

REQUEST FOR PROPOSAL

FOR

**DESIGN, SUPPLY, INSTALLATION AND
COMMISSIONING OF 6 MW_p AGGREGATED
GRID TIED SOLAR PV POWER PROJECT
UPTO 1 MW_p EACH AT SITECH ENTERPRISES**

THROUGH

**ENGINEERING, PROCUREMENT, AND
CONSTRUCTION (EPC) BASED COMPETITIVE
BIDDING PROCESS**

**ONE STAGE TWO ENVELOPES
BIDDING PROCEDURE**

October, 2022

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REQUEST FOR PROPOSAL

**INSTRUCTIONS
TO
BIDDERS**

INSTRUCTIONS TO BIDDERS

A. GENERAL

1H.1 INTRODUCTION

- 1.1 The SITECH Group Headquarters is located at Islamabad with its following companies located in Lahore, Karachi and Taxila:-
- a. Heavy Mechanical Complex, Taxila
 - b. Ravi Chemical Complex, Lahore
 - c. Peoples Steel Mill, Karachi
 - d. Pakistan Machine Tool Factory, Karachi
 - e. Enar Petroleum Refining Facility, Karachi
- 1.2 In order to optimally exploit the solar power potential and augment power generation capacity, SITECH management is entrusted with the responsibility of promotion and development of renewable energy for its above mentioned enterprises and sister organization i.e; National Centre of Physics, Islamabad. In this regards SITECH management intends to engage top class national/ international engineering firms registered with AEDB & PEC under relevant category to construct **aggregated 6 MWp On-Grid Solar Power Plant Project, 1 MWp each for all organizations** with following deliverables: -
- a. Designing of an **Efficient and Cost Effective** Solar Based Power Solution.
 - b. Supply of Tier 1 manufactured equipment as per **Bloomberg List**.
 - c. Installation of Solar Based Power Plant.
 - d. Net Metering including all regulatory approvals.
 - e. Testing & Commissioning of Solar Based Power Plant.
 - f. O & M Services for 2 years.
- 1.3 In order to execute the project in a befitting manner till completion, a Project Management Committee (PMC) has been constituted on behalf of SITECH, headed by Director Admin, HMC Taxila as Project Director along with Consultants and Technical Representatives of respective enterprises.
- 1.4 According to the RFP document published, the selected firm/ developer/ Company will enter EPC turnkey agreement with SITECH and is responsible for the Design, Procurement, Engineering, Commissioning and O&M Services to meet a minimum generation output committed in the bidding document.
- 1.5 Interested Firms/ developers/ Company to apply against Subject Bidding Documents and shall submit its documents on or before **1500 hrs on 28th November, 2022**. The Project Location Maps and other relevant details are depicted as Appendices to Bid.
- 1.6 The EPC Contractor is bound / obligated to provide energy generation commitment as described/ agreed in the bidding documents.

III.2 PURPOSE OF PROJECT BRIEF AND BIDDING INSTRUCTIONS

- 2.1 Selection of Successful bidder(s) for the turnkey Grid Tied Solar PV Power Project for aggregate capacity up to 6 MWp shall be done through One Stage Two Envelope Process.
- 2.2 The Works to be executed under this Contract comprise Design, Construct, Supply, Installation, Testing, Commissioning and O & M of 1 MWp Solar Power Generation Plant each for SITECH Enterprises and its sister organizations located at Lahore, Karachi, Rawalpindi and Taxila.
- 2.3 The RFP document has been prepared for Solar PV Power Project which means the solar project that uses sunlight for conversion into electricity through Photo Voltaic technology. A detailed scope of work has been furnished along with the Annexure/Appendices referred to herein and any future additions and amendments to this document constitute the Bidding Documents. The successful Bidder will be expected to complete the works within the stipulated period of **150 days** (including 30 days unforeseen) as specified in these Bidding Documents.
- 2.4 Operations and maintenance of facilities such as operations, cleaning of power plant, electrical and mechanical infrastructure maintenance and other requirements needed for smooth operations shall be provided by the Executing Company.

III.3 ELIGIBLE BIDDERS

- 3.1 This Invitation for Bidding Document is open to all the Bidders meