Bank of Pakistan Monthly Average Floating exchange rate
Exchange Rate Benchmark or ERB	Exchange Rate as at the Bid Submission Deadline
Financial Bid	As defined in Section 4.3 of this RFP
Financing Term Sheet	A duly signed indicative offer containing terms & conditions for arrangement of long-term debt financing, issued by a reputable Bank/Financial Institution in favor of the Bidder for undertaking the Project. The period of long-term financing shall not be more than the Debt Period.
GEPCO	Gujranwala Electric Power Company (GEPCO)
Levelized Bid Price	As defined in Annex F. This will only be used for ranking the Bidders.
LOA	Letter of Award issued to the Successful Bidder.

NEPRA	National Electric Power Regulatory Authority
Performance Security	As defined and as per format provided in the PPA.
Plant	As defined in PPA, having a nominal rated capacity of approximately 230 KW to be established at the Premises and having minimum specifications as defined in Annex - B to this RFP
Premises	Rooftop area earmarked for installation of plant is provided in Annex-B-1
Point of Injection	Localized near transformer (LV side; 400 V) of each building before metering point of building.
Post-debt Period	Remaining years of the PPA Term after completion of Debt Period
PPA	Power Purchase Agreement, to be executed between the Successful Bidder and GCWU Sialkot.
PPA Tenure	25 (Twenty-five) years starting from the Commercial Operations Date as defined in the PPA.
PKR	Pakistani Rupee

Plant Value	The initial value of Plant in PKR, specified by the Bidder in the Technical Bid, to be used for calculation of termination amount, in case of termination of PPA, as provided in section. [24] of the PPA under heading “EARLY TERMINATION AND BUYOUT IN CASE OF DEFAULT”.
RFP	This Request for Proposal issued by the GCWU Sialkot, including all Sections and attachments hereto.
Seller	A Successful Bidder whose PPA becomes effective and operative in accordance with its terms.
Successful Bidder	The first ranked Bidder who has been awarded an LOA by GCWU Sialkot pursuant to this RFP.
GCWU Sialkot or Purchaser	Government College Women University Sialkot

2 Introduction & Background

2.1 Background & Objective

GCWU Sialkot intends to solarize its main campus, with a grid-tied solar system of up to 230 KW on rooftops of academic blocks, through private investment in an ESCO Model. The purpose of the process is to provide renewable energy based cost-effective solution to GCWU Sialkot through solar energy for sustainable growth and future.

The objective of this RFP is to solicit offers from ESCOs for supply and delivery of electricity to GCWU Sialkot from the Plant under a PPA arrangement. The Bids received from ESCOs will be evaluated based on the evaluation criteria given under this RFP. PPA will be signed with the Successful Bidder for supply and delivery of electricity to GCWU Sialkot at applicable Energy Price during the PPA Tenure.

RFP is being issued to the interested parties companies/ Bidders/Contractors in submitting Bids for the Solarization of GCWU Sialkot.

2.2 About GCWU Sialkot

The GCWUS ACT 2012 (VII of 2013) was promulgated by Provincial Assembly of Punjab in January 2013 and the University has been established by upgrading the Government Postgraduate College for Women, Sialkot. The college was already offering 4 year BS programs in 14 disciplines in affiliation with University of Gujrat and after getting the status of university the number of degree programs has been enormously increased including 22 BS programs, 13 MS programs and PhD in 9 disciplines.

The Government College Women University, Sialkot in terms of its ranking, securing the 2nd place amongst the Women Universities of Pakistan and 29th position overall in Pakistan, as declared by the 'Times Higher Education World University Rankings' 2021.

This ranking was based on the following Sustainable Development Goals (SDG) i.e. Gender Equality (SDG5), Clean Drinking Water (SDG6), Climate Change (SDG13) and Quality Education (SDG4). GC women university Sialkot.

Keeping in view the power crises situation in the country, Government College Women University (GCWU) Sialkot, several key factors have been taken into consideration. These factors include the annual unit consumption, available rooftop area, proposed solar system capacity, and sanctioned load.

Based on the available data, GCWU Sialkot has an annual unit consumption of 324,132 units, providing valuable insights into the institute's energy demand over the course of a year.

Considering the available rooftop area, the proposed solar system capacity for GCWU Sialkot has been determined as 567 kWp (kilowatts peak), representing the maximum power output that the solar panels can generate under ideal conditions.

Ensuring that the installed solar system capacity adequately meets the institute's energy needs is crucial. With a sanctioned load of 414 kW, which is the maximum authorized power from the utility company, careful consideration must be given to matching the solar system capacity accordingly. To accurately calculate the total consumption and cost of electricity for GCWU Sialkot, the electrical bill of the site has been analyzed, providing detailed information on monthly consumption, energy charges, and other billing components. This analysis enables a precise determination of the total annual consumption and associated costs.

Additionally, to incorporate the power demands of the two new buildings, namely the Social Sciences Block and the student service center, their estimated power requirements of 125 kW and 40 kW, respectively, will be included in the overall power consumption.

Considering the power demands of these new buildings, along with the existing load of GCWU Sialkot, a solar power generation capacity of **230 kW** will be utilized. This capacity will not only cover the energy requirements of the entire university but also accommodate the specific loads of the Social Sciences Block and the student service center.

By integrating the load of the new buildings within the solar power generation capacity based on unit consumption, GCWU Sialkot ensures that the solar energy system can effectively meet the electricity needs of the expanded campus. This comprehensive approach accounts for the increased demand resulting from the new infrastructure while maintaining a sustainable and environmentally friendly energy solution.

The decision to install solar panels at GCWU Sialkot signifies a significant step towards establishing a sustainable energy source for the institute. By harnessing solar power, the institution can reduce its dependence on traditional fossil fuels, decrease its carbon footprint, and contribute to a cleaner environment. Additionally, the adoption of solar panels offers the potential for long-term cost savings, ensuring a reliable and cost-effective energy supply for the institution.

In conclusion, the load estimation for the installation of solar panels at Government College Women University Sialkot considers factors such as annual unit consumption, available rooftop area, proposed solar system capacity, and sanctioned load. The precise calculation of total consumption and cost of electricity from the electrical bill provides a solid foundation for determining the feasibility and benefits of solar energy implementation. By embracing solar panels, GCWU Sialkot demonstrates its commitment to sustainable energy practices and takes a proactive step towards a greener and more sustainable future.

The following table presents details of the 15 meters installed at Government College Women University (GCWU) Sialkot, including the meter number, consumer/reference number, sanctioned load, total annual unit consumption (kWh), and total energy consumption payments:

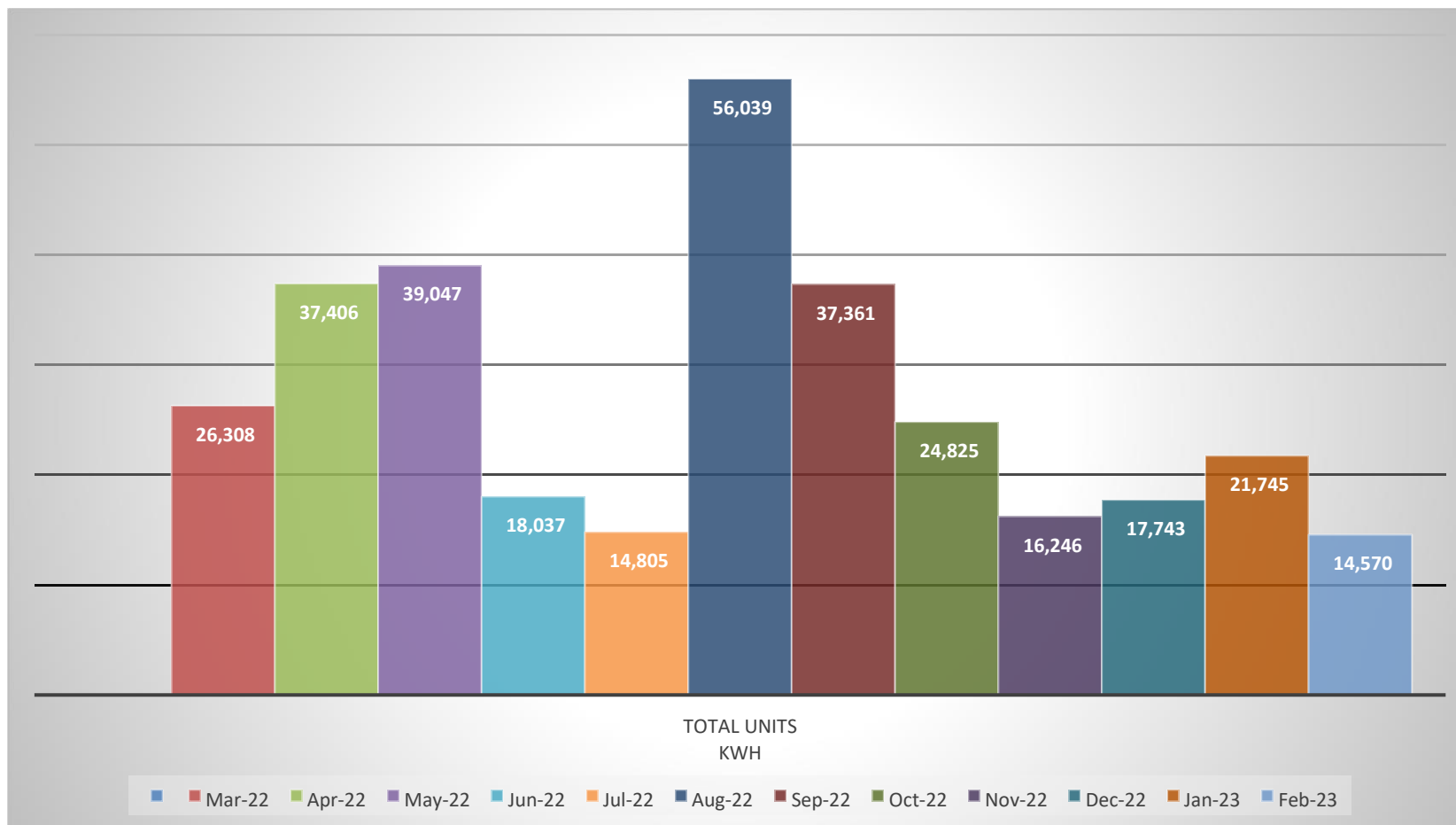
Sr.no	Meter No	Reference No	Sanction Load	Total Annual Unit Consumption KWH
1	3-P 010292	09 12414 0552700 U	19	9664
2	S-P 3554007	09 12414 0552600 U	3	1659
3	S-P 05018812	09 12414 0552900 U	2	924

4	S-P 33294	09124140553000 U	12	33023
5	3-P 103725	09 12414 0553100 U	8	8713
6	S-P 1959907	09 12414 0553200 U	3	14336
7	S-P 179714	09 12414 0553300 U	2	13293
8	3-P 2524	09 12414 0553400 U	5	21131
9	S-P 211841	09 12414 0553500 U	3	11434
10	3-P 00115107	09 12414 0553600 U	7	2547
11	3-P 00141382	09 12414 0553601 U	5	7677
12	3-P 333982	09 12414 0553700 U	5	13479
13	204137	2120107230 / 12040639099	128	54120
14	11892	2120107234 / 12040637577	88	124240
15	100064	2120108282 / 12040639649	14	7892
Total				324,132

Annual Unit Calculation

Annual Energy Consumption Data KWH	Meter No. 01	Meter No. 02	Meter No. 03	Meter No. 04	Meter No. 05	Meter No. 06	Meter No. 07	Meter No. 08	Meter No. 09	Meter No. 10	Meter No. 11	Meter No. 12	Meter No. 13	Meter No. 14	Meter No. 15	Total Units KWH
	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	Units KWH	
Mar-22	682	-	19	2,371	430	978	673	1,377	763	-	145	866	6,520	11,480	4	26,308
Apr-22	1,975	-	149	4,396	1,314	1,586	1,347	2,532	1,253	-	847	1,047	6,640	14,320	-	37,406
May-22	1,451	-	137	3,443	1,404	1,214	1,186	2,115	1,077	-	741	1,121	7,480	17,520	158	39,047
Jun-22	1,535	205	133	3,213	1,146	1,416	1,554	2,366	1,212	-	491	1,583	2,080	-	1,103	18,037
Jul-22	-	104	62	2,235	604	1,007	648	1,567	879	-	508	1,090	2,600	3,080	421	14,805
Aug-22	851	49	79	2,433	1,025	1,138	762	1,947	996	-	405	1,283	4,480	39,560	1,031	56,039
Sep-22	734	145	140	3,397	881	1,322	1,731	2,629	1,348	-	1,407	1,631	7,440	13,560	996	37,361
Oct-22	599	161	108	3,097	832	1,182	1,178	2,298	1,229	17	1,011	1,290	4,680	5,640	1,503	24,825
Nov-22	310	141	2	2,003	355	1,094	1,096	1,110	772	65	494	817	3,240	3,720	1,027	16,246
Dec-22	425	202	34	1,807	290	995	1,385	1,070	528	215	536	1,154	2,760	5,560	782	17,743
Jan-23	433	380	57	3,067	272	1,282	711	985	606	497	506	1,597	3,640	6,920	792	21,745
Feb-23	669	272	4	1,561	160	1,122	1,022	1,135	771	1,753	586		2,560	2,880	75	14,570
Total	9,664	1,659	924	33,023	8,713	14,336	13,293	21,131	11,434	2,547	7,677	13,479	54,120	124,240	7,892	324,132

Maximum and Minimum Annual Month Wise Consumption (kWh):



Maximum Annual Consumption (kWh) = 56,039

Minimum Annual Consumption (kWh) = 14,570

Annual Billing Calculation

Annual Energy Consumption Payment Rs	Meter 01	Meter 02	Meter 03	Meter 04	Meter 05	Meter 06	Meter 07	Meter 08	Meter 09	Meter 10	Meter 11	Meter 12	Meter 13	Meter 14	Meter 15	Total Payment Rs
	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	Payment Rs	
Mar-22	19,682	213	490	84,528	11,116	34,531	33,044	45,088	26,409	418	4,808	35,840	203,914	470,193	10,651	980,925
Apr-22	54,208	339	896	136,869	43,470	51,658	39,207	76,693	39,180	418	20,907	36,350	195,423	401,559	10,273	1,107,450
May-22	40,361	2,811	-	104,557	44,929	37,358	35,019	63,965	32,787	418	17,733	31,855	237,099	542,429	14,848	1,206,169
Jun-22	51,912	30,576	-	113,947	42,850	48,560	50,677	80,573	41,070	418	15,932	49,685	92,680	68,302	47,683	734,865
Jul-22	14,860	4,077	5,105	99,545	29,261	41,694	84,655	66,996	36,558	418	19,772	41,897	153,505	263,122	65,387	926,852
Aug-22	49,016	4,156	1,685	123,961	54,646	56,969	48,779	96,797	49,540	418	18,572	64,121	206,424	1,606,918	121,366	2,503,368
Sep-22	30,022	6,456	1,850	150,013	42,851	59,097	73,256	115,267	59,496	418	58,891	72,142	316,368	473,051	167,622	1,626,800
Oct-22	23,235	6,639	1,386	127,884	39,333	48,865	47,905	94,931	50,764	697	40,967	53,121	196,473	230,563	234,043	1,196,806
Nov-22	12,379	5,917	146	84,053	12,636	45,865	45,316	46,661	32,408	2,686	19,449	34,476	141,191	156,808	114,731	754,722
Dec-22	16,570	8,344	447	73,938	10,722	40,922	56,302	43,614	21,490	8,810	20,349	47,523	111,911	226,887	149,987	837,816
Jan-23	16,889	15,694	697	126,792	10,355	53,066	29,114	40,834	25,145	20,198	19,542	65,850	150,675	285,898	2,444	863,193
Feb-23	26,709	10,658	134	59,333	5,368	43,492	37,741	43,821	30,317	70,585	21,254		98,371	103,914	31,829	583,526
Total	355,843	95,880	12,836	1,285,420	347,537	562,077	581,015	815,240	445,164	105,902	278,176	532,860	2,104,034	4,829,644	970,864	13,322,492

2.3 Energy Price, Bid Price & Tenure

2.3.1 A PPA will be signed between GCWU Sialkot and the Successful Bidder and the term of the PPA shall be **25 (twenty-five) years** starting from the Commercial Operations Date as defined in the PPA. GCWU Sialkot shall pay to the seller the Energy Price monthly against energy delivered as per terms and conditions of the PPA calculated pursuant to the Bid Price submitted by the Bidder.

2.3.2 Bid Price

All Bidders are required to submit their Financial Bids by providing Bid Price for both Debt and Post-Debt Periods in Pak Rupee per KWh.

2.3.3. Bid Price Components

The Energy Price will be payable in PKR (local currency) throughout the PPA Tenure as per the terms of the PPA.

The Bid Price for both Debt and Post-Debt Periods will have two components i.e., a) fixed component and b) variable component:

Variable Component: The variable component will be subject to annual adjustment for CPI indexation. The Bid Price will be considered to include PKR 0.50/kWh as variable component (the 'Variable Component'). No further adjustment or indexation regarding inflation or increase in costs will be allowed during the PPA Tenure.

Fixed Component: the fixed component will be established for both debt period and Post debt period at the date of signing of PPA under the following formula:

Fixed Component = Bid Price in PKR. - Variable Component (i.e. PKR 0.50/kWh)

Fixed Component will be established for both Debt period and Post-debt period at the date of signing of PPA.

In case where the Bid Price is lower than the Variable Component i.e PKR 0.50/kWh, the following formula shall be used.

Fixed Component = 0, and

Variable Component = the Bid Price in PKR

In such a case, the Specified value of the Variable Component will be reduced to the Bid Price.

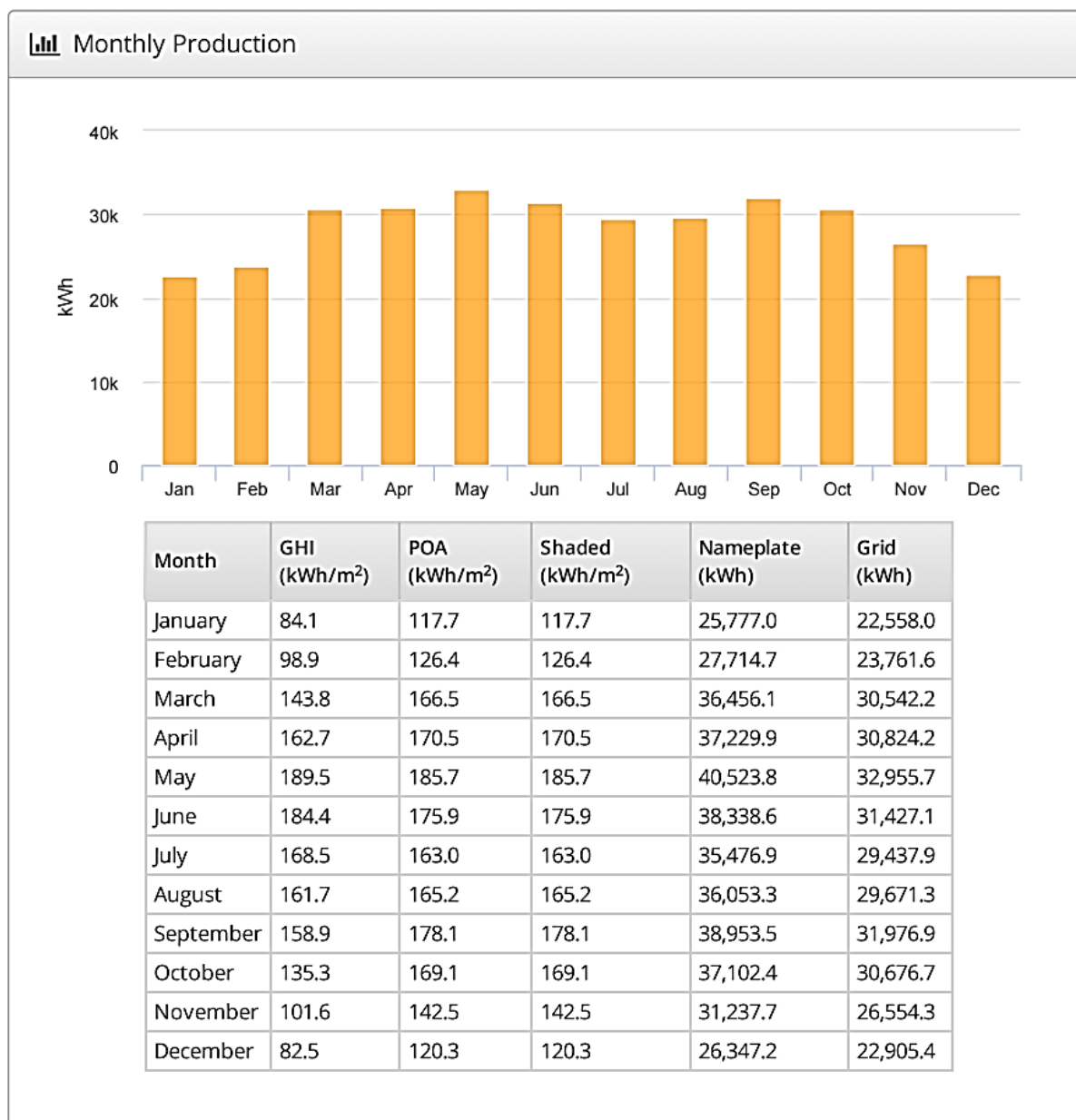
2.4. Instructions to the Bidders

2.4.1. Minimum Capacity of the Plant

The capacity of Plant to be offered shall be **230 KW** i.e., the DC capacity of Solar PV Modules. PV to Inverter ratio must be 1:1 and no under sizing shall be allowed. The responsibility of the Successful Bidder shall be to supply electricity power to GCWU Sialkot.

2.4.2. Guaranteed Energy

The Successful Bidder, with whom PPA is executed, shall at minimum deliver energy as mentioned in Annex-H and in table below:



In case of failure to deliver the Guaranteed Energy, the Successful Bidder shall pay liquidated damages for the shortfall energy per the following formula:

Liquidated Damages for the Shortfall Energy = (the prevailing Off-Peak Grid Tariff - the prevailing Energy Price) x (Guaranteed Energy - actual energy delivered in kWh).

The liquidated damages for the Shortfall Energy shall be calculated and recovered on Monthly basis. For example, for 1 MW the bidder has to supply 1,500,000 kWh energy and it has supplied 1,459,000 kWh energy which is short of 41,000 kWh and if the differential of the Off-Peak Tariff and Solar Tariff is Rs.5 then the total penalty will be PKR. 205,000 which will be debited to Energy Ledger. These liquidated damages will be paid by the Seller to the Purchaser for that year. No liquidated damages shall be recovered in case the Off-peak Grid Tariff is less than the prevailing Energy Price.

2.4.3. Deemed Energy

During PPA Tenure, the Purchaser shall procure electricity from the Seller (Successful Bidder, with whom PPA is executed), however in case Seller could not deliver electric energy (in kWh) from the Plant at the Point of Injection due to no fault of Seller, will be considered as Deemed Energy. Deemed Energy will be established at the end of every month and recorded for adjustment on an annual/quarterly basis.

Deemed Energy will be calculated as function of the Deemed Energy number provided by the Bidder in its Bid, which in any case shall not be more than the 0.29 kWh/KW.

In case the Plant could not operate partially then the Plant size provided above will be adjusted accordingly.

In case of high Deemed Energy then seller should pay liquidated damages for the Shortfall Energy.

2.4.4. Grid Connectivity/ Net metering

The grid connectivity, Net metering, interconnectivity, and associated evacuation facilities from the Plant to the Point of Injection will be provided by the Seller, that will be near transformer at LV section before metering point of each building as listed in Annex B-1 of this RFP.

The Seller will be solely responsible for connectivity with the Grid for all building in the premises of university. The cost of the interconnection and related equipment (Poles, all cables, changeover etc as per Wapda specifications) to the Point of Injection will be the responsibility of the Seller. Detailed SLD attached as Annex-B2

The Seller will be responsible for design, engineering, financing, supply, construction, maintenance, and operation of the Plant throughout the PPA Tenure.

Dynamic reactive power compensator should be installed either at main PCC or local solar grid PC.

The interconnection/metering point(s) shall be in substation(s) and the Seller will bear the cost of construction of interconnection/metering facility up to the point(s) of connectivity included wapda and other chargers.

2.4.5. Cost of RFP

Bidders interested to participate in the bidding process are required to purchase complete RFP by sending a written request at its company's letterhead along with a challan form of non-refundable fee of **PKR.2,000/- (Two Thousand Only)** in GCWU Sialkot Bank GCWU Sialkot or Pay order/ CDR in favour of Treasurer, GC Women University Sialkot.

In case of a JV/Consortium, one company should be the Lead member having legal authorization from all consortium members to be their Lead member for submission of bid. However, all the JV/Consortium members will be jointly and severally responsible during the whole bidding process and PPA Tenure.

2.4.6. Site Visit

Representatives of Bidders/Companies/Contractors are encouraged to visit the site through prior coordination with **Engr. Muhammad Usman Saleem, Senior Engineer/ Xen (Electrical), Works Directorate, GCWU Sialkot. Contact: 052-9250665, 0302-8480619, usman.saleem@gcwus.edu.pk** and assess the site conditions regarding roofs condition, sub-station, point of connectivity and distance

from the Plant to point(s) of connectivity. The site can be inspected during working hours 08 to 04:00 Monday to Friday with prior coordination.

2.4.7. Additional Requirements for Consortium

In the case of JV/Consortium, the bid shall contain a legally enforceable JV/Consortium Agreement duly executed by all the members of the JV/Consortium, designating one of the members to be the Lead Member. In the absence of duly executed JV/Consortium Agreement, the Bid will not be considered for evaluation and will be rejected.

In case, JV/Consortium Agreement has already been submitted at PQD stage, each member of the JV/Consortium is required to confirm the validity of the JV/Consortium Agreement on its letterhead as at the date of submission of the Bid.

The JV/Consortium Agreement shall not be amended without the prior written approval of GCWU Sialkot.

The Lead Member shall designate one person to represent the JV/Consortium in its dealings with GCWU Sialkot. The person designated by the Lead member shall be authorized through a board resolution to perform all tasks including but not limited to providing information, responding to enquiries, signing of the Bid on behalf of the JV/Consortium etc. Additionally, the Bid shall also contain Power of Attorney in original as per Format Annex-C Form 2 in the favor of the Lead Member issued by each member of the JV/Consortium.

The bid shall also contain a Board Resolution from each member of the JV/Consortium confirming that the

RFP has been read, estimated, and understood and the Bid has been reviewed and each element of the Bid is agreed to them. Resolution should also authorize a representative of JV to submit the bid on behalf of JV.

2.4.8. Representative of the Bidder

The Bidders should designate one person to represent the company or the JV/Consortium in its dealings with GCWU Sialkot. The person so designated shall be duly authorized through a Board resolution to perform all tasks including but not limited to providing information, responding to enquiries, signing a Bid on behalf of the Bidder or the Consortium etc.

2.4.9 Fraud and Corruption

Anticorruption policy prevailing in Pakistan requires that Bidders, suppliers, and contractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the GCWU Sialkot:

defines, for the purposes of this provision, the terms set forth below as follows:

“corrupt and fraudulent practice” means the offering, giving, receiving, or soliciting, of anything of value to influence the action of a public official or the contractor in the procurement process or in contract execution to the detriment of the procuring agency; or misrepresentation of facts in order to influence a procurement process or the execution of a contract, collusive practices among bidders (prior to or after bid submission) designed to establish Bid prices at artificial, non-competitive levels

and to deprive the procuring agency of the benefits of free and open competition and any request for, or solicitation of anything of value to any public official during the exercise of his duty.

“Coercive practice” means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to achieve a wrongful gain or to cause a wrongful loss to another party.

“Collusive practice” means by arrangement between two or more parties to the procurement process or contract execution, designed to achieve with or without the knowledge of the procuring agency to establish prices at artificial, non-competitive levels for any wrongful gain.

“Integrity violation” means any act which violates anticorruption policy including corrupt, fraudulent, coercive, or collusive practice, abuse, and obstructive practice.

“obstructive practice” by harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract or deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements before investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or acts intended to materially impede the exercise of inspection and audit rights;

will reject a Bid for award if it determines that the Bidder recommended for award of the Project has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the PPA.

will sanction/impose remedial actions on a firm or an individual, at any time in accordance with applicable laws and anticorruption policy including declaring ineligible, either indefinitely or for a stated period of time, to participate as a contractor, nominated subcontractor, consultant, manufacturer or supplier, or service provider; or in any other capacity, if it at any time GCWU Sialkot determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices or other integrity violations; and

will have the right to inspect accounts and records and other documents relating to the Bid submission and PPA performance and to have them audited by auditors appointed by GCWU Sialkot.

2.4.10. Eligible Bidders

In the case the firm is a JV:

all partners to the JV shall be jointly and severally liable; and the one partner of the JV shall act as the lead partner who shall have the authority to conduct all business for and on behalf of all of the partners of the JV during the bidding process and, in the event the JV is awarded the PPA, during PPA execution.

After the Bid has been submitted to GCWU Sialkot, the lead partner identified to represent the JV shall not be altered without the prior written consent of GCWU Sialkot. Furthermore, neither the lead partner nor the member entities of the JV can submit another Bid, either in its capacity nor as a lead partner or a member entity of another JV submitting another Bid.

Proposed contractors, subcontractors, or suppliers for any part of the Plant including related services shall have a nationality of an eligible country. Proposed contractors, subcontractors or suppliers shall

be deemed to have the nationality of a country if they are national or are constituted, incorporated, or registered and operate in conformity with the provisions of the laws of that country.

'Eligible Countries' means all countries of the World with whom Islamic Republic of Pakistan has commercial/trade relations and those who are not subject to sanctions imposed by the United Nations Security Council.

A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. Without limitation to the generality of the foregoing, a Bidder may be considered to have a conflict of interest with one or more parties in this bidding process if a Bidder participates in more than one bid in this bidding process, either individually or as a partner in a joint venture. This will result in the disqualification of all Bids in which it is involved. However, this does not limit the participation of a Bidder as a contractor or subcontractor in another bid or of a firm as a contractor or subcontractor in more than one bid. In the event of any uncertainty in the interpretation of what is potentially a conflict of interest, Bidders must disclose the condition to the GCWU Sialkot and seek GCWU Sialkot's confirmation on whether such conflict exists.

Similarly, the Bidders must disclose in their Bid their knowledge of the following:

that they are owners, part-owners, officers, directors, controlling shareholders, or they have key personnel who are family of GCWU Sialkot's staff involved in the procurement functions and/or the Government receiving services under this Bidding Document; and all other circumstances that could potentially lead to actual or perceived conflict of interest, collusion, or unfair competition practices.

Failure to make such a disclosure may result in the rejection of the Bid or Bids affected by the nondisclosure.

2.4.11. Eligible Plant and Services

The plants and services to be supplied under the PPA shall have their origin in Eligible source Countries as defined above and all expenditures under the PPA will be limited to such plant and services.

For purposes of above, "origin" means the place where the plant, or component parts thereof are mined, grown, produced, or manufactured, and from which the services are provided. Plant components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

2.4.12. Integrity Pact

Each Bidder shall be required to provide an integrity pact in the format provided at Form 3 of Annex C (Integrity Pact) as part of its Technical Bid.

2.5 Bid Costs

All costs associated with the preparation and submission of the Bid and the Bidder's participation in the bidding process including, without limitation, all costs and expenses related to participation in pre-bid conference, preparation and submission of the Bids, the provision of any additional information, conducting due diligence of GCWU Sialkot, site visits, engagement of consultants, advisors and contractors etc. and in discussion with the GCWU Sialkot, Consultant or their advisors or consultants, the provision of any additional information, preparation of questions or requests for clarification to GCWU Sialkot, preparation of Bidders' questions during the clarification process and discussions on the PPA, if any (the "Bid Costs") shall, in each case, be borne exclusively by the Bidder. GCWU Sialkot,

consultant or their advisors or consultants shall not be responsible or liable to pay any Bid Cost of any Bidder, regardless of the conduct or outcome of the bidding process.

2.6 Tentative Calendar

The key tentative dates to remember are given below:

No	Milestone	Anticipated Date
1.	Pre-Bid Meeting	15 April, 2024 11:30 AM
2.	Bids submission deadline	18 April, 2024 11:00 AM

GCWU Sialkot may, in its sole discretion and without prior notice, amend the above timetable, GCWU Sialkot shall not incur any liability whatsoever arising out of amendments to the above timetable.

2.7 Technical Specifications

All equipment in the PV system should be new and free from defects. No refurbished material or equipment shall be used for constructing the system. Each PV module, inverter, and transformer etc., shall have a unique serial number and shall be clearly and indelibly displayed inside and outside the inverter cabinet. The PV modules should clearly show the flash test and electronic database with all flash data results on the back side, and they should be fully traceable regarding the manufacturing facility and the main components (glass, EVA, aluminum frame, etc.).

The main equipment suppliers (PV modules, inverters, cables, generator, and mounting structures) shall be certified to ISO 9001, ISO 14001, and ISO 18001. The IEC 61215 or IEC 61646 or IEC 61208 and IEC 61730 certificates must be provided with the full certification reports.

All components shall be capable of withstanding all climatic and electrical induced loads during the operational design life as specified in the relevant IEC standards.

The system equipment warranty shall include, as a minimum, 10-15 years of defects warranty. The manufacturer shall provide a linear warranty for the output power of the module, indicating the expected annual degradation for the first 25 years.

The system equipment should not contain irregularities, visual spots or blemishes affecting the module performance or system reliability. The detailed specifications of each component of the PV system are given in the following sub-sections.

The seller should provide generator of capacity 250 KW.

2.7.1. PV Modules

- The PV modules are one of the crucial components of a PV system and thus its quality and selection is of paramount importance. This section includes the following requirements:
- AEDB's regulations for PV modules
- Requisite standards compliance
- Performance and efficiency requirements
- Guarantees and warranties required.
- Pre-shipment and post-shipment inspection and testing

The modules tier-1 shall be protected by high transmission tempered glass covered with anodized aluminum alloy frames. Serially connected cells shall be terminated to IP 65 junction boxes at bottom with multi-strand copper cables. Positive and negative terminals shall be terminated with MC4 connectors and Y connectors for making module interconnections. The minimum technical specifications of the PV Modules are given in **Table 1** below.

Table 1: Minimum Technical Specifications of PV Modules

Sr. No	Parameters	Minimum Technical Specifications
1	Module Make and Manufacturer	HIMO 6, Tier-1 Brand, A+ Rating module,
2	Wattage and Size	550W and above
3	PV Module Type	Mono Crystalline Half Cut Cells Bi-Facial
4	Cell Quality	M-10 Large Cells A+ Grade
5	Cell Quantity	72 Cells (144 Half Cells)
6	Diodes	2 or More Bypass Diodes
7	Bus Bars	Minimum 10 Tin Bus Bars
8	Doping	P-Type
9	Frame	Anodized Aluminum Frame to Withstand 5400 Pa Impulse Load
10	Junction Box	IP-67 or above
11	Cable	4 mmsq (IEC) Length of 1000 mm Minimum
12	Fuse Rating	20 A or above
13	Power Tolerance	+/- 3%
14	Front Glass	3.2 mm thick prism type Tempered glass / Semi Tempered or higher
15	Connectors	MC-4 Connectors IP-68
16	Module Efficiency	19% or above
17	Operating Temperature	-40 Degree C ~ 85 Degree C
18	Certifications	IEC 61215, IEC 61730, IEC61701 ED2 or equivalent
19	Product Warranty	10 years product replacement warranty 10 years for 90% of warranted min. power 25 years for 80% of warranted min. power.

2.7.2. Inverters

The inverter unit design shall allow for fully rated operation at the expected environmental conditions at the site. The inverters shall use a control algorithm to maximize energy output via tracking of the

maximum power point of the PV array. The inverters' nominal efficiency shall be no less than 97.5% (European Efficiency). The maximum inverter operating voltage should be 1500 VDC.

Inverter protective characteristics shall include the following.

- Overload
- Short circuit
- High DC bus voltage
- High/low AC voltage
- Loss/restoration of AC voltage
- High/low grid frequency
- Insulation resistance monitoring
- Internal faults
- High internal temperature
- Automatic thermal protective control system

The following requirements apply:

- i. All inverters must be of the same type and manufacturer.
- ii. The inverters must have a minimum product warranty against defects of five years
- iii. The inverters must be designed and constructed for continuous operation under prevailing climatic and Environmental conditions at the installation site. Maximum ambient temperatures of 55°C shall be expected. According to the requirements of the PV module manufacturer, the negative / positive pole must be grounded.
- iv. The protection system must be selected and coordinated according to the requirements of the grid operator. Each inverter must be connected to the PV protective earth ground through an appropriate electrical scheme.
- v. The inverters must be able to synchronize automatically with the grid and UPS/Gen Sets. The Pakistani grid code applies.

The minimum technical specifications of the Inverters are given in **Table 2** below.

Table 2: Minimum Technical Specifications of Inverters

Sr. No	Parameters	Minimum Technical Specifications
1	Module Make and Manufacturer	Huawei, Sofar, Growatt, GoodWe, Fronius, SMA, SolarEdge, Hopewind, SAJ, INVT, Chint, SunGrow, Solis, ATESS or any other renowned brand with 100MW of Global Sales
2	Wattage and Size	20kVA to 110kVA
3	Type	Grid Synchronous Pure Sine Wave

4	Minimum Startup Voltage	200V DC
5	Minimum Voc for String	600V DC
6	Maximum Input Voltage	1500V DC
7	Output Voltage	220/380~240/415VAC String Inverter With 5% Tolerances 3W + N + PE
8	Min. MPPT Per Inverter	2
9	Min. input current per MPPT	22 A
10	Night Consumption/ Standby	10W or less
11	Grid Frequency Range	45Hz ~ 55Hz
12	THDi	<3%
13	Active Adjustable Power Range	0% To 100%
14	Adjustable power factor	0.8 Lagging to 0.8 Leading (Adjustable)
15	Operation temperature range	-25 ~ +60 °C (-13 °F ~ 140 °F)
16	Efficiency	95% or above
18	Relative humidity	0 % RH ~ 100% RH
18	Max. operating altitude	4,000 m (13,123 ft.) (Derating above 2000 m)
19	Communication	RS 485; WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional)
20	Features & Protections	Input-side disconnection device
		Anti-islanding protection
		AC over-current protection
		AC short-circuit protection
		AC over-voltage protection
		DC reverse-polarity protection
		DC surge protection
		AC surge protection
		Residual current monitoring unit
		Arc fault protection
		Ripple receiver control
Integrated PID recovery 4		

21	Degree of protection	IP 65
22	Safety	EN/IEC 62109-1, EN/IEC 62109-2
23	Grid connection standards	G98, G99, EN 50549, CEI 0-21, CEI 0-16, VDE-AR-N-4105, VDE-AR-N-4110, AS 4777.2, C10/11, ABNT, VFR 2019, RD 1699, RD 661, PO 12.3, TOR D4, IEC61727, IEC62116, DEWA
24	Warranty	Minimum 5 Years Optional Extendable

2.7.3. To be proven by the technical brochure for the equipment.

The inverter manufacturer must have:

1. Minimum manufacturing experience of 5 years
2. Annual production capacity in the last 3 years is not less than 1000 MW per year.

2.7.4 Declarations duly signed and stamped by the manufacturer must be submitted.

- i. Inverters must be manufactured in factories certified in accordance with:
 - ISO 9001 - Quality Management Systems.
 - ISO 14001 - Environmental Management Systems.

Certificates or declarations duly signed and stamped by the manufacturer must be submitted. No certifications in progress shall be accepted.

2.7.5. Combiner Boxes/DC Junctions

The Combiner boxes shall be made of insulation waterproof material according to the PV system design (min. IP 54). Including.

- Input terminals for the parallel connection of the strings or arrays without diodes, string fuses for positive and negative pole, output terminals and cable conduits.
- The string fuses in the positive and negative string terminals shall be designed according to the PV modules manufacture guideline regarding maximum current and reverse current.
- Overvoltage and lightning protection between positive, negative pole to the PE (Potential Earth) and positive to negative pole
- DC-disconnecting device to disconnect the main DC cable between combiner box and inverter.
- Ozone-resistant and UV-resistant housing
- Connection terminals for the monitoring and control system

2.7.6. AC Distribution Board

- a. The AC power output of the inverter shall be fed to the AC distribution board.
- b. The 415 V AC output of the isolation panel is fed to the grid. AC energy is then synchronized with the grid and power is exported to the grid.

2.8 Protection System

2.8.1. Lightning Protection

Lightning protection should be provided as per IEC 62305 standard. The protection against induced high voltages shall be provided using metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

A lightning protection system shall be provided for each inverter and array of photovoltaic modules. Each lightning protection system shall be bonded to the main earthing system according to IEC 62305 (1-4), IEC 61173 and IEC 60099. Protective equipment and its installation shall comply with IEC 60255.

2.8.2 Surge Protection

Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and –ve terminals to earth (via Y arrangement). Surge protection shall be provided on the DC side and the AC side of the solar system.

- a) The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar grid inverter.
- b) The AC SPDs shall be installed in the AC main distribution board adjacent to the solar grid inverter. The SPDs earthing terminal shall be connected to earth through the above mentioned dedicated earthing system.
- c) The SPDs shall be of type 2 as per IEC 60364-5-53

2.8.3. Earthing Protection

- a) Each array structure of the PV yard should be grounded/ earthed properly as per IS: 3043-1987. In addition, the lightning arrester/masts should also be earthed inside the array field. Earth resistance shall be tested in presence of the representative of department as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly.
- b) Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.
- c) A minimum of two separate dedicated and interconnected earth electrodes must be used for the earthing of the solar PV system support structure.
- d) The earth electrodes shall have a precast concrete enclosure with a removable lid for inspection and maintenance. The entire earthing system shall comprise noncorrosive components.

2.8.4. Cables and Hardware

The following requirements shall apply:

- i. The choice of installation method and cable routing shall be according to the type of conductor or cable to be used.
- ii. The cable routings (DC and AC) on the roof shall be encased in appropriate electrical conduits and not loose cables.
- iii. The conduits shall be thermoplastic (PE, PVC)

- iv. The supplier must submit the following technical data:
 - a) Drawings with the routings for the various types of cables
 - b) Conduits to be used.
- v. No cables shall be loose.

Cables of appropriate size to be used in the system shall have the following characteristics and cable manufacturers should be reputed national/international brands.

- Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards.
 - Temp. Range: –100 C to +800 C.
 - Voltage rating 660/1500V
 - Excellent resistance to heat, cold, water, oil, abrasion, UV radiation, Flexible
 - Multi strand, annealed high conductivity copper conductor PVC type ‘A’ pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection armored cable for underground laying. All cable trays including covers are to be provided. All cables conform to the latest edition of IEC/ equivalent BIS standards.
 - The size of each type of DC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 1%.
 - The size of each type of AC cable selected shall be based on minimum voltage drop; however, the maximum drop shall be limited to 2 %.
- i. DC cables shall comply with
 - a) Operating continuously at the maximum defined voltage at a temperature of 120°C
 - b) UV protected according to EN 50618
 - ii. AC cables shall comply with
 - a) Operating continuously at the maximum voltage set at a temperature of 90° C.
 - b) UV protected according to EN 50618
 - c) Operate to a maximum temperature of 250° C under fault conditions.
 - d) Resist without damage by withstanding the maximum fault current of the system for the time corresponding to the duration of a short circuit.
 - iii. Optical Fibers
 - a) Single or multimode fibers are allowed.
 - b) UV protected.
 - c) Operate at a maximum temperature of 50 oC
 - d) Include a protective sheath.

The minimum technical specifications of the cables and wires are given in **Table 3** below.

Table 3: Minimum Technical Specifications of Cables

Sr. No	Parameters	Minimum Technical Specifications
1	PV to Inverter	DC Cable 4 mmsq Tinned Copper with Multi Strands, Flexible and Double XLPE Coated with UV Resistant and Fire Retardants Properties 1500V Insulation. 4 mm ² XLPE/XLPE/Tn-Cu. Two Color Red and Black with Cable Manufacturing year and name
2	Grid to Inverter	4 Core Armored cable with gauge as per inverter rating. 99.9% pure copper (Stranded) with voltage drop less than 3%, U.V. resistive

2.9. Civil Works and Modules Mounting Structure

The supplier shall comply with all applicable legislations, such as the licensing of civil works, capacity and permits to perform the contractor's activity, safety, health, and environment.

The mounting system shall be designed according to the Euro Code and DIN 1055 and IBC-2009 standards or comparable local standards. Depending on the terrain, the suitable type of foundation has to be chosen, preferably the ramming design for the PV system.

All structural components shall be painted, coated as per instructions of the Engineer, otherwise protected against corrosion and UV light to ensure the supporting structures integrity all along the minimum 25 years design life. Particular attention shall be paid to the prevention of corrosion of the connections between different metals. All materials should be selected to avoid corrosion and degradation. The use of ferrous metals, contact of dissimilar metals and the use of any wood or plastic components are strongly discouraged. Aluminum, stainless steel and galvanized steel components are preferred.

Only the mounting structures shall be fixed. Its design and construction should take the following into consideration:

- i. The fixing/mounting structure must be compatible with the proposed PV modules.
- ii. The fixing/mounting structure shall have 25 years warranty against defects.
- iii. The mounting structure must be designed to withstand the permanent load of the modules, cables and other components attached to it, as well as mechanical loads due to local Environmental conditions such as wind, snow, or earthquakes (if applicable). A detailed structural design report should be submitted for approval. Mounting structures and fixing systems shall allow access to all installation components for maintenance purposes.
- iv. The mounting structure and the fixing elements shall avoid bimetallic corrosion between different metals.

- v. The mounting structures shall be installed allowing a certain distance between each other to minimize shading between modules installed in adjacent structures, if applicable.
- vi. The mounting structures, fixing systems, nuts and bolts must withstand high levels of corrosion using stainless steel or hot-dip galvanized steel. Galvanization should be sufficient to provide corrosion protection for at least 40 years, galvanization of at least 99 microns is mandatory. No screw holes will be drilled at site in GI structure components, it should be ensured that no screw holes be made after galvanization.
- vii. If concrete, the cement mix shall be submitted for evaluation.
- viii. The design criteria for wind loads should be 150 km/h. The nuts and bolts or ballast to be used shall be appropriately justified based on calculations.
- ix. The mounting structures shall include cable runs appropriate for the number of and size of cables to be used.
- x. The mounting structures shall be connected to the ground of the PV system through an adequate electrical system.
- xi. The mounting structures shall not be confined under pressure or any mechanical process to avoid damaging the PV modules.

The minimum technical specifications of the modules mounting structure are given in **Table 4** below.

Table 4: Minimum Technical Specifications of Mounting Structure

Sr. No	Parameters	Minimum Technical Specifications
1	Wind Holding	Mounting system able to allow air circulation for cooling in high temperature and withstand wind speed of 150 Km/hour at 3 sec gusts.
2	Mounting Structure Specifications	SWG 14,1x2 Landscape Hot dip galvanized structure minimum 14 Gauge thickness or better with minimum 80-micron coating. GI Nuts and Bolt S.S 304 Grade or better.
3	Certification	Vender will provide certificate from structural engineer for all installation (Structure Life grantee of 25 years)

2.9.1. Modules Cleaning System

A module cleaning system shall be envisaged for spraying the soft water over the modules manually, by providing storage tanks, water pumps, PVC piping network & valves. This cleaning process is to be carried out periodically depending upon the intensity of dust deposition over the PV modules. The contractor shall ensure that adequate infrastructure for water is developed at rooftop which will be further used for water cleaning of panels through pressurized water guns. In contractor uses water from University them he will be charged accordingly.

2.9.2. Drainage System

While undertaking installation of mounting structure the drainage system of the roof should be respected. In case there is no drainage system, or it must be changed, the contractor shall ensure and clearly demonstrate the adequacy of the drainage for possible rainfall in consultation with the site owner and instructions of the Engineer.

2.9.3. Other Civil Works

The contractor shall specify any other civil work they intend to perform, if applicable. Such works shall always be verified and approved by the Purchaser and shall be legally permitted before being carried out.

The acceptance of the civil works is intended to ensure the quality and proper performance of all works performed for which it was designed and throughout its useful life. The work should be in accordance with the detailed engineering reports and specifications, local and all applicable regulations, standards, and mandatory technical documentation.

All equipment to be supplied shall be mandatory new and without any previous utilization or usage.

2.10. Electrical Works

The contractor shall comply with all applicable legislation, such as the licensing of electrical works, capacity and permits to perform the contractor's activity, safety, health, and environment.

The electrical works consists of the supply of all electrical equipment as well as its proper installation and final commissioning.

All equipment to be supplied must be new and without any previous utilization or usage.

2.10.1. Operational Track Record and Performance

The proposed PV modules and inverters shall be part of a well-developed and proven product range. It will be ensured that the latest installation figures for the proposed models and inverters along with the operational track record and/or bankability reports are sought.

2.10.2. Health and Safety

The PV system shall be designed to include provisions that respect the health and safety of the public, operators and any other personnel who may have an interest in the PV system throughout the project's lifetime. All safety equipment shall comply with applicable Pakistan codes for use in this project.

2.10.3. Environmental and Social

The solar PV system shall be designed/installed to include provisions of Environmental and social impacts of the project with a goal to make an already Environmentally friendly project more in compliance with the environmental and social considerations which consist of, but not limited to, the following.

- i. **Access to the rooftop:** It has been ensured during the survey that only the buildings without any permanent encumbrance or encroachment are selected. However, any debris or obstructions/encumbrance built after the survey on the roof that could cause access restrictions to the rooftop, the contractor will be required to clear those before installation of PV system. The contractor will suggest dumping sites for all debris generated during the construction phase of the project.
- ii. **Suitability of rooftop:** The contractor will carry out any repair/rehabilitation of the rooftop required due to wear and tear, age of the building etc. if required. The purpose is to ensure the safety of the roof and its capacity to hold the additional load of the proposed solar PV system.

2.10.4. Fire Protection

Determination of the local fire protections should be carried out in accordance with the applicable standards. Portable fire extinguishers of the appropriate type and rating complying with the national codes and recognized solar industry practice, and adequate first-aid kits including eye wash bottles, shall be provided at each inverter shelter and at the control building. Smoke detectors should be installed in each inverter shelter and at the control building.

2.10.5. Electrical Protection

The electrical protection scheme shall disconnect faulted electrical sub-systems within the system, meet the Network Operator's requirements and be designed to adequately protect the electrical

components of the PV system for the maximum design fault currents at the site and any other electrical conditions passed through from the utility system.

2.10.6. Acceptance and Commissioning

The acceptance of the electrical works is intended to ensure the quality and proper performance of all works performed for which it was designed throughout its useful life. The work should be in accordance with the draft implementation, regulations, standards and mandatory detailed engineering report and technical documentation submitted. The commissioning of the electrical works is described in the commissioning of the PV system.

2.10.7. Acceptance

The PV system shall be considered accepted only after all tests defined in the commissioning tests have been performed and approved by the client.

2.10.8. Commissioning

In the commissioning process, a set of verifications and tests are to be carried out to ensure the proper functioning of the photovoltaic system based on detailed engineering.

All tests must comply with the applicable standards and requirements as per NEPRA and AEDB Testing, Commissioning and Net-metering guidelines (Attached at as Annexure-2, and in line with the guidelines of International Solar Energy Society (ISES). The contractor shall get the approval of the Engineer 2 weeks prior to the start of the commissioning process.

2.11. Operation and Maintenance

The operation and maintenance period/DLP shall start after the acceptance of the PV system and after the punch list has been all solved and approved by the client.

2.11.1 Operation

The general principles of the PV system operation shall be based on, but not limited to, the following requirements:

- i. The PV system shall remain operational in full compliance with technical, environmental and safety requirements and in accordance with national regulations and legislation.
- ii. The operation of all equipment shall be performed in accordance with the supplied O&M manual, service manuals and manufacturer supplied recommendations.
- iii. The PV system shall be capable of operating in automatic production mode under normal operating conditions.

2.11.2. Maintenance

In order to ensure the normal and correct operation throughout the life cycle of the PV installation, preventive and corrective maintenance tasks should be performed. As much as possible, maintenance operations should take place at night.

The preventive maintenance to be performed consists of routine inspections and maintenance of the equipment with procedures and frequencies determined by the type of equipment, manufacturer's indications, environmental conditions, and the specified project requirements. This is intended to reduce the likelihood of unplanned downtime of the PV system and the corresponding undesirable production failures.

The preventive maintenance activities include:

- i. Inverter maintenance operation
- ii. Verification of the fixing/mounting structures
- iii. Cleaning of the PV modules
- iv. Verification and maintenance of other electrical equipment (cables, AC and DC boxes, connections, low voltage switchgears etc.)

The following maintenance activities shall be performed, but it is not limited to only these actions:

Period	Equipment/Infra-Structure	Maintenance Activity
Annual	Inverters	Maintenance
Trimester	Fixing/mounting structures	Verification and maintenance
Trimester	PV modules	Cleaning
Annual	PV modules	Thermography tests
Trimester	Other electrical equipment	Verification and maintenance
Trimester	Drainage system	Verification and cleaning
Monthly	Generator	Maintenance

The corrective or reactive maintenance to be performed must respond to the equipment's fault repair needs after their occurrence. Performing these tasks may lead to an unplanned production outage. Therefore, the corrective maintenance activities should be carried out as soon as possible to minimize possible financial costs.

2.11.3. Production Guarantees

The production guarantees of the PV system will be in the form of quantity in terms of energy produced and quality in terms of availability and the system's PR. Production guarantees shall be required during the first two years of operation and will be measured at the end of each year counting from the date of acceptance of the system.

- i. The PV system availability shall be measured and values below 97.5% shall not be accepted. System availability will be determined as the proportion of time annually that the PV system generated electricity excluding all grid outages as well as planned and unplanned maintenance. If below, the equipment supplier shall have to justify the reason for such amount and may be subject to a non-compliance penalty.
- ii. Annual PR shall be measured and should be within the value submitted within 0.1%. If it is more than 0.1% below the value for that year, the supplier must justify the reason for that amount and may be subject to a non-compliance penalty.
- iii. The energy generated must reach the value of the award of the contract and should not be lower. If lower, the operator must explain the unavailability of the PV system and the maintenance times so that the expected value would have been proportionally reached.

2.12. Contractor Guidelines

2.12.1. The Contract

The contract will be awarded on EPC (PPA Model) basis including engineering, procurement, detailed design, supply, install, test, commission and operate basis, with 25 years backup support. The contract shall include a complete rooftop/carport/open area PV system delivering AC power at the specified site and/or building.

2.12.2 Layout

The contractor shall submit CAD drawings in A3 for the proposed site showing:

- i. North direction
- ii. Location of the PV modules and inverter(s).
- iii. Location of the grid connection
- iv. Location of water to be used for the O&M

2.12.2. Single Line Diagrams (SLDs)

The contractor shall submit a general SLD including a total overview of the electrical circuit of the PV system from the generators (PV modules) to the injection point (power evacuation) and total overview of the electrical circuit of the DC part of the PV system, namely from the PV modules to the inverter(s). In the diagram the following elements should be represented:

- a) Inverters and its location
- b) PV arrays
- c) Combiner boxes
- d) PV strings
- e) DC cables
- f) Earthing system
- g) Disconnectors and DC protection
- h) AC cables
- i) Meter
- j) PV System connection with Backup Power Supply/UPS/Gen Set etc.
- k) Other miscellaneous details

2.13. Detailed Design and Engineering Report

Applicable standards:

IEC 62548 or equivalent Photovoltaic (PV) arrays - Design requirements

The contractor shall submit complete design and engineering report including but not limited to the following:

- i. Submission of certificate/report by structure engineer regarding building roof strength analysis specifically of Head Office Islamabad site to assess the existing strength of roof capable to withstand the load of heavy solar structure.
- ii. Submission of SAP-2000/STADD Pro Wind Analysis (aerodynamic study) report in case solar structure is elevated.
- iii. Any works envisaged including: clearing of the roof, change of the items on the roof, any fixes to the roof, works to pass cables, DC and AC cable runs, PV modules fixing/mounting structures and others.
- iv. Fixing/mounting structures to be used
- v. Mechanism of safe transportation of solar system and allied structure to the rooftop of the building especially multistorey buildings which may require crane/tower crane etc.
- vi. Currents and voltages to be used in DC and AC
- vii. Sizing of the PV array – mentioning at least the number of modules per string, array and total, Isc and Voc versus the allowed by the inverter.
- viii. PV modules and inverters to be used.
- ix. Generator 250KVA to be used
- x. Sizing of the AC and DC cables – including the section and the estimated losses
- xi. Earthing and grounding for lightning protection – the grounding system of the building should be used for the PV system.
- xii. Combiner/distribution boxes DC and AC
- xiii. Junction boxes DC
- xiv. MCB's to be used including the protection at DC and AC levels – the system should be able to isolate each string, each array, and each inverter, if applicable. At the AC level all voltage levels should be able to be isolated.

2.13.1 Technical Drawings and As-Builts

All final technical drawings and as built must be delivered upon acceptance of the PV system and rectified if necessary, after acceptance for both the civil and electrical works. A PV system O&M manual should also be delivered in accordance with the manufacturer's recommendations.

2.13.2. Acceptance of the PV System

The PV system shall be considered accepted after all commissioning tests have “passed” and without any fail and after receipt of all technical drawings and as-builts as well as the O&M manual.

A preliminary acceptance certificate (PAC) shall be provided upon successful commissioning. A punch list shall be produced and corrected before the acceptance/transfer of the PV system is made to the client.

The contractor shall be liable for the PV system in the 1st year and the 2nd year regarding the annual energy generated as per the value submitted by the award of the contract. The final acceptance certificate (FAT) shall only be given after 2 years and provided that this condition is met either in year 1 and 2 or on year 2.

2.13.3. Control Room for Remote Monitoring System and Office

The successful bidder is required to construct a control room with dimensions of 15x15 feet. This room must be equipped with a gateway capable of ensuring reliable, stable, and continuous (24/7) remote access to the monitoring system of the PV Generator located in the control room on-site, including remote accessibility. The control room and remote access facility at the specified site must incorporate all operational data for the PV Generator, ensuring the uninterrupted transfer and acquisition of operational data. Additionally, the remote monitoring system should offer a secure and redundant archive for all acquired operational data.

Prior to procurement, both the chosen gateway and the control room of the remote monitoring system will undergo a review and approval process by the consultant and client. The system must be designed to provide different access levels and access rights."

2.13.3. Training of University Staff

Upon the successful operation of the solarization system, the Seller is responsible for providing comprehensive training to the Purchaser. This training shall cover the effective utilization, maintenance, and troubleshooting of the solarization system. The Seller must allocate and maintain a dedicated training section, equipped with the necessary resources and materials, to facilitate the training sessions for the University staff. The training should be designed to ensure that the University staff gains a thorough understanding of the solarization system's operation and upkeep, enabling them to manage and utilize the system efficiently."

3 Bidding Documents

3.1 Contents of Bidding Documents

The details of transaction structure, bidding procedures, contract terms and technical requirements etc. are prescribed in the bidding documents, which include the following (collectively, the "**Bidding Documents**"):

No.	Description
1.	Request for Proposal (RFP)
2.	Annexes to Request for Proposal
3.	Power Purchase Agreement (PPA)

Each Bidder shall examine all instructions, terms and conditions, forms, specifications, and other information contained in the Bidding Documents. If the Bidder:

Fails to provide all documentation and information required by the Bidding Documents.

OR

Submits a Bid which is not responsive to or fully compliant with the terms and conditions of the Bidding Documents,

Such action shall be at the Bidder's risk and GCWU Sialkot or Evaluation Committee may determine that the Bid is nonresponsive to the Bidding Documents and may reject it.

3.2 Pre-Bid Meeting

GCWU Sialkot will organize a Pre-Bid meeting on (15-04-2024) the date also specified in the Data Sheet to discuss any comments the Bidders might have with respect to the transaction structure and the Bidding Documents.

3.3 Bidders' Comments and Clarifications on Bidding Documents

A Bidder requiring any clarification on the Bidding Documents may send a written request for clarification to GCWU Sialkot. Any request for clarification shall be sent by e-mail or through courier to GCWU Sialkot at the contact details provided in the Data Sheet at Annex-A.

Any such clarification request shall be addressed before 14:00 (Pakistan time) on the clarification/comments deadline on time and date specified in the Data Sheet at Annex-A. GCWU Sialkot shall endeavor to provide a response to such queries as soon as possible.

Electronic copies of the response, including an explanation of the query but not identification of its source (the **Response to Questions Document**), shall be sent to all Bidders. If similar or repeated queries are made by a Bidder, those queries may be listed as one query and GCWU Sialkot may respond to such query only once.

GCWU Sialkot reserves the right not to consider any such comments or amendments of the Bidding Documents. Any proposed changes that substantially affect the structure of the Bidding Documents or the transaction structure shall in no case be taken into consideration.

3.4 Amendments of Bidding Documents

The Bidding Documents shall be deemed amended to the extent GCWU Sialkot makes a statement to this effect in the Response to Questions Document and, in the absence of such express statement by GCWU Sialkot, the Response to Questions Document shall not have the effect of amending or modifying the Bidding Documents by implication.

No other communication of any kind whatsoever shall be deemed to modify the Bidding Documents by implication.

3.5 Reservation of Rights

GCWU Sialkot reserves the right to reject any or all the Bids or the Bidders without assigning any reason.

3.6 Confidentiality

GCWU Sialkot recognizes that certain information contained in Bids submitted may be confidential and may represent competitive information or business strategy. The Bidders are responsible for identifying those portions of their Bid which they consider confidential. The Bids in their entirety may be shared by GCWU Sialkot with relevant governmental ministries and agencies for appropriate purposes.

3.7 Due- Diligence

Each Bidder is solely responsible for conducting its own independent research, due diligence, and any other work or investigations and for seeking any other independent advice necessary for the preparation and submission of Bids and the subsequent sale and supply of electricity. The Bidders are expected to have full understanding of the project including obtaining necessary Consents, Clearances and Permits, whenever and wherever required, for implementation of the project.

Bidders may find it useful to visit the site before or on the date of the pre-bid meeting. Please refer to the contact details in the Data Sheet at Annex-A for this purpose.

No representation or warranty, express or implied, is made and no responsibility of any kind is accepted by GCWU Sialkot or its advisors, employees, consultants, or agents, for the completeness or accuracy of any information contained in the Bidding Documents or the Response to Questions Document or provided during the bidding process or during the term of the PPA. GCWU Sialkot and its advisors, employees, consultants, and agents shall not be liable to any person or entity as a result of the use of any information contained in the Bidding Documents or the Response to Questions Document or provided during the bidding process or during the PPA Tenure.

Any Bids submitted in response to this RFP will be submitted upon a full understanding and agreement of terms of this RFP and, therefore, the submission of Bids in response to this RFP would be deemed as acceptance of the said terms.

4 Bid Preparation

4.1 Contents of Bid

Bidders must prepare and submit their Bids in full compliance with the requirements of this RFP together with the submission of the documents, forms and instruments required for submission under this RFP. Each Bidder shall submit the following documents (together with the "Bid"): 1. Technical Bid

4.1.1. Financial Bid

Bidders are requested to submit the required Technical and Financial Bid in such number as indicated in "Bid Data Sheet" (Annex-A). The Bid shall be written in English language. The authorized representative of the Bidder appointed pursuant to the Bidder's Power of Attorney (the **Bidder's Attorney**) shall complete and sign the Technical and Financial Bids and initial each page thereof.

4.2 Technical Bid Documents

Each Bidder shall submit a technical proposal (the "**Technical Bid**") containing information required under this RFP and by completing the following documents (collectively, the "Technical Documents"):

No.	Description	Relevant Annexes
1.	Technical Bid Form	Annex C, Form-1
2.	Power of Attorney	Annex C, Form-2
3.	Technical Proposal	Annex C, Form-3
4.	Integrity Pact	Annex C, Form-4
5.	Bid Security (Bond)	Annex C, Form-5
6.	Additional Documents	As stated in the paragraphs below

The Technical Documents are self-explanatory. However, the Bidders may seek clarifications in the Pre-Bid Conference if required.

The Power-of-Attorney is to be duly stamped and notarized.

Bidders shall also attach the PPA duly accepted by putting their initials at the bottom of each page by the Bidders' Attorney without any amendments thereto, signifying the Bidders' acceptance of the terms of the PPA in its entirety with the Technical Bid.

Each Technical Bid shall be prepared in conformity with the requirements specified in the Bidding Documents and must adhere to the formats wherever prescribed.

Each Bidder may submit any supporting information or documentation (other than mentioned above), which shall not exceed five (5) pages, that may assist the Evaluation Committee in the evaluation process and the same may be annexed to the Technical Bid.

The Additional Documents to be provided under the Technical Bid will also include applicable documents as mentioned in section 2.4 above, depending upon the structure of the Bidder (i.e JV/Consortium or otherwise).

4.3 Financial Bid Documents

- The Financial Bid shall not be made conditional about any matter in any manner.
- All costs for implementing the project at the site of GCWU Sialkot, if any, shall be borne by the Seller.
- **Financial Bid**
- The Financial Bid shall be submitted in the Form of Financial Bid provided at Annex-D inclusive all taxes.
- The Financial Bid is to be made on a PKR per kWh basis in the manner described in section 2.3 above.
- The Financial Bid will be submitted on the Bidder's letterhead signed by the Bidder's Attorney.

4.4 Sealing and Marking of the Bids

Each Bidder shall submit one original technical proposal and one original financial proposal and the number of copies of technical proposal as indicated in the "Bid Data Sheet" (Annex A). Each Technical Bid shall be in a separate envelope indicating the Bid as original or copy clearly marked as "ORIGINAL" and "COPY", as appropriate. All copies of the Technical Bid shall be placed in a sealed envelope/box clearly marked "TECHNICAL BID" (the "Technical Bid Envelope") and the Financial Bid in the sealed envelope clearly marked "FINANCIAL BID" (the "Financial Bid Envelope"). These two envelopes and/or boxes, in turn, shall be sealed in an outer envelope/box bearing the address and information indicated in the "Bid Data Sheet" (Annex-A).

Each Bidder can submit only one Bid.

Each page of the Technical and Financial Bid shall be initialed or signed by the Bidder's Attorney. In case of any inconsistency between original and copy, the original will prevail.

The inner envelopes/boxes shall each indicate the name and address of the Bidder so that the Bid can be returned unopened in case it is declared "late".

If the outer envelope/box is not sealed and marked as required above, GCWU Sialkot will assume no responsibility for the Bid's misplacement or premature opening. If the outer envelope/box discloses the Bidder's identity, GCWU Sialkot is not responsible for the disclosure of the Bidder, however, this disclosure will not constitute grounds for Bid rejection. The Technical Bid Envelope and the Financial Bid Envelope shall each indicate the name and address of the Bidder.

5 Bids Opening and Bid Evaluation

5.1 Evaluation Committee

GCWU Sialkot and Consultants shall set up a special-purpose committee, which shall be responsible for assessing the Bids (**Evaluation Committee**). The members of the Evaluation Committee shall be prohibited from participating directly or indirectly in the preparation and/or submission of any Bid and shall be prohibited from providing any assistance to any Bidder for the purposes thereof, except as may be expressly provided herein.

5.2 Opening and Preliminary Examination of Bids

The Evaluation Committee shall open the Bids of each Bidder, in the presence of Bidders' designated representatives who choose to attend, at the time, date and location stipulated in the Bid Data Sheet (refer Annex-A). The Bidders' representatives shall bear identification and authorization documents issued by the Bidder. The Bidders' representatives who are present shall sign a register evidencing their attendance.

The Evaluation Committee received the outer envelopes/boxes, one at a time, in the order in which the Bids were received, and take out the inner envelopes/boxes containing the Technical Bids and the Financial Bids. These inner envelopes/boxes shall be placed on a table in open view of the attendees but shall remain sealed. The Evaluation Committee shall then declare the Bids opening proceedings ended and shall dismiss the Bidders' representatives present for this purpose. No Bid shall be rejected at the Bids opening except for late Bids.

The Bidders' names and any other details the Evaluation Committee may consider appropriate shall be announced by the Evaluation Committee at the opening of each Bid.

The Evaluation Committee shall prepare minutes of the Bids opening, including the information disclosed to those present. The Evaluation Committee shall then proceed to the opening and evaluation of the Technical Bids. Any minor deficiencies or errors in a Bid will not result in its automatic rejection. In case the Evaluation Committee determines that the Technical Bid is subject to minor deficiencies or certain errors or omissions, it may request for such clarifications from the Bidders in writing which do not change the substance of their bid to correct such deficiencies and submit the cured Technical Documents to the Evaluation Committee in accordance with the requirements set out in this RFP.

5.3 Bid Security and Performance security

The bidder is required to submit a **bid security of 2%, Rs. 1,000,000 (Rs.1.00 Million in the form of a CDR/PO in favour of Treasurer, GC Women University Sialkot**, which should be attached to the technical bid. Upon being awarded the contract, the successful bidder must provide a performance security of 5%, in the form of a bank guarantee as specified in the Request for Proposal (RFP).

5.4 Opening and Evaluation of the Bids

The initial Evaluation Committee will assess the pre-qualification criteria outlined in Annex-E1. Subsequently, eligible firms will undergo evaluation based on technical criteria. The Evaluation Committee will appraise the Technical Bids using the "Technical Evaluation Criteria" specified in Annex-E. The committee's decision will rely solely on the content of the Technical Bids, without considering external evidence. Technical bids that substantially meet the criteria in Annex-E will be chosen for further consideration.

The Evaluation Committee may waive any minor informality, non-conformity or irregularity in a Bid that does not constitute a material deviation, and that does not prejudice or affect the relative ranking of any Bidder because of the Technical Bid and Financial Bid evaluation.

For purposes of this determination, substantially responsive Technical Documents are those that conform to the minimum technical requirements set out in Annex B and all other terms and conditions of the Bidding Documents without material deviations, objections, conditionality, or reservations. A material deviation, objection, conditionality or reservation resulting in a failure of Technical Bid can relate to issues: (i) that affect in any way on the terms envisaged under the PPA; (ii) that limits in any substantial way, inconsistent with the Bidding Documents, GCWU Sialkot's rights or the Successful Bidder's obligations under the PPA; or (iii) that relate to material errors or deficiencies whose rectification would unfairly affect the competitive position of other Bidders who are presenting substantially responsive Technical Documents.

Bids for which the Technical Documents have been determined to be as not substantially responsive or which do not achieve the minimum qualifying marks as required under the technical evaluation criteria below under Annex-E shall be rejected, and the unopened Financial Bid Envelope of that Bid shall be returned to the representatives of such Bidder.

5.4 Opening and Evaluation of the Financial Bids

Opening of Financial Bid

The Evaluation Committee shall open the Financial Bid Envelopes of those Bidders whose.

Technical Bids have achieved marks above the threshold set out in Annex E in the presence of

Bidders' designated representatives who choose to attend, at the time, date, and location communicated through a letter.

The Financial Bids that are either conditional or do not contain the Financing Term Sheet will be rejected by the Evaluation Committee.

The Evaluation Committee shall prepare minutes of the Financial Bid opening, including the information disclosed to those present in the Bid-opening meeting.

Evaluation of Financial Bid

The Financial Bids will be evaluated as per Financial Evaluation Criteria as provided in Annex F and all the Financial Bid will be ranked in ascending order as provided thereunder.

5.5 Letter of Award

GCWU Sialkot will then issue the Letter of Award (LOA) to the lowest Bidder and invite such bidder to sign the PPA within fifteen (15) days of the date of the LOA.

If lowest Bidder declines or fails to sign the PPA within stipulated time, or fails to provide Performance Security, or otherwise becomes ineligible or is rendered unable for any reason to proceed with signing or performing the PPA, GCWU Sialkot is entitled to encash its Bid Security forthwith. GCWU Sialkot may consider issuing the LOA to the 2nd lowest Bidder.

5.6. LIST OF DOCUMENTS ISSUED WITH RFP

Following information has been issued with the RFP:

- Annex A: Bid Data Sheet
- Annex B: Technical Information about GCWU Sialkot
- Annex C: Forms for Technical Bid
- Annex D: Forms for Financial Bid
- Annex E1: Pre-Qualification Criteria
- Annex E: Technical Evaluation Criteria
- Annex F: Financial Evaluation Criteria
- Annex G: Power Purchase Agreement
- Annex H: Helioscope Report

Annex A: Bid Data Sheet

DATA SHEET

Project Title	Solarization of GCWU Sialkot (Fatima Jinnah Campus), on ESCO Model
RFP Date	21 st March 2024
Pre-bid Conference	15 th April 2024 at 11:30 AM in the Committee Room, GC Women University Sialkot Katchehry Road Sialkot
Contact details of GCWU Sialkot representative for site visit	Engr. M. Usman Saleem +92- [302-8480619]
Validity of Bid	Three Months from Bid Submission Deadline
Copies of Bid Required	01 Original and 02 sets of copies. 1 soft copy of technical bid in DVD or USB.
Bid Submission Address	Vice Chancellor Office, Government College Women University, Kutchehry Road Sialkot, Pakistan. <i>Phone:</i> 052-9250665
Bid Submission Deadline	11:00 AM, 18 th April 2024
Place and Time of Technical Bid Opening	11:30 AM, 18 th April 2024 Committee Room, Admin Block, GC Women University Sialkot
Contact details of GCWU Sialkot for clarifications on the Bid Documents sought by the prospective Bidders	Project Director. Works Directorate GC Women University Sialkot 052-9250665 P.director@gcwus.edu.pk Usman.saleem@gcwus.edu.pk

Annex B: Technical Requirements of the Plant

A 230kWp (DC Capacity at Standard Test Conditions) Grid-Connected Solar PV System, excluding energy storage, will be installed on a Power Purchase Agreement (PPA) basis. The installation will include a generator with a capacity of 250KVA, positioned at locations specified in Annex B-1. The roof-mounted PV modules will adhere to the following minimum technical requirements.

Reactive power compensator

Reactive power compensation to maintain the power factor of (leading/lagging) 0.92 at each point of coupling is the responsibility of contractor.

Monitoring of PV Plant

Online and remote monitoring, data must be available online, locally stored on hard drive, and displayed on 50 in LED screen with customized GUI as per site requirement. PC with min core i3, 1 TB HDD, 4 GB RAM & 50 inches HD-LED screen along with networking hub is part of BoQ.

The following functionality is expected:

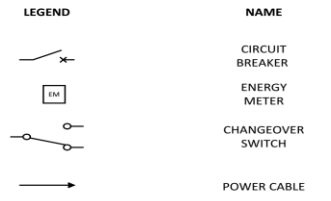
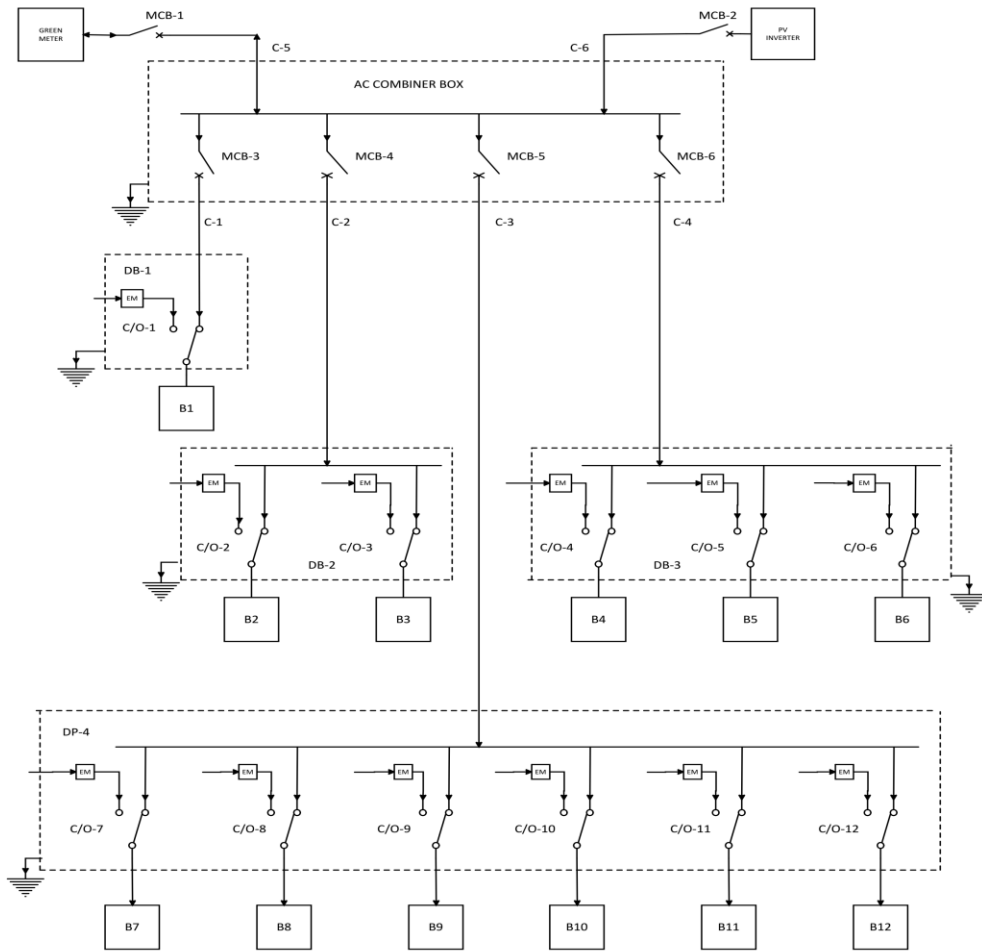
1. Generation data must be logged and available online for future access.
2. Solar Irradiance data and air temperature data must be integrated into GUI.
3. Generation data must be logged and secured off-line with time tracks.
4. Automated frequent data collection, analysis, and display of the fundamental parameters of the system output (especially Inverter's all parameters)
5. Alarms/alerts and timely notification of key performance indicators
6. Daily, Monthly, quarterly, and yearly reporting of deviations from the guaranteed PR
7. Data must be readily available for the fulfillment of all warranties and performance guarantees.
8. Equipment condition monitoring
9. Separate inverter parameters monitoring and Data logging.
10. Generator 250KVA, Dynamic Genet Controller, compatible with Gen-Set & Inverter Generator Ratings must visit power house for understanding) Minimum diesel load Guarantees that the diesel generators do not operate under a minimum load level, in order to ensure a longer engine life. Reverse power protection Avoids a power flow from the inverter to the genset, for example, in the event of a total load disconnection. Stability against irradiance variations Controller should limit the PV output power to guarantee that the available spinning reserve is enough to meet the energy demand in a cloud shading event. Monitoring the installation can be monitored by using a SCADA. Reactive Power Support from the PV inverters, for those installations with high reactive power consumption. External Synchronizer, able to optimize the PV Reverse power flow should be stopped in case of load less than required. (power/energy feedback controller). Certificates and compliance with standards Safety regulations for electrical measuring, control, regulation, and laboratory equipment EN 61010-1:2010, electromagnetic compatibility EN 61000-6-2:2005, EN 61000-64:2011 or equaling.
11. **AMI based Meters** Must be installed at each energy coupling point Data should be sent /received for on cloud and available online.
12. **Testing & calibration** (Approved by M&T or GEPCO & NTDC rules) should be class 1 with accuracy of + or – 0.5 Calibration should be done after 2 years every time.

Annex B-1: the Premises

GCWU Sialkot

Sr. No.	Departments allocated for 230kwplInstallation of solar Power plant	Estimated PV Rooftop Capacity
1	Admin Block	75
2	Social Sciences Block	303
3	Khawaja Safdar Block	90
4	Auditorium	45
5	NLC Block	54

Annex B-2: SLD For Interconnectivity and single point of injection



MCB	RATING (4-P, 440V)
1	1000 AMP
2	1000 AMP
3	1000 AMP
4	320 AMP
5	320 AMP
6	320 AMP

CABLE	RATING (4-C, 440V) (Cross Section)	LENGTH
C-1	630 mmsq	45 ft
C-2	400 mmsq	520 ft
C-3	400 mmsq	1100 ft
C-4	400 mmsq	1150 ft
C-5	630 mmsq	35 ft
C-6	630 mmsq	20 ft

CHANGEOVER RATING (4-P, 440V)			
C/O	RATING (amp)	C/O	RATING (amp)
1	1000	7	42
2	170	8	10
3	60	9	10
4	24	10	10
5	10	11	18
6	6	12	260

DISTRIBUTION PANNEL	BUILDING NAME
DP-1	B1-SOCIAL SCIENCE BLOCK
DP-2	B2- NLC B3- ARMS + TUBEWELL
DP-3	B4- AUTOTORIUM B5- INTERMEDIATE + SSC B6- BBA BLOCK
DP-4	B7- GIRLS HOSTAL + MOSQUE B8- FEDERAL HOSTAL B9- NATURAL SCIENCE BLOCK + LIBRARY B10- SHAMAS BLOCK B11- KHAWAJA SAFDAR BLOCK B12- MA BLOCK + GUEST HOUSE

Annex C: Forms for Technical Bid

Form 1 Technical Bid Form

To: [Insert Name]

[Designation]

[Address]

[Government College Women University Sialkot]

[Address]

Re: TECHNICAL BID - RFP for Solarization of GCWU Sialkot, on ESCO Model

Ladies and Gentlemen,

1. Terms & Expressions

Unless the context indicates otherwise, all capitalized terms and expressions used herein and, in our Bid, have the meaning given to them in the document entitled 'Request for Proposal' dated [●] issued by GCWU Sialkot bearing the title given in the caption to this letter (as amended and/or supplemented from time to time, the **RFP**).

2. GENERAL

We, the undersigned, acknowledge, confirm, and agree that:

- A. We have carefully examined, read, and understood and agreed to the terms of the Bidding Documents, including the RFP with its Annexes and the PPA.
- B. We have satisfied ourselves that we have full and complete understanding of the nature and dynamics of the project referenced above and general and local conditions to be encountered in implementation of the said project thereof including obtaining Consents, Clearances and Permits, if required any, for sale/supply of energy under the PPA; and
- C. We, the undersigned, offer to design, engineer, finance, install and operate & maintain the Plant for the duration of the PPA and will be bound by the obligations provided in the Bidding Documents.

3. Bidder's Capability to Implement the Project

We declare that we can implement the project, as per terms of the RFP and the PPA and of supplying the Guaranteed Energy during the PPA Tenure as per terms stated in the RFP & PPA.

4. BID COMPLIANT WITH SUBMISSION REQUIREMENT

We declare and confirm that our Bid satisfies and complies with the submission requirements indicated in the RFP. We also undertake that no circumstances exist that (i) have resulted in us not meeting the eligibility criteria for Technically Qualification as per requirements mentioned in the Request for Proposals Document issued by GCWU Sialkot or (ii) would materially and adversely affect our ability to implement the Project as per our Technical and Financial Bid that conforms to the requirements of the Bidding Documents.

5. FIRM AND IRREVOCABLE BID

We agree to abide by this Bid, which consists of our Technical Bid and Financial Bid (each as defined in the

Bidding Documents), for a period of six months from the Bids Submission Deadline as set forth in the Bidding Documents, and that it is irrevocable and shall remain binding on us and may be accepted by you at any time before the expiration of that period. Our Bid Security is enclosed herewith.

We hereby confirm that the following values shall be used in the PPA under the respective headings.

- a) Guaranteed Energy will not be lower than: 3.5 kWh/KW
- b) Deemed Energy will not be higher than: 0.29 kWh/KW
- c) Annual Degradation will not be higher than: 0.5 % age.
- d) The initial Plant Value will not be higher than: 50 million PKR.

6. Undertaking

We undertake that we will provide in a timely and accurate manner all information concerning our company, equipment, and facilities, as may be required from time to time by GCWU Sialkot for the purposes of this RFP and/or the PPA.

We further undertake that, subject to the terms of the PPA, we will supply all energy generated by the Plant daily up to Guaranteed Energy.

We further undertake that our Technical Bid and appended Financial Bid is based on the supply, installation, and commissioning of new equipment for the Plant.

7. FURTHER WARRANTIES

We hereby represent and warrant that all information, data and material of any nature whatsoever provided by us in the Bid is true and accurate and not misleading in any manner and any further information as may be provided by us to GCWU Sialkot in connection with this RFP and/or the PPA shall be accurate and not misleading in any manner.

We have made a complete and careful examination of the RFP and have received all the relevant information as required by us at our sole risk and cost for the purposes of submission of the Bid. We further guarantee that we have verified and understood all the information required in connection with the RFP. To the extent that any provision in our Bid conflicts with the terms and conditions of the Bidding Documents, such provision is hereby withdrawn.

We understand that you are not bound to accept any Bid you may receive.

8. CONFIDENTIALITY

In connection with the transaction contemplated by the RFP, the Bidder has been (or will be) given access to information regarding the Project, including, but not limited to, financial data, agreements,

business plans, software, reports, data, records, forms and other information regarding GCWU Sialkot, as well as information provided by the GCWU Sialkot in physical or digital form (all such information being referred to as "Confidential Information"). The Bidder hereby agrees and warrants that to the extent it receives Confidential Information, the Bidder, and its affiliates, controlling and related persons and agents (collectively, the "Recipient"), the Recipient shall:

- a keep and maintain the Confidential Information strictly confidential.
- b disclose such Confidential Information (if at all) only to its controlling persons, its attorneys, and professional advisors, and to such employees who have a reasonable need to know such Confidential Information (subject, in each case, to such persons' agreement to make no further disclosure), or as may be required by law.
- c use such Confidential Information solely for the purpose of determining whether to enter into the transaction contemplated hereby; and
- d promptly upon request of GCWU Sialkot disclosing Confidential Information following the abandonment of the transaction contemplated by the RFP, return such Confidential Information (and all copies thereof) to GCWU Sialkot.

9. ADDITIONAL DOCUMENTS

In addition to the Technical Bid Form, we have submitted all the information identified in the RFP and the Bidding Documents.

We acknowledge and agree that GCWU Sialkot, or its advisors and consultants will not be responsible for any errors or omissions in relation to the Bidding Documents or the transactions contemplated thereunder, and we shall indemnify GCWU Sialkot and its advisors and consultants fully in connection therewith.

Capitalized terms used in this Technical Bid bear the meaning ascribed to them in the aforesaid RFP.

(signature)

In the capacity of

(Insert position)

Authorized to sign this Bid Form of

(Name of Bidder)

Pursuant to the Power of Attorney being submitted along with this letter.

Form 2 Power of Attorney

NOTES FOR EXECUTION OF POWER OF ATTORNEY

- The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.
- The Power of Attorney should be duly notarized, indicating that the person(s) signing the Bid has (have) the authority to sign the Bid and thus that the Bid is binding upon the Bidder(s) during the full period of its validity.
- This Power of Attorney shall be notarized with the Notary Public.
- Please find below the form and substance of the Power of Attorney.

FORM OF POWER OF ATTORNEY

On this.....day of

Before me

The Notary in this office

The undersigned

Mr./Ms. _____, duly authorized vide [*Board Resolution; power of attorney, dated*• of {*name of Bidder*}]

In his capacity as

Nationality

Holder of Passport or ID no.

Issued from _____

Dated _____

Residing at _____

Hereby appoints Mr./Ms. _____ in his capacity as _____, to:

- Execute under hand, or under seal, and deliver to the competent authorities all the documents listed in Schedule 1 attached here too.
- Deliver and receive any document or instrument in relation to the documents listed in Schedule 1 attached hereto; and

c) Do all the things necessary and incidental in respect of the matters set out herein including to do, execute and perform any other deed or act ought to be done executed or performed to perfect or otherwise give effect to the documents listed in Schedule 1,

And hereby confirm that all acts and deeds done by the said attorney in pursuance of these presents shall bind *{name of Bidder}* and shall if so, required be ratified by the *{name of Bidder}*.

SCHEDULE 1

A. DATED: [INSERT DATE OF EXECUTION]

B. THE GRANTOR: [INSERT NAME OF BIDDER]

C. THE ATTORNEY: [INSERT NAME OF REPRESENTATIVE]

D. PLACE IN WHICH DOCUMENTS ARE TO BE EXECUTED AND DELIVERED: Building & Works Department, GCWU Sialkot.
TEL: 042-99029238

E. DOCUMENTS:

THE GRANTOR'S BID AND ALL DOCUMENTS RELATED THERETO IN RESPECT OF THE REQUEST FOR PROPOSAL FOR SOLARIZATION OF GCWU Sialkot ON ESCO MODEL UNDER A PPA ARRANGEMENT

IN WITNESS WHEREOF the Grantor has executed this Power of Attorney (**under seal**) on the date set out above.

[SEAL])

[Name / Title of Grantor representative]

WITNESSES:

WITNESS 1:

WITNESS 2:

NAME:

NAME:

CNIC / PASSPORT NUMBER:

CNIC / PASSPORT NUMBER:

ADDRESS:

ADDRESS:

ACCEPTED & AGREED [NOTARISED]

Form 3 Technical Information

Sr.#	Description	Documentary Evidence
1	Energy Yield (adhere to units' requirement as per software simulation)	Provide document
2	Overall system design with basic components and functionality	Provide document
3	Software Simulation with annual energy yield commitment	Department/Building wise design and simulation
4	Building/Premises wise SLDs	Detailed SLDs building wise indicating all components and system design approach
5	Solar Panel	Technical data required
6	Inverter	Technical data required
7	Mounting Structure and civil works	Technical data required
8	Mounting Structure drawings, design ensuring rooftops are secure and water drainage	Design and drawings
9	SCADA	Technical data required
10	Generator with Dynamic Gen-set Controller	Technical data required
11	Irradiance and Weather meter with dataset	Technical data required
11	Project Organogram including CVs of the technical team	Organogram indicating actual project team and personnel
12	Project Planning and Presentation	<u>Project execution methodology along with presentation</u> shall be provided. Also, Bidder Shall has to present the execution plan to the Technical Committee
13	Timeline with COD	Detailed timeline indicating all activities and deliverables
14	Adherence to timeline in completion of work Non-adherence without just cause shall result in imposition of penalty	Undertaking on Stamp Paper that the Bidder shall, at the time of submission of Financial Proposal, provide the schedule of activities according to the time line given in the Bidding Documents and shall adhere to it, otherwise liable to imposition of penalty as per RFP and PPA clause.

Form 4 Integrity Pact

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC.

PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES & WORKS

Re: 'Bidding Document for Design, Supply, Installation, Testing, Commissioning, Operation and Maintenance of Grid Connected Rooftop Solar PV Power System on Energy Services Companies (ESCO) Model at Government Institutes in Punjab, Pakistan'

..... [name of Bidder] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan (GoP), Government of Punjab (GoPb) or any administrative subdivision or agency thereof or any other entity owned or controlled by GoP or GoPb through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Bidder] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP or GoPb, except that which has been expressly declared pursuant hereto.

[name of Bidder] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and GoPb and has not taken any action or will not take any action to circumvent the above declaration, representation, or warranty.

[name of Bidder] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts, or taking any action likely to defeat the purpose of this declaration, representation, and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to GoP or GoPb under any law, contract, or other instrument, be voidable at the option of GoP or GoPb.

Notwithstanding any rights and remedies exercised by GoP or GoPb in this regard (as may be applicable), [name of Bidder] agrees to indemnify GoP or GoPb for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP or GoPb in an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Bidder] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP or GoPb.

Name of Bidder:

Signature:

[Seal/ Stamp]

Form 5 Bid Security / Performance Security

Bank Guarantee (the Bond)

Guarantee No. _____

Executed on _____

Expiry date _____

[Letter by the Guarantor to GCWU Sialkot]

Name of Guarantor (Bank) with address: _____

Name of Principal (Bidder) with address: _____

Guaranteed Amount (express in words and figures): _____

Bid Reference No.: _____ Date of Bid: _____

The above premised, we [*insert name of the Guarantor*] hereby undertake irrevocably and unconditionally on demand to pay to the Government College Women University Sialkot (GCWU Sialkot), without any notice, reference or recourse to the Bidder or to any other entity or without any recourse or reference to any document, agreement, instrument or deed, any sum or sums (or any part thereof) equivalent in aggregate up to but not exceeding a maximum amount of:

[●] [●]/- ([●][●])

(The Guaranteed Amount)

at sight and immediately, however not later than [●] business days from the date of receipt of the GCWU Sialkot's first written demand (the Demand) at the Guarantor's offices located at [●] or through SWIFT instructions transmitted by the GCWU Sialkot's bank (i.e. [●]), on behalf of GCWU Sialkot, to the Guarantor, such Demand stating:

- that the Bidder is in breach of its obligations towards the GCWU Sialkot
- the total amounts demanded.
- the details of the account in which the total amounts demanded are to be credited.

A Demand shall only be honored by us (i) in the case of a written Demand, if it is made by and bears the signature of an authorized officer or other representative of GCWU Sialkot, as duly verified to us by the GCWU Sialkot's bank (i.e. [●]); or (ii) in the case of a Demand transmitted through SWIFT, if it is transmitted through authenticated SWIFT instructions by GCWU Sialkot's bank (i.e. [●]), on behalf of the GCWU Sialkot.

We, the Guarantor, shall unconditionally honor a Demand hereunder made in compliance with this Bond at sight and immediately on the date of receipt of your Demand, as stated earlier, and shall transfer the amount specified in the Demand to the bank account, as notified in the Demand, in

immediately available and freely transferable funds in the currency of this Bond, free and clear of and without any set-off or deduction for or on account of any present or future levies, imposts, duties, charges, fees, deductions or withholdings of any nature whatsoever and by whomsoever imposed.

Such demand must be received by us on or before the [●] (the “expiry date”), when this Bond shall expire and shall be returned to us.

We have been informed that GCWU Sialkot may require the Bidder to extend this Bond if the Performance Security has not been issued by the date 30 days prior to such expiry date. We undertake to immediately pay you a guaranteed amount upon receipt by us of your demand in writing and your written statement that Performance Security has not been issued and that this Bond has not been extended.

Upon expiry, this Bond shall be returned to the Bidder without undue delay.

The Guaranteed Amount shall be revised upon receipt by us of a notice duly signed by GCWU Sialkot and the Bidder of the revised guaranteed amount.

We hereby agree that any amendment, renewal, extension, modification, compromise, release or discharge by mutual agreement by GCWU Sialkot, the Bidder or any other entity of any document, agreement, instrument or deed shall not in any way impair or affect our liabilities hereunder and maybe undertaken without notice to us and without the necessity for any additional endorsement, consent or guarantee by us.

This Bond for its validity period shall not be affected in any manner by any change in our constitution or of the Bidder’s constitution or of their successors and assignees and this Bond shall be legally valid, enforceable, and binding on each of their successors and permitted assignees.

All references to any contract, agreement, deed or other instruments or documents are by way of reference only and should not affect our obligations to make payment under the terms of this Bond.

If one or more of the provisions of this Bond are held or found to be invalid, illegal, or unenforceable for any reason whatsoever, in any respect, any such invalidity, illegality, or unenforceability of any provision shall not affect the validity of the remaining provisions of this Bond.

We hereby declare and confirm that under our constitution and applicable laws and regulations, we have the necessary power and authority, and all necessary authorizations, approvals and consents thereunder to enter into, execute, deliver and perform the obligations we have undertaken under this Bond, which obligations are valid and legally binding on and enforceable against us under the laws of Pakistan and under the laws of the jurisdiction where this Bond is issued. Further, that the signatory(ies) to this Bond is/are our duly authorized officer(s) to execute this Bond.

This Bond and all rights and obligations arising from this Bond shall be governed and construed in all respects in accordance with the laws of Pakistan. The courts in Pakistan shall have exclusive jurisdiction in respect of any dispute relating to any matter contained herein.

The issuance of this Bond is permitted according to the laws of Pakistan and the laws of the jurisdiction where this Bond is issued.

Name:

Designation:

Annex D: Forms for Financial Bid

FINANCIAL BID FORM

Date: [Insert Date] To: [Insert Name, Designation & Address]

Re: FINANCIAL BID

Request for Proposal for RFP for Solarization of GCWU Sialkot, on ESCO Model under a PPA arrangement

Having carefully examined the Bidding Documents pursuant to and comprising the Request for Proposals (RFP) dated • issued by Government College Women University Sialkot (GCWU Sialkot) in connection with the captioned transaction, and having satisfied ourselves with the nature and dynamics of the said project and electricity sale referenced above and general and local conditions to be encountered in performance thereof, we, the undersigned, offer to design, engineer, finance, install, operate & maintain solar power Plant having a capacity of 230kwpto sell the generated energy stated in our Technical Proposal for the duration of the PPA at;

- 1 PKR [] **per kWh** during the Debt Period i-e ¹,
- 2 PKR [] **per kWh** during the Post-debt Period i-e

We understand, acknowledge, confirm, and agree that:

- a) We shall proceed to sign the PPA with 15 days of the LOA on the same terms as set out in the initial PPA submitted by us as part of our Technical Proposal.
- b) They offered Tariff will be payable in PKR on the terms provided in the RFP and PPA.
- c) this Financial Bid is unconditional.
- d) our calculation of levelized tariff for comparison purposes is appended with the Financial Bid Form

We further acknowledge and agree that GCWU Sialkot will not be responsible for any errors or omissions on our part in preparing this Financial Bid, including assumptions and cost, and we shall indemnify GCWU Sialkot fully in connection therewith.

Capitalized terms used in this Financial Bid bear the meaning ascribed to them in the aforesaid RFP.

[Signature]

In the capacity of [position]

¹ Bidder will specify years for Debt Period and years for Post Debt Period. Debt Period years will not be more than 10.

Authorized to sign this Financial Bid Form of [name of Bidder]

Bid Price Table

[to be filled and provided by the Bidder]

Year	Bid Price (as per Financial Bid Form) in PKR/kWh
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	
23.	
24.	
25.	
NPV @10%	
Levelized Bid Price*	

* Levelized Bid Price will be calculated using an annuity method over 25 years at 10% discount rate.

Notes:

- 1 Each Bidder shall tabulate the Bid Price for each year based on its Financial Bid.
- 2 No adjustment for future indexations for Variable Component i-e PKR 2/kWh are required for these calculations.
- 3 In case of any inconsistency between the Financial Bid Form and the above Bid Price Table, the Financial Bid Form shall prevail.

- 4 GCWU Sialkot shall have the right to verify all calculations based on the Financial Bid Form and in case of any inconsistency shall have the right to disqualify such a bidder.

Annex E: Technical Evaluation Criteria

1.1 GENERAL

Pre-qualification will be based on all the criteria given in succeeding paras 3.2 to 3.7 regarding the Applicant's Financial Soundness, Experience Record, Personnel Capabilities, Equipment Capabilities and Domestic Content Requirements as demonstrated by the Applicant's responses in the forms given in this PQD. Sub-contractor's experience and resources shall not be taken into account in determining the Applicant's compliance with the qualifying criteria. However, JV/ Consortium experience and resources shall be considered.

Failure of an Applicant to provide to provide essential information may result in dis - qualification.

The criterion for the evaluation is given below:

Sr.	Category	Weightage/Marks
1.	General Experience	20
2.	Personnel Capabilities	20
3.	Financial Soundness	15
4.	Project Management Capacities	05
5.	Equipment Capabilities	05
6.	Energy Parameters	20
7.	Methodology	15
Total:		100

Note: The applicant must secure **at least 50%** marks in General Experience and Financial Soundness category.

Overall score for passing technical proposal is 65 Marks.

All proposals should be properly tagged.

1.2 BASIC ELIGIBILITY

The firms/company/JV fulfilling the following basic requirements shall only be considered for further evaluation (relevant documents to be attached):

Local firms/ companies may participate in this process having valid registrations with the Securities and Exchange Commission of Pakistan (SECP), Income Tax Department / NTN / Sales Tax Number, PRA registration and Valid Pakistan Engineering Council (PEC) Registration in C5 Category with relevant

codes e.g. (EE04, EE06,EE11), or above, if international firm is desirous of getting prequalified then proof of their affiliation/ registration from their respective country's legal and professional body shall have to be provided. However, the international firm shall submit JV/ consortium agreement with local partner(s) having **PEC license of C5 or above category** (copy of the certificates must be attached).

The Applicant / firm / company must have completed at least 1 project of solarization **capacity of 230 KWp**. The Applicant (and members of a JV/consortium) shall provide a Judicial Affidavit declaring no blacklisting from any government agency or an international financial institution.

Certified Annual Audit Report for the last three (03) years,

(JV/ Firm turnover collectively / jointly shall be calculated)

All the Applicants must fulfill the requirements mentioned in this sub-Clause 3.2 (a to c).

1.3 GENERAL EXPERIENCE:

Credit Marks for experience shall be awarded based on following qualifications:

Sr.	Salient Feature	Maximum Marks
1..3	General Experience – Solarization (Total Marks 20)	
a)	Projects completed (Work Order and Project completion certificate should be provided) Marks distribution 200 kWp or above = 3 marks per project 50 kWp to 199 kWp =2 marks per project 10 kWp to 49 kWp = 1 marks per project Note: Maximum 5 projects will be Considered	15
b)	Projects in hand (Work Order / Evidence of work in hand should be provided) Marks distribution 100 kWp or above = 2.5 marks per project 50 kWp to 99 kWp = 2 marks per project 10 kWp to 49 kWp = 1 marks per project Note: Maximum 2 projects will be Considered	5
Sub-Total		20

1.4 PERSONNEL CAPABILITIES

Credit Marks shall be awarded under this category using the following criteria:

Sr. No.	Salient Feature	Maximum Marks
1.4 .	Personnel Capabilities (Total Marks 20) (Attach copies of CVs along with the affidavit stating the availability of Engineers for the project)	
i)	Qualified Graduate Engineers	
(a)	<p>Total Number of Engineers = 5 Marks distribution 5 marks will be given if the total No. of Engineers are 5 Nos. or above. For less than 5 Nos. of Engineers, marks will be given as per following formulas: $= (A/5) \times 5$ A = No. of Engineers BSc Engineer (PEC Registration/ equivalent for foreign qualified) with min One (01) Year Experience</p> <p>Note: At least 3 of 5 engineers should have specialization in Electrical Engineering with min two (02) Year Experience in Solar Energy system Designing and installation.</p>	05
(b)	<p>Experience of Engineers in number of years Marks distribution 5 marks will be given if the Applicant/Firm has at least three (3) engineering graduates each of whom has at least 05 years' relevant experience. For less than 3 No. of Engineers having at least 05 years relevant experience, marks will be given as per following formulas: $= (A/3) \times 5$ A = No. of Engineers having at least 05 years' relevant experience.</p>	05
ii)	Number of diploma engineers/ technicians in employment of the firm	
(a)	<p>Number of diploma engineers/technicians Marks distribution 5 marks will be given if the total No. of Diploma of Associate Engineers (DAE)/ B Tech are 5 nos. or above. For less than 5 No. of Diploma of Associate Engineers, marks will be given as per following formulas: $= (A/5) \times 5$ A = No. of DAEs/B-Tech</p> <p>Note: At least 3 of 5 Diploma Engineers/Technicians should have specialization in DAE Electrical/ Electrical Technology with min two (02) Year Experience in Solar Energy system.</p>	05

(b)	Experience of diploma engineers/ technicians in number of years. Marks distribution 5 marks will be given if the individual experience of at least 03 No. of DAEs/ B Tech is equal to 4 years or above relevant experience. For less than 3 No. of DAEs/ B Tech having individual experience of 4 years, marks will be given as per following formula: = $(A/3) \times 5$ A = No. of DAEs/ B Tech having individual experience of 4 years or above relevant experience.	05
Sub-Total		20

1.5 Financial Position

Credit Marks shall be awarded based on the following criteria:

Sr.	Salient Feature	Maximum Marks
1.5.	Financial Position (Total Marks 15)	
i)	Working Capital = Current Assets – Current Liabilities (Average of Certified Audit Reports of Last 3 years)	
	Marks distribution: 10 marks will be given if the available average working capital for the last three years or available bank credit line limit is equal to Rs. 50 million PKR or above For limit, less than Rs. 50 million PKR, the following weightage will be applied. $10 \times (A/50)$ A= Average working capital for last three years OR Available Bank Credit Line Limit	10
ii)	Annual Turnover (Certified Audit Reports of Last 3 years)	
	Marks distribution: 05 marks are given if the available average annual turnover for the last three years is equal to Rs. 100 million or above. For the turnover, less than Rs. 100 million following weightage will be applied $05 \times (A/100)$ A= Average Annual Turnover in last three (03) years	05
Sub-Total		15

1.6. PROJECT MANAGEMENT CAPACITIES

Credit Marks shall be awarded based on the following criteria:

Sr.	Salient Feature	Maximum Marks
1.6.	Project Management Capacities (Total Marks 05)	
a)	CV of Project Management Leader / Project Manager (master's degree in engineering electrical / Mechanical / Mechatronics / Civil or relevant) with an experience of 5 Years for implementing projects of similar nature or relevant (01 personnel) (Qualification and Experience carry 50% Marks each)	05
	Sub-Total	05

1.7 Equipment CAPABILITIES

Credit Marks shall be awarded based on the following criteria:

Sr.	Salient Feature	Maximum Marks
1.7	Equipment Capacities (Total Marks 05)	
a)	PV Analyzer. (1 Mark) GPS Meter. (1 Mark) Megger / Earth Resistance Tester (1 Mark) AC/DC Clamp Meter (1 Mark) Repair / Workshop Facility (1 Mark)	05
	Sub-Total	05

1.8 Energy Parameters

1.8 Energy Parameters (Max Marks: 20)			
Note: Bidder SHALL have to comply with the minimum specifications for all the items/products.			
	Guaranteed Energy	The Highest Guaranteed Energy offered by the Bidder will be given full score and other Bidders will be given proportionate scores based on offered Guaranteed Energy. (Bidders offering lower Guaranteed Energy as against requirement specified in this RFP, will be disqualified.	05

	Deemed Energy	The Lowest Deemed Energy demanded by the Bidder will be given full score and other Bidders will be given proportionate scores based on demanded Deemed Energy. (Bidders offering higher Deemed Energy as against the Guaranteed Energy offered by the Bidder in its Technical Bid will be disqualified.	05
	Annual Degradation	The lowest annual degradation allowance demanded by the Bidder will be given full score and other Bidders will be given proportionate scores based on demanded annual degradation allowance. (Bidders offering higher annual degradation allowance as against requirement specified in this RFP, will be disqualified.	05
	Value of Plant	The Bidder, meeting all minimum specifications of the Plant specified in this RFP, with lowest value of Plant will be given full score. Other Bidders will be given proportionate scores based on the value of the Plant.	05

1.9 Methodology

1.9 Methodology (Max Marks: 15)			
	Project Organogram	Organogram indicating actual project team and personnel- CVs of technical team	03
	Presentation, Methodology & level of details of the Technical Proposal	<u>Project execution methodology along with presentation</u> shall be provided. Also, Bidder Shall has to present the Technical Proposal to satisfy the Technical Committee about Technical Details of the Plant.	05

	Work Plan	Detailed work plan with timeline indicating all activities and deliverables shall be evaluated based on level of detail of activities and time to achieve COD. The Bidder offering more than 6 months for achievement of COD after signing of PPA will be disqualified.	07
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Note: Shall comply with “Mandatory requirements” and “Minimum specifications”.

Sr.#	Mandatory Requirements	Documentary Evidence	Total Marks
1- System Design (Bidder failed to provide required items <u>Shall be Disqualified</u>)			
1	Monthly Energy Yield (adhere to units' requirement as per software simulation)	Provide document	Mandatory
2	Overall system design with basic components and functionality	Provide document	Mandatory
3	Software Simulation with annual energy yield commitment	Department/Building wise design and simulation	Mandatory
4	Building/Premises wise SLDs along with power distribution details	Detailed SLDs building wise indicating all components and system design approach	Mandatory

Annex F: Financial Evaluation Criteria

1.1 Financial Evaluation Criteria

The Financial Bid of each Bidder will be evaluated based on the Bid Price Table submitted by the Bidders along with the Financial Bid Form. Bid Price Tables submitted by all the Bidders will be assimilated in Table 1 and rankings shall be made based on Levelized Bid Price in Table 2.

To verify the Bidders' Bid Price Tables, GCWU Sialkot will run calculations for this purpose in the following manner.

- 1.1.1 The Bid Price (for the Debt Period and for the Post-Debt Period) of each Bidder shall be tabulated in Table 1 for 25 years.
- 1.1.2 The Bid Prices for each year shall then be discounted to the COD, using a discount rate of 10 %.
- 1.1.3 The sum of the discounted Bid Prices shall then be compounded on fixed annuity basis over the PPA Tenure, at the rate of 10 % (Levelized Bid Price).
- 1.1.4 The Bidders shall be ranked in ascending order in Table 2 based on the numbers calculated in the above steps.

Table 1

Year	Bidder-1	Bidder-2	Bidder-3	Bidder-n
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
NPV @10%				

Levelized Bid Price*				
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* Levelized Bid Price will be calculated using an annuity method over 25 years at 10% discount rate.

Table 2

Rank	Name of Bidder	Levelized Bid Price
[insert rank]	[insert name of bidder]	[insert levelized Bid Price in PKR]

Note: The successful bidder will provide all necessary documents for the security/medical clearance of its representatives that are supposed to stay on site during the working hours.

Annex G: Power Purchase Agreement



**POWER PURCHASE AGREEMENT (PPA)
For Grid connected Solar PV Plant of 230kwp**

**To be installed at
GOVERNMENT COLLEGE WOMEN UNIVERSITY
SIALKOT**

Date:

POWER PURCHASE AGREEMENT (PPA)

For Grid connected Solar PV Plant of 230kwp

To be installed at GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT

THIS POWER PURCHASE AGREEMENT (the "Agreement") is made on -----,
2023 (the "Signing Date") at Sialkot, Pakistan.

BY AND BETWEEN:

- (1) [Seller Name], a company registered and existing under the laws of Pakistan having its registered office at _____ (the "Seller"); and
- (2) **GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT** an educational institution and existing under the laws of Pakistan, having its registered head office at _____ (the "Purchaser").

The Seller and the Purchaser shall be collectively referred to as the "Parties" and individually as a "Party".

WHEREAS:

- A. The Seller has proposed to the Purchaser that the Seller shall develop, design, construct, own and operate the Solar PV plant of 230kwp (the "Plant") to be located at Sialkot.
- B. The Seller wishes to sell and the Purchaser wishes to purchase all of the energy generated by the Plant pursuant to the terms and conditions of this Agreement.
- C. The Purchaser has in connection with the above agreed to provide roof-top spaces available at its campuses to the Seller for a period of [twenty five (25)] years in accordance with the terms of this Agreement.

NOW, THEREFORE, the Parties agree as follows:

1. DEFINITIONS

Unless otherwise defined herein, capitalized terms used herein shall have the following meanings, whether used in the singular or in the plural.

"Actual Energy Generation" means the amount of energy (expressed in kWh) generated by the Plant as measured by the Metering Equipment.

"Applicable Law" means any law, legislation, statute, act, decree, rule, ordinance, judgment, order, treaty, regulation, directive, requirement, other governmental restriction or announcement or any interpretation thereof enacted or issued by Government of Pakistan (including without limitation labor laws, immigration, trade and customs, and road laws) which necessarily relate to or impact upon the transactions contemplated under this Agreement.

"Board of Arbitrators" shall mean the three (3) arbitrators of whom each Party shall select one (1) member and the third member shall be appointed by the two (2) arbitrators so selected by the

Parties, provided that such „Board of Arbitrators“ shall consist of either retired High Court or Supreme Court judges or such persons as appointed by the President of the National Engineering Services Pakistan (Private) Limited.

“**Certificate of Commissioning of the Plant**” shall mean the certificate to be issued by the Engineer to the Parties under Clause 7.1 of this Agreement stating that, in the professional opinion of the Engineer, the Plant has been successfully commissioned.

“**Change in Law**” If, after the date of this Agreement, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost incurred by the Seller for supply of electricity, then the Solar Tariff otherwise payable to the Seller under this Agreement shall be increased or decreased accordingly by agreement between the Parties, and corresponding adjustments shall be made to the amounts specified in Solar Tariff.

“**Check Meter**” shall mean the check meter installed by Purchaser apart from the Metering Equipment, as detailed in Clause 6.5 of this Agreement.

“**Commercial Operations Date**” shall have the meaning ascribed thereto in Clause 7.3 of this Agreement.

“**Commissioned**” shall mean the successful completion of the commissioning of the Plant for continuous operation in accordance with Clause 7.2 of this Agreement.

“**Contract Performance Guarantee**” shall mean the Contract Performance Guarantee as submitted by the Seller in favor of the Purchaser at the time of bidding.

“**Contract Year**” means, in respect of the first Contract Year, the period of twelve (12) calendar months from the date on which the Commercial Operations Date occurs and, in respect of subsequent Contract Years, means each successive period of twelve (12) calendar months.

“**Electric Power Authority**” means any government, administrative or regulatory authority, Board, agency, ministry and commission in Pakistan which regulates and administers the power sector in Pakistan.

“**Energy Charge**” shall have the meaning ascribed to it in Clause 8.3 of this Agreement.

“**Engineer**” shall mean the firm of engineering consultants to be appointed and hired by the Parties for the purposes of certifying to the Parties that the Plant has been successfully commissioned in the manner detailed in Clause 7.2 of this Agreement.

“**Estimated Production**” shall mean as estimated production as per Clause 14.6.

“**Force Majeure Event**” shall have the meaning defined in Clause 17.2.

“**Government Approval**” means any approval, consent, permit, license or other authorization from any relevant Government Authority, which is necessary or desirable for the development, construction, installation, financing, operation and/or maintenance of the Plant.

“**Government Authority**” means any relevant government, administrative or regulatory authority, board, agency, commission or ministry in Pakistan having authority in respect of the matters being described in this Agreement.

“**Guaranteed Energy Generation**” shall mean the minimum generation of energy guaranteed which is [.] KWh/day average (Total KWh generated in one year divided by 365 days) for first year and later

calculated with accounting for 0.7% degradation each subsequent year in Energy as set out in Schedule 3.

“Insurance Policy” means the all risks insurance and third party liability insurance that the Parties shall reasonably agree in good faith to obtain and maintain according to the terms and conditions in this Agreement.

“Interconnection Facilities” shall mean the transmission line and other related equipment necessary for connecting the Plant to the Interconnection Point.

“Interconnection Point” shall mean the Interconnection Point as specified in the drawings provided in the RFP.

“KW and KWh” means kilowatt as power and Kilowatt hour as energy.

“Lease Deed” shall mean the lease deed to be entered into between the Parties in respect of the Premises in the form set forth in Schedule 1 of this Agreement.

“Lenders” shall mean the financial institutions extending financial assistance to the Seller in respect of the construction and long term financing of the Plant.

“Metering Equipment” shall mean all meters and metering devices as well as the Recording Equipment used for measuring the Actual Energy Generation.

“Minor Revisions” shall mean the proposed minor revisions suggested by the Purchaser to the Plant Design and / or, as the case may be, to the Premises Modification Statement, if any, as submitted by the Seller and which do not materially affect the nature, scope, schedule and / or cost of the Plant Installation as contemplated under this Agreement.

“NEPRA” means National Electric Power Regulation Authority in Pakistan.

“Off-Peak Tariff” shall mean the off-peak grid tariff of GEPCO applicable from time to time.

“Planned Outage” shall mean a planned interruption of the Plant’s generating capability or any material part thereof that has been scheduled by the Seller and has been notified to the Purchaser in accordance with Clause 10.1.

“Plant Design” shall mean the detailed Plant design including Specifications with Brands/origin, BOQ and drawings.

“Plant Installation” shall have the meaning of placement of all plant equipment including accessories ready for commissioning and commercial operation of the Plant.

“Plant Operation Day(s)” means seven days a week and 365 days a year.

“Premises Audit” shall have the meaning ascribed thereto in Clause 4.2 of this Agreement.

“Premises Modification Statement” shall have the meaning of statement of modification of Premises for making the Premises suitable for construction, operation and maintenance of the Plant, as detailed in Clause 4.3 of this Agreement.

“Premises Modification” shall have the meaning of all activities by the Seller for making Premises suitable for construction, operation and maintenance of the Plant.

“**Premises**” means the area designated by the Purchaser on which the Plant is to be installed with the address as set out below. GC Women University Sialkot.

“**Purchaser**” means **GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT**

“**Recording Equipment**” shall mean the recording equipment to be installed by each Party at its respective office premises enabling each Party to make continuous readings of the Actual Energy Generation remotely, as detailed in Clause 6.3 below.

“**Required Commercial Operations Date**” shall mean the date that is three (3) months from the Signing Date and as such may be extended pursuant to Clause 4.6, Clause 5.1, Clause 6.2, Clause 6.3, by reason of Force Majeure Event or for such periods as mutually agreed to between the Parties based on a request by the Seller.

“**RFP**” shall mean the Request for Proposal.

“**Seller**” means Bidding Company alone or Lead Partner in the Consortium or SPV mentioned in the Bid.

“**Singing Date**” shall mean the date of signing of this Agreement.

“**Solar Tariff**” shall mean the fixed tariff of PKR [•]/- (Pakistani Rupees [•]) per KWh payable during Debt Period and the fixed tariff of PKR [•]/- (Pakistani Rupees [•]) per KWh for the remaining period of this Agreement. The term Solar Tariff excludes applicable General Sales Tax amount which will be charged over & above the Solar Tariff as per Applicable Laws.

“**Specifications**” shall mean the required specifications of the Plant as detailed in Schedule 2 of this Agreement.

“**Substation Outage**” shall mean a total or partial interruption of the Plant’s generating capability which is caused by the Substation’s inability to evacuate energy supplied by the Seller at the Interconnection Point.

“**Substation**” shall mean the Purchaser’s 11 KV Substation as specified in the drawings provided in the RFP.

“**Term**” shall have the meaning ascribed thereto it in Clause 3 of this Agreement.

“**Transferee**” shall mean Seller to whom the Premises is leased for construction, operation and maintenance of Solar PV Plant for the duration of PPA.

“**Troubleshooting Period**” shall have the meaning of minimum time spent for rectification of problem/fault in the Plant.

“**Unplanned Outage**” means an Outage because of any fault or any happening other than a Planned Outage.

“**Willful Misconduct**” means, on the part of a Party, any deliberate or intentional disregard of any provision of this Agreement by an officer, director or employee of such Party when acting for and on behalf of that Party, with the intention to inflict damage or injury, or a reckless disregard of the consequences of such act, but shall not include any omission, error of judgment, mistake or negligence or recklessness of any officers, directors, employees, agents of such Party in the exercise of any function, authority or discretion conferred upon that Party in such capacity.

2. PURPOSE

The Parties agree that, subject to the terms and conditions set forth in this Agreement, the Seller shall invest, design, construct, install, own, operate, and maintain the Plant located at the Premises provided on lease by the Purchaser to the Seller for duration of this PPA and the Purchaser shall purchase all of the power generated or available by the Plant from the Seller under the terms and conditions set forth herein and the Purchaser will provide facilitation to Seller in early achievement of Commercial Operations Date.

3. TERM AND EFFECTIVE DATE

This Agreement shall commence upon the Signing Date and shall remain in force for a period of [twenty five (25)] years unless terminated earlier in accordance with the terms hereof (the “Term”).

4. PLANT INSTALLATION

- 4.1. Upon the execution of this Agreement, the Parties shall enter into a Lease Deed in relation to the Premises on which the Plant shall be installed by the Seller for a period not exceeding the Term.
- 4.2. The Seller shall from the Signing Date commence a due diligence and a thorough physical inspection of the Premises, and shall within a period of [•] days confirm its suitability for the construction, installation, operation and maintenance of the Plant (the “Premises Audit”).
- 4.3. Upon completion of the Premises Audit, the Seller shall within a period of [•] days submit with the Purchaser a statement for any Premises Modification that it deems necessary (the “Premises Modification Statement”) to which the Purchaser shall, subject to any proposed Minor Revisions, accord its approval within a period of [•] days of submission thereof (the “Premises Modification Approval Period”).
- 4.4. The Seller shall within a period of [•] days of the Signing Date submit with the Purchaser the proposed Plant Design to which the Purchaser shall, subject to any proposed Minor Revisions, accord its approval within a period of [•] days (the “Plant Design Approval Period”).
- 4.5. The Purchaser may, prior to according its approval to the Plant Design and / or, as the case may be, to a proposed Premises Modification, if any, as specified the Premises Modification Statement suggest Minor Revisions thereto which shall become effective upon mutual agreement between the Parties.
- 4.6. In the instance where the Purchaser does not accord its approval to the Plant Design and / or, as the case may be, the Premises Modification Statement submitted in connection with any proposed Premises Modifications deemed necessary by the Seller within the stipulated the Plant Design Approval Period or the Premises Modification Approval Period (as the case may be) due to either:
 - (i) on-going discussions between the Parties in respect of the proposed Minor Revisions, if any; or
 - (ii) a delay on account of any other reason,The Required Commercial Operations Date in either case shall be extended on a day today basis by such number of days that it takes the Parties to either reach a final decision in respect of the proposed Minor Revisions, if any, and / or, as the case may be, for the Purchaser to

otherwise accord its approval to the Plant Design and / or, as the case may be, the Premises Modification Statement, if any, as submitted by the Seller.

- 4.7. Upon the Parties' agreement in respect of both the Plant Design and / or, as the case may be, a proposed Premises Modification, if any, as submitted in the Premises Modification Statement, the Seller shall at its own cost obtain the relevant Governmental approvals as required under the Applicable Laws in relation to any necessary Premises Modification that the Seller may seek to undertake as well as for Plant Installation in accordance with the Plant Design. The Purchaser hereby undertakes to provide its full cooperation to the Seller for the acquisition of the aforesaid Governmental approvals.
- 4.8. Upon being granted the necessary Governmental approvals as detailed in Clause 4.7 above, the Seller shall proceed with completing any Premises Modifications that it deems necessary as well as the Plant Installation in accordance with the Plant Design with a view to achieving the Commercial Operations Date of the Plant by the Required Commercial Operations Date as required under Clause 7.3 below.
- 4.9. The Purchaser hereby agrees that the Plant shall, at all times, be the property of the Seller with free access to any of its consortium/SPV members and Seller's Banks till the expiry of the PPA.

5. GRID CONNECTIVITY / NET METERING

- 5.1. The Purchaser shall at its own cost procure and deliver to the Seller the Interconnection Facilities within a period of [•] from the Signing Date following which the Seller shall install Interconnection Facilities on a date not later than [•] days prior to the date on which the Plant is Commissioned. Provided, however, that in the instance that the Interconnection Facilities are not procured and delivered by the Purchaser to the Seller within the timeline stipulated in this Clause 5.1, the Required Commercial Operations Date shall be extended on a day-to-day basis by such number of days that procurement and delivery of the Interconnection Facilities are delayed by the Purchaser.

6. METERING EQUIPMENT

- 6.1. The Parties hereby acknowledge that for the purposes of determining the Actual Energy Generation, Metering Equipment shall be required prior to the delivery of energy by the Seller to the Purchaser at the Interconnection Point for sale in accordance with the terms of this Agreement.
- 6.2. The Purchaser shall at its own cost procure and deliver to the Seller the Metering Equipment within a period of [•] days from the Signing Date following which the Seller shall install such Metering Equipment (excluding the Recording Equipment) on a date not later than [•] days prior to the date on which the Plant is to be Commissioned. Provided, however, that in the instance that the Metering Equipment is not procured and delivered by the Purchaser to the Seller within the timeline stipulated in this Clause 6.2, the Required Commercial Operations Date shall be extended on a day-to-day basis by such number of days that procurement and delivery of the Metering Equipment is delayed by the Purchaser.

- 6.3. The Parties shall on and after the Commercial Operations Date take readings from the Metering Equipment on the last day of every calendar month during the Term and such readings shall be carried out remotely from the Recording Equipment to be procured and installed by each Party at its own expense at its respective office [•] days prior to the date that the Plant is Commissioned. The Parties shall be required to sign and stamp their respective monthly readings. Provided, however, that in the instance that the Metering Equipment is not procured and installed by the Purchaser at its premises within the timeline stipulated in this Clause 6.3, the Required Commercial Operations Date shall be extended on a day-to-day basis by such number of days that procurement and installation of such Recording Equipment by the Purchaser is successfully completed.
- 6.4. The Metering Equipment (excluding the Recording Equipment) shall be sealed and such seal shall only be broken on a pre-agreed maintenance and calibration schedule to be decided on the first Plant Operation Day of each Contract Year throughout the Term or otherwise on a day and time as mutually agreed between the Parties.
- 6.5. The Purchaser shall, in addition to the Metering Equipment, have the right to install at its own cost a Check Meter upon notifying the Seller of its intention to do so [•] days in advance.

7. COMMISSIONING OF THE PLANT

- 7.1. Upon the Seller having completed the Plant Installation in accordance with the Plant Design and having obtained all necessary Governmental approvals under the Applicable Laws as required for power generation under this Agreement, the Seller shall request the Engineer to issue the Certificate of Commissioning of the Plant.
- 7.2. Upon the Seller having been successfully issued the Certificate of Commissioning of the Plant by the Engineer, the Plant shall be commissioned.
- 7.3. Following the successful commissioning of the Plant in the manner detailed in Clause 7.2 above, the Seller shall notify the Purchaser in advance the date on which the Plant shall be delivering energy at the Interconnection Point to the Purchaser in accordance with the terms of this Agreement (the “**Commercial Operations Date**”). Provided, however, that such Commercial Operations Date shall not be later than the Required Commercial Operations Date.
- 7.4. If the Seller is in breach of its obligation under Clause 7.3 above to achieve the Commercial Operations Date by the Required Commercial Operations Date, then the Seller shall, unless such breach is attributable to breach or default by the Purchaser of its obligations, be liable to pay liquidated damages to the Purchaser in the following manner:
- a) If there is a delay in achieving Commercial Operations Date by up to one (1) month from the Required Commercial Operations Date, the Seller shall pay liquidated damages at the rate of PKR 5,000/- (Pak Rupees Five Thousand Only) per MW per day of delay by way of Demand Draft / Pay Order to the Purchaser.
 - b) If there is a delay in achieving the Commercial Operations Date by up to two (2) months from the Required Commercial Operations Date, then the Seller shall encash twenty per cent (20%) of the Contract Performance Guarantee.

- c) If there is a delay of up to three (3) months from the Required Commercial Operations Date, then the Purchaser shall encash forty per cent (40%) of the Contract Performance Guarantee.
- d) If there is a delay up to four (4) months and above from the Required Commercial Operations Date, then the Purchaser shall encash 100 % (one hundred per cent) of the Contract Performance Guarantee.

Notwithstanding the foregoing, the Purchaser shall have the right to waive off the payment of liquidated damages by the Seller under this Clause 7.4 based on a genuine request by the Seller.

8. ENERGY SALE AND PURCHASE

- 8.1. Subject to the terms of this Agreement, the Seller shall from and after the Commercial Operations Date and until the expiry of the Term be under an obligation to deliver and sell to the Purchaser at the Interconnection Point the Guaranteed Energy Generation. Provided, however, that the Seller shall not be in breach of its obligations under this Agreement if energy is not delivered to the Interconnection Point due to the occurrence of a:
- a) Planned Outage;
 - b) Substation Outage; or
 - c) Force Majeure Event.
- 8.2. The Purchaser shall be under an obligation to purchase the Actual Energy Generation up to the Guaranteed Energy Generation as delivered by the Seller to the Purchaser to the Interconnection Point pursuant to Clause 8.1 above.
- 8.3. Upon each calendar month's end, the Seller shall prepare an invoice by multiplying the Actual Energy Generation with the Solar Tariff in that time period (the "Energy Charge").
- 8.4. The Seller shall provide details of its designated bank account, for the purpose of depositing payment in respect of the Energy Charge within the due date. The Seller shall have the right to change the designated bank account as and when needed and shall inform at least forty-five (45) days of prior written notice to Purchaser (provided, that Seller shall submit to Purchaser a „ Bank Maintenance Certificate“ on the bank's letter head along with its official request signed by an authorized representative of the Seller.
- 8.5. The Purchaser shall pay through cheque the amount payable in respect of the Energy Charge to the Seller's designated bank account within fifteen (15) days of receipt thereof. If the payment is not made within the due date, the Purchaser shall, in addition to such amount due, pay interest thereon at the rate of twelve percent (12%) per annum (accrued on a daily basis) from the due date until such amounts are paid in full.
- 8.6. In case of any dispute on the billed amount, Purchaser shall give a notice of such dispute to the Seller specifying the precise portions of the relevant bill that is disputed, the specific amount disputed and the reasons for the dispute. Purchaser shall pay the undisputed amount on or

before the due date, and any disputed amount shall be payable subject to resolution of such dispute in favor of the Seller.

9. ENERGY LEDGER

- 9.1. The Parties shall during the Term maintain an energy ledger containing debit and credit entries in respect of the Guaranteed Energy Generation to be sold and bought by the Parties in accordance with the terms of this Agreement (the “Energy Ledger”).
- 9.2. In an instance where the Actual Energy Generation as supplied by the Seller is of an amount lesser than the Guaranteed Energy Generation in contravention of its obligations under Clause 9.1 above, the Energy Ledger shall be debited by an amount equivalent to the Guaranteed Energy Generation minus Actual Generation and multiplied by the differential of the Solar Tariff and the Off-Peak Tariff in accordance with the illustration provided below:

Illustration

If in one year the Guaranteed Energy Generation for 250kW is 312,500 KWh and Actual Energy Generation is 317,500 KWh and difference between both is 5000KWh and if the differential of the Off Peak Tariff and Solar Tariff is Rs.5 then the total debit will be Rs.25,000 debited to Energy Ledger.

- 9.3. In an instance where the Purchaser is unable to evacuate the energy supplied to it by the Seller, in contravention of its obligations under Clause 9.2 above, due to a Substation Outage, the Energy Ledger shall be credited by an amount equivalent to multiplication of the Guaranteed Energy per day with the Solar Tariff in accordance with the illustration provided below:

Illustration

If the average hourly full load required is 250kW per day for 230kwp solar power plant and for two days (Saturday and Sunday) average hourly load measured is 125 KW and 125 KW is lost, then this loss will be multiplied by Guaranteed Energy Generation and Solar Tariff. Accordingly, if the Solar Tariff is Rs.7 per KWh, then daily amount of loss will be (Loss (KW) × Guaranteed Energy × Solar Tariff) = 125×4×7 = Rs.3500 and for two days Rs.7,000 will be credited to the Energy ledger.

- 9.4. The ledger net amount in the Energy Ledger shall be settled between the Parties on an annual basis.

10. MAINTENANCE SCHEDULE AND OUTAGE NOTIFICATION

10.1 Annual Maintenance Plan

- (a) On the first Plant Operation Day of each Contract Year throughout the Term, the Seller shall provide the Purchaser with a schedule of the period and the dates of any Planned Outages (the “Planned Outage Schedule”).
- (b) The Seller shall notify the Purchaser of any changes to or variation from the Planned Outage Schedule at least five (5) days in advance.

10.2 Unplanned Outages

- (a) The Seller shall use its reasonable endeavours to minimize the number of Unplanned Outages. The Seller shall try to troubleshoot any Unplanned Outage and bring back the Solar PV Plant to full operation as soon as possible after the commencement of any such Unplanned Outage. However, such Troubleshooting must be completed no later than 48

hours after occurrence of such Unplanned Outage. Seller will send email to purchaser upon each unplanned outage and will maintain record of this unplanned outages for verification by Purchaser and Purchaser will have free access to this record as and when desired by the Purchaser. At the end of each year the Seller will send Unplanned Outage report to Purchaser.

(b) If the Seller could not troubleshoot such Unplanned Outage arising out of any fault or any malfunctioning or whatsoever any reason within 48 hours after the occurrence of such Unplanned Outage as the case may be, then after first 48 hours, the Penalty charge will start and will remain till the rectification of problem and amount will be calculated by multiplication of Guaranteed Energy and Differential of Solar and Off-Peak Grid Tariff and this amount will be debited to Energy Ledger. The purchaser will serve first notice to Seller for troubleshooting the problem after lapse of 48 hours (**Troubleshooting Period**) and second notice will be issued after 96 Hours from the occurrence and third notice after 144 hours from the occurrence of unplanned outage. After three months of continuous system down, the purchaser will have right to engage the third party for rectification of the problem at the cost of the Seller.

11. OTHER OBLIGATIONS OF THE PARTIES

11.1. Throughout the Term:

- (a) The Purchaser shall remove all the trees, poles or any physical structure at Premises before the plant installation causing hindrance in the installation of the plant and Seller shall keep trimming the trees, plants, bushes and hedges regularly so that the Plant receives as much sunlight for its best output. Seller will ensure regular cleaning of Solar PV modules to maintain the optimum yield.
- (b) The Seller shall arrange electricity, water and other utilities necessary for the construction, installation, operation and maintenance of the Plant and will charge for such services at Government applied rates.
- (c) The Purchaser shall not modify the Premises in a manner that will have any impact on or interfere with the operation of the Plant, without obtaining prior written consent from the Seller 15 days in advance;
- (d) The Seller shall not remove any markings or identification tags on the Plant;
- (e) The Purchaser shall provide the Seller all time access to Premises and the Plant for any construction, installation, inspection, operation, maintenance, repair, removal and replacement or other proper operation as the Seller determines necessary;
- (f) The Purchaser shall not allow to exist any condition or circumstances that would have a negative impact on solar irradiation or the performance of the Plant or a reduction of the output capacity of the Plant;
- (g) The Seller shall promptly notify the Purchaser if the Plant (or any part thereof) is damaged, appears unsafe, or is stolen but Seller will ensure security of Plant along with the risk coverage through insurance policy from first class insurance company in Pakistan;
- (h) The Seller shall not perform any action to the Plant which result in the Plant being shut down continuously for more than one full 24 hour day without obtaining prior written consent from the Purchaser;

- (i) The Purchaser shall not perform any action which can result in the Seller not being able to sell the power to the Purchaser for more than one full 24 hour day without giving written notice to the Seller one day in advance;
 - (j) The Seller will not make any major modification to the Plant after the Commercial Operation Date but can upgrade technology/firmware/software helping in improvement of the performance of the Plant. For any replacement of any component of the Plant with any upgraded version, the Seller will submit the details of such replacement to Purchaser for its permission. Any such outage will be considered as Unplanned Outage and clause for Unplanned Outage will apply.
 - (k) Purchaser shall provide all possible help in obtaining any required Governmental Approval helping in quicker achievement of Commercial Operation Date;
 - (l) Seller shall maintain insurance cover of the working people at site and equipment/Plant against all risks with any reputable insurance company in Pakistan and in an amount acceptable to the Purchaser;
 - (m) The Purchaser shall transfer the Premises to the Seller through Lease Deed which will provide legal possession of the Premises for construction, operation and maintenance of the solar Plant till the expiry of the PPA.
 - (n) The Seller shall at all times, keep the Plant free and clear of all claims, levies and legal processes not created by the Purchaser, and protect and defend the Purchaser against the same.
 - (o) The Purchaser, in addition to the Premises Modification, properly shall maintain the Premises in good condition and is capable of being used safely for the Plant Installation, inspection, operation and maintenance, and the removal and replacement of the Plant.
- 11.2. If the Seller modifies or repairs the Premises beyond Premises modification statement or without any prior approval from the Purchaser, the Seller at its own cost will bring back the Premises to a position as per Premises Modification Statement without any effect on the performance of the Solar PV Plant.
- 11.3. Throughout the Term, the Seller shall, at its own costs:
- (a) Keep Plant operational throughout the Term and shall provide maintenance services to the Plant in efficient manner through professional trained engineers and technicians as per laws of Pakistan Engineering Council.
 - (b) Investigate the cause of the Plant being shut down for more than 24 hours continuously and troubleshoot the Plant within 48 Hours (Troubleshooting Period) after occurrence of the fault or upon receipt of such notice from the Purchaser.
 - (c) Construct, operate and maintain the Plant fully complying with latest versions of Building Code of Pakistan- Seismic, Energy and Fire Safety provisions, PETSAC (Pakistan Electrical and Telecommunication Safety Code) 2014, NEPRA Latest Grid Code, Pakistan Electricity Act 1997 and other National and International safety and installation standards, codes, practices and guidelines applicable to Solar plant construction, operation and maintenance.
- 11.4. Throughout the Term, each Party shall, at its own cost, ensure that its Insurance Policies include waivers of subrogation in favor of the other Party.

- 11.5. The Seller shall provide all time access to Purchaser or any of its representatives / guests for visits, inspection, verification, and performance measurement of the Plant and shall also entertain the study tours from Universities/Organizations duly authorized by the Purchaser.
- 11.6. The Seller shall ensure security of its staff and equipment through its own security measures and must also ensure workers and equipment safety risks through insurance cover from AA insurance company in Pakistan.
- 11.7. Purchaser will also ensure security of the Premises through its own measure and will provide maximum protection possible. Each worker assigned for this plant shall pass through a security Process of the Purchaser for eligibility of work on this plant and each worker or Engineer or technician or officer has to fully comply with the security process of the Purchaser. The Seller will submit to purchaser complete information of the people at work and will keep informed on regular basis of any change in worker at plant. Seller will maintain register of roll call of employees on daily basis.

12. CHANGE OF PREMISES AND TRANSFER OF PLANT

- 12.1. During the Term, the Purchaser shall not, subject to the provisions of Clause 22 below, change the Premises and transfer the Plant to new premises.

13. INDEMNIFICATION

- 13.1. Each Party shall indemnify, defend, protect, save and hold harmless the other Party, its employees, officers, directors, agents, successors and assigns from any and all third party claims, actions, costs, expenses (including reasonable attorneys' fees and expenses), damages, liabilities, penalties, losses, obligations, injuries, demands and encumbrances of any kind or nature arising out of, connected with, relating to or resulting from the first Party's negligence or Willful Misconduct or breach of this Agreement including Force Majeure Event as set out in Clause 17; provided, that nothing herein shall require the first Party to indemnify the other Party for its own negligence or Willful Misconduct or breach of this Agreement.
- 13.2. The provisions of this Clause (*Indemnification*) shall survive the termination or expiration of this Agreement.

14. LOSS OR DAMAGE

- 14.1. In the event of any loss, damage, theft, destruction or a similar occurrence affecting the Plant, the Purchaser shall continue payments due under the agreement in timely manner.
- 14.2. In the case that the event referred to in Clause 14.1 was due to the Purchaser's negligence or Willful Misconduct or breach of this Agreement, the Purchaser at its sole cost and expense shall repair or replace within two months from the date that such event occurs. If the Purchaser fails to repair or replace the Plant within the Troubleshooting Period, the Purchaser shall also pay to the Seller the amount of estimated Energy Charge, using the average total production in the corresponding three months of the preceding operational year.

- 14.3. In the case that the event referred to in Clause 14.1 was due to the Seller negligence or Willful Misconduct or breach of this Agreement, the Seller shall bear all of the risks, costs and expenses of such event and the Purchaser shall only be required to cooperate with the Seller, at the Seller's sole cost and expense, to the extent necessary to have the Plant repaired or replaced. Such downtime will be considered as Unplanned Outage.
- 14.4. The Seller shall be responsible for damage to or loss of Premises if any arising out of the activities by Seller arising out of the plant installation and/or maintenance.
- 14.5. Each Party's liability to the other Party under this Agreement shall be limited to direct and actual damages only. The Parties agree that, unless specifically provided for in this Agreement, neither Party shall be liable to the other for consequential, incidental, punitive, exemplary, special or indirect damages.
- 14.6. If the Plant metering is damaged and not operational but energy in reality is being generated and consumed, then the Seller shall reasonably estimate the amount of power that would have been delivered to the Purchaser during such period (the "Estimated Production") using the average production in the corresponding period last year, and shall consider the Estimated Production as the actual production for the purposes of Clause 8.3.
- 14.7. If the Seller sends an invoice to the Purchaser for Estimated Energy Charge pursuant to the preceding paragraph, and the Seller subsequently determines that it has either overestimated or underestimated the actual production, then the Seller will adjust the next bill downwards (to refund the overbilling) or upwards (to make up for the lost billing), as the case may be.

15. EVENTS OF DEFAULT

- 15.1. The Purchaser shall be in default under this Agreement if any one of the following events occur:
- (a) The Purchaser fails to make payment of any amount due and such failure continues for a period of 60 days maximum after receipt of written notice of such non-payment.
 - (b) The Purchaser fails to perform any obligation specified under this Agreement and fails to commence (and thereafter diligently proceed with) appropriate steps to Troubleshooting such failure within a period of 60 days from the date of written notice identifying the breach and requiring the Troubleshooting of the breach;
- 15.2. The Seller shall be in default under this Agreement if any one of the following events occur:
- (a) The Seller fails to perform any obligation specified under this Agreement and fails to commence (and thereafter diligently proceed with) appropriate steps to Troubleshooting such failure within a period of 60 days from the date of written notice identifying the breach and requiring the Troubleshooting of the breach.
 - (b) The Seller makes an assignment for the benefit of creditors, admits in writing its insolvency, files or there is filed against it a voluntary petition in bankruptcy, is adjudicated bankrupt or insolvent or undertakes or experiences any substantially similar activity.
 - (c) The Seller fails to achieve the Commercial Operations Date within three (3) months from the expiry of the Required Commercial Operations Date.

- (d) Following the Commercial Operations Date, the Seller fails to maintain the Guaranteed Energy Generation as required under Clause 8.1 of this Agreement for over a period of [•] consecutive months.

16. REMEDIES IN THE CASE OF DEFAULT AND TERMINATION

16.1. If there is an event of default by the Purchaser under Clause 15.1, the Seller may take any one or more of the following actions. The Seller may:

- (a) Terminate this Agreement by giving thirty (30) days" written notice to the Purchaser of such breach and the intention to terminate this Agreement and may on

the expiry of such notice elects to transfer the Plant to the Purchaser or its designee in which case the Purchaser or its designee shall simultaneously pay the „Compensation Amount" set forth in Schedule 4 of this Agreement;
- (b) Take any reasonable action to correct the Purchaser's default or to prevent the Seller's loss; and any amount that the Seller pays with respect to this matter will be added to the amount the Purchaser owes to the Seller and will be immediately due;
- (c) Require the purchaser at its own expense to return the plant or make it available to Seller in a reasonable manner.
- (d) Proceed, by appropriate court action, to enforce the performance of this Agreement and to recover damages for the Purchaser's breach;
- (e) Disconnect, turn off or take back the Plant by legal process or self-help, to the extent permissible under the law; or
- (f) Exercise any rights or remedies available under applicable law or this Agreement.

16.2. If there is an event of default by the Seller under Clause 15.2 the Purchaser may take any one or more of the following actions. The Purchaser may:

- (a) Terminate this Agreement by giving written notice to the Seller of such breach and the intention to terminate this Agreement, which termination shall be effective on a date specified by the Purchaser that is no earlier than 30 days following the date of such notice;
- (b) Take any reasonable action to correct the Seller"s default or to prevent the Purchaser"s loss; and any amount that the Purchaser pays with respect to this matter will be added to the amount the Seller owes to the Purchaser and will be immediately due;
- (c) Uninstall or return the plant to the Seller at the sole cost of the Seller.
- (d) Proceed, by appropriate court action, to enforce performance of this Agreement and to recover damages for the Seller"s breach.

16.3. The defaulting Party agrees to repay the non-defaulting Party for any reasonable amounts the non-defaulting Party pays to correct or cover the default. The defaulting Party also agrees to reimburse the non- defaulting Party for any reasonable costs and expenses the non- defaulting Party incurs resulting from early termination. By choosing any one or more of these remedies, the non-defaulting Party does not give up its right to use another Troubleshooting method. By deciding not to use any Troubleshooting in respect of a default by the defaulting Party, the non-defaulting Party does not give up the right to use that Troubleshooting in the case of a subsequent default.

17. FORCE MAJEURE EVENT

- 17.1. Subject to the limitations set forth in this Agreement, if either Party is rendered unable by reason of a Force Majeure Event (as defined below) to perform, wholly or in part, any obligation set forth in this Agreement, then upon such Party's giving notice and full particulars of such event as soon as practicable after the occurrence thereof, such obligation of such Party shall be suspended or excused to the extent of such Force Majeure Event.
- 17.2 For the purposes of this Agreement, "Force Majeure Event" shall mean an event, condition or circumstance beyond the reasonable control and without the fault or negligence of the Party claiming force majeure which, despite all reasonable efforts of the Party claiming force majeure to prevent its occurrence or mitigate its effects, causes a delay or disruption in the performance of any obligation imposed hereunder. Subject to the foregoing, Force Majeure Events shall include any of the following:
- (a) Lightning, storm, flood or other unusually severe weather conditions;
 - (b) Earthquake, landslide or other natural disasters of overwhelming proportions;
 - (c) Strikes, lockout or other industrial disturbance;
 - (d) War (whether declared or undeclared), mobilization or other unexpected call-up of armed forces, actions of terrorists, blockade, riot, insurrection, civil commotion, revolution, coup d'état, sabotage, vandalism or acts of public enemies;
 - (e) Expropriation or compulsory acquisition of the Premises and/or the Plant, omission or default by any Government Authority which adversely affects the Premises and/or the Plant or any of the relevant Party's rights under this Agreement;
 - (f) Any permit or license or approval from a Government Authority being revoked or not renewed, the occurrence of which is not attributable to the failure of the relevant Party; or
 - (g) Any restriction on the distribution of power by the Electricity Authority or any other Government Authorities who have authority over the Grid.
- 17.3. If a Force Majeure Event occurs that prevents a Party from performing its obligations hereunder, such Party shall:
- (a) Immediately notify the other Party in writing of such Force Majeure Event;
 - (b) Be entitled to suspend performance under this Agreement only for the scope and duration as required by the Force Majeure Event;
 - (c) Use all reasonable efforts to Troubleshooting its inability to perform and to resume full performance hereunder as soon as practicable;
 - (d) Keep the other Party informed of such efforts on a continuous basis; and (e) Provide written notice of the resumption of performance hereunder.
- 17.4. Neither Party shall be relieved of any obligations under this Agreement solely because of increased costs or other adverse economic consequences that may be incurred through the performance of such obligations.

- 17.5. If a Force Majeure Event continues for 180 consecutive days, either Party has the right to terminate this Agreement, provided that such period shall be extended if a Force Majeure Event cannot be cured within such 180 day period for as long as the affected Party is diligently seeking to mitigate such Force Majeure Event, provided that in no event shall a Force Majeure Event continue beyond 365 days.

18. ASSIGNMENT AND SECURITY

- 18.1. No assignment, novation or transfer by a Party of this Agreement or such Party's rights or obligations hereunder shall be effective without the prior written consent of the other Party, except as provided under Clauses 18.2 to 18.4 below.
- 18.2. Notwithstanding the provisions of Clause 18.1, for the purpose of financing the Plant, the Seller may not assign or create a security interest in favor of the Lenders in the Seller's rights and interests pursuant to: (i) this Agreement; (ii) the Plant; (iii) the present and future revenues or any of the rights or assets or actionable claims of or debts owned to the Seller;
- and (iv) any other present or future right, interest, property or asset of the Seller of any kind and wherever situated.
- 18.3. Upon notification by the Lenders to the Purchaser, of the occurrence and continuance of an event of default under the financing documents pursuant to which the Lenders have extended financial assistance to the Seller (the "Financing Documents"), the Lenders shall have the right, *inter alia*, to (i) take possession of the Plant and prior to the Commercial Operations Date, complete construction of the Plant and to operate and maintain the same, and (ii) cure any event of default of the Seller as provided for under Clause 15.2 above.
- 18.4. The Lenders may sell, transfer or assign the Plant as a going concern with all assets (present and future) together with possession thereof for the purposes of enforcing their rights under or pursuant to the Financing Documents, with the prior consent of the Purchaser and such consent may not unreasonably withheld.

19. CONFIDENTIALITY

- 19.1. The Parties shall treat as strictly confidential all Confidential Information (defined below) received or obtained in relation to entering into or performing this Agreement.
- 19.2 "Confidential Information" means any and all information furnished by the Disclosing Party to the Receiving Party in connection with this Agreement, whether disclosed directly or indirectly, verbally or in writing, and includes, without limitation business Plans, operations, strategic plans, clients, pricing, methodologies, processes, financial data, technical specifications and/or products and services of the Disclosing Party, as well as all notes, compilations, analyses or other documents prepared by the Receiving Party which contain or are based upon the information provided by the Disclosing Party pursuant hereto.
- 19.3 The Parties may disclose Confidential Information which would otherwise be confidential if and to the extent:
- (a) Required by any law;
 - (b) Disclosed to the professional advisers, auditors, the financing Parties and/or bankers of each Party on a need-to-know basis;

- (c) Such Confidential Information has come into the public domain through no fault of that Party; or
- (d) The other Party has given prior written approval of the disclosure, provided that any such Confidential Information disclosed will be disclosed only after consultation with the other Party.

20. MISCELLANEOUS

20.1. Detail as under:-

- (a) Each Party shall be responsible for its own costs and expenses incurred in connection with its preparation, negotiation, execution and performance of this Agreement.
- (b) The Purchaser agrees to be solely responsible for any costs and expenses in connection with the Premises modification, including removing trees or anything blocking or impeding access to the roof, for the Plant Installation.
- (c) The Seller agrees to be solely responsible for any costs and expenses in connection with the Plant Installation and the application for required Governmental Approvals.

20.2. Communication and Administration

- (a) Any notice to be given under this Agreement shall be in writing and shall be sent by fax, email or courier to the fax number, email address or address of the relevant Party below, or to such other fax number, email or other address as that Party may from time to time notify to the other Party in accordance with this Clause. The details for notices of the Parties are as follows:

If to the Seller:	[full name] [Address] Fax: +92[-----] Attn: [-----] Email: [-----]
If to the Purchaser:	[full name] [address] Fax: +92[-----] Attn: [-----] Email: [-----]

- 20.3. If any provision of this Agreement is held to be invalid or unenforceable, such provision shall to the extent possible be regarded as having been replaced by an equivalent provision that, as closely as possible, reflects the original intent of the Parties while still being valid and enforceable. To the extent that such deemed replacement is not possible, then the provision held invalid or unenforceable shall be given no effect and shall be deemed not to be included in this Agreement, without invalidating any of the remaining provisions of this Agreement.
- 20.4. This Agreement, RFP, Bid offer by Seller and its Schedules represents the entire agreement and understanding of the Parties with respect to the transaction forming the subject hereof, and supersedes any earlier agreements, understandings and communications between the Parties with respect thereto.

- 20.5. Any Schedule or Annexure attached or clarification issued time to time hereto shall be deemed an integral part of this Agreement. In the event an inconsistency exists between this Agreement and any Schedules hereto, this Agreement shall prevail.
- 20.6. The Seller shall, at its own cost and expense, ensure that adequate fencing is set up around the construction site of the Solar Plant which would prevent unauthorized ingress into the construction site by third parties, whether associated with Purchaser, Seller and/or its subcontractors, employees, agents, officers, etc., provided, that placement of fencing shall be approved by Purchaser prior to the erection thereof.

21. GOVERNING LAW AND JURISDICTION AND DISPUTE RESOLUTION

- 21.1. This Agreement shall be governed by and construed in accordance with the laws of Pakistan.
- 21.2. The Parties shall attempt to settle in good faith any Dispute that may arise by mutual discussions within a period of thirty (30) days upon delivery of notice of the Dispute by the disputing Party on the other Party.
- 21.3. In the event that the Parties are unable to resolve the Dispute in accordance with Clause 21.2 within the time period stipulated therein, the Dispute shall be decided by reference to arbitration to the Board of Arbitrators, subject to the following conditions.
- (a) The arbitration shall be conducted in accordance with the provisions of the Arbitration Act, 1940;
 - (b) The place of arbitration shall be Lahore, Pakistan; and
 - (c) The decision or award of the Board of Arbitrators shall be final and binding upon the Parties. The Parties hereby agree to waive to the extent permitted by law any rights to appeal or any review of such award by any court or tribunal of competent jurisdiction. The Parties agree that any arbitration award made may be enforced against the relevant Party's assets wherever they are located or may be found, and a judgment upon any arbitration award may be entered by any court having jurisdiction thereof.

22. RELOCATION OF THE SOLAR PLANT

- 22.1. If Purchaser requests the Seller for any relocation of the Plant within the Premises or to nearest premises or other new premises, whether temporary or permanent, the Seller shall undertake such relocation at the cost of Purchaser. Such relocation shall be completed within a maximum period of 12 months from the date of last supply of energy, assuming handover of new site. Purchaser shall give the Seller three (3) month's written notice prior to commencement of the intended relocation. The cost of such relocation shall be limited to the actual logistics cost of relocation, including the cost of labour, material, disposal of old material, replacement cost of disposed old material, storage of material, design resources and any other costs associated with the relocation of the Plant and the quotation for this cost shall be shared with Purchaser by the Seller for prior approval and if so approved shall be payable forthwith to the Seller by the Purchaser.
- 22.2. During the time period within which the relocation of the Plant is carried out by the Seller on the instructions of the Purchaser, it shall be assumed that there is a Substation Outage and the Energy Ledger shall for such time period be credited in the same manner as detailed in Clause 9.3 above.

22.3 If the Seller determines that the relocated plant shall have a lower energy generation capacity than the Plant, then the Solar Tariff for the relocated plant shall be increased pro rata to the reduction in Guaranteed Energy Generation.

23. EARLY TERMINATION AND BUYOUT IN CASE OF DEFAULT

If purchaser desires to purchase the plant as a result of default by seller or wish for early termination of the PPA, then residual plant value will be calculated as per formula given below and table is given as example but this table has been developed by inserting Rs.100 Million value of the plant as example.

23.1 Plant value calculation Formula

[Insert Formula]

Year	Dep Value	%	Termination Value (Purchasers Default)	Purchase Price (Sellers Default)
Year 1	96	15%	110.4	81.6
Year 2	92	15%	105.8	78.2
Year 3	88	15%	101.2	74.8
Year 4	84	15%	96.6	71.4
Year 5	80	15%	92.0	68.0
Year 6	76	15%	87.4	64.6
Year 7	72	15%	82.8	61.2
Year 8	68	15%	78.2	57.8
Year 9	64	15%	73.6	54.4
Year 10	60	15%	69.0	51.0
Year 11	56	15%	64.4	47.6
Year 12	52	15%	59.8	44.2
Year 13	48	15%	55.2	40.8
Year 14	44	15%	50.6	37.4
Year 15	40	15%	46.0	34.0
Year 16	36	15%	41.4	30.6
Year 17	32	15%	36.8	27.2

Year 18	28	15%	32.2	23.8
Year 19	24	15%	27.6	20.4
Year 20	20	15%	23.0	17.0
Year 21	16	15%	18.4	13.6
Year 22	12	15%	13.8	10.2
Year 23	08	15%	9.2	6.8
Year 24	04	15%	4.6	3.4
Year 25	-	15%	0.0	0.0

The Parties have created this Agreement by signing and stamping on their behalf and each Party has retained one copy.

[Purchaser Name]

By: [-----] Title:

By: [-----] Title:

[Seller Name]

By: [-----]
Title: Director

By: [-----]
Title: Director

Witnesses

SCHEDULE 1
FORM OF LEASE DEED

[Enclosed]

SCHEDULE 2
SPECIFICATIONS OF THE PLANT¹

Seller will provide Plant design with detailed BOQ with drawings and simulations reports through licensed world reputed software

Sr. No	Name of Component	Model	Name of Manufacturer	Country of manufacturing	Brand Name	QTY

¹ Please provide the details of the System and the specifications with SLD of the Plant

**SCHEDULE 3
GUARANTEED ENERGY GENERATION**

Guaranteed Energy Generation is [.]KWh per day average calculated by dividing the total energy generated in one year divided by 365 Days. Year wise Energy Guaranteed is given below.

YEARS	GUARANTEED ENERGY GENERATION FOR 230kwpPlant
YEAR-1	
YEAR-2	
YEAR-3	
YEAR-4	
YEAR-5	
YEAR-6	
YEAR-7	
YEAR-8	

YEAR-25	

SCHEDULE 4
COMPENSATION PAYMENTS
[]¹

¹ Client to kindly provide details

Annex H: Helioscope Report




Annual Production Report produced by Design Expert

GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT, 32.504059027481425, 74.52964806560821

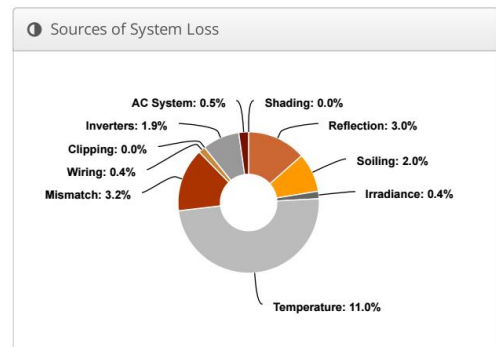
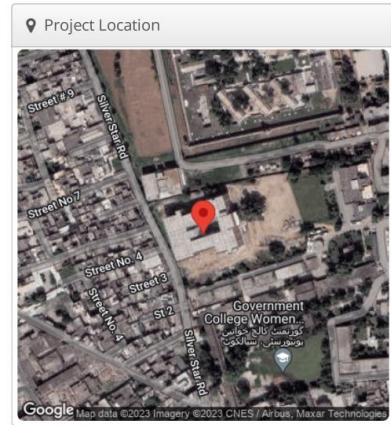
Report

Project Name	GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT
Project Address	32.504059027481425, 74.52964806560821
Prepared By	Design Expert eastern.engineering.crp@gmail.com



System Metrics

Design	GOVERNMENT COLLEGE WOMEN UNIVERSITY SIALKOT
Module DC Nameplate	230.0 kW
Inverter AC Nameplate	220.0 kW Load Ratio: 1.05
Annual Production	343.3 MWh
Performance Ratio	79.4%
kWh/kWp	1,492.9
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)
Simulator Version	05d74c1a92-675ebb7508-54ce698b62-07e59d1d0d





Annual Production Report produced by Design Expert

⚡ Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,671.9	
	POA Irradiance	1,880.9	12.5%
	Shaded Irradiance	1,880.9	0.0%
	Irradiance after Reflection	1,824.2	-3.0%
	Irradiance after Soiling	1,787.7	-2.0%
	Total Collector Irradiance	1,787.7	0.0%
Energy (kWh)	Nameplate	411,211.0	
	Output at Irradiance Levels	409,655.5	-0.4%
	Output at Cell Temperature Derate	364,792.5	-11.0%
	Output After Mismatch	352,949.5	-3.2%
	Optimal DC Output	351,699.3	-0.4%
	Constrained DC Output	351,698.5	0.0%
	Inverter Output	345,016.2	-1.9%
	Energy to Grid	343,291.1	-0.5%
Temperature Metrics			
	Avg. Operating Ambient Temp	26.6 °C	
	Avg. Operating Cell Temp	48.1 °C	
Simulation Metrics			
	Operating Hours	4547	
	Solved Hours	4547	

☁ Condition Set												
Description	Condition Set 1											
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)											
Solar Angle Location	Meteo Lat/Lng											
Transposition Model	Perez Model											
Temperature Model	Sandia Model											
Temperature Model Parameters	Rack Type	a	b	Temperature Delta								
	Fixed Tilt	-3.56	-0.075	3°C								
	Flush Mount	-2.81	-0.0455	0°C								
	East-West	-3.56	-0.075	3°C								
	Carport	-3.56	-0.075	3°C								
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D
	2	2	2	2	2	2	2	2	2	2	2	2
Irradiation Variance	5%											
Cell Temperature Spread	4° C											
Module Binning Range	-2.5% to 2.5%											
AC System Derate	0.50%											
Module Characterizations	Module	Uploaded By	Characterization									
	LR5-72HTH 565M (Longi)	HelioScope	Spec Sheet Characterization, PAN									
Component Characterizations	Device	Uploaded By	Characterization									
	SUN2000-110KTL-M0 (380V) (Huawei)	HelioScope	Spec Sheet									

📦 Components		
Component	Name	Count
Inverters	SUN2000-110KTL-M0 (380V) (Huawei)	2 (220.0 kW)
Strings	10 AWG (Copper)	22 (3,487.3 ft)
Module	Longi, LR5-72HTH 565M (565W)	407 (230.0 kW)

👤 Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	5-20	Along Racking

🏠 Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Flush Mount	Portrait (Vertical)	25°	180°	4.0 ft	1x1	407	407	230.0 kW

Detailed Layout

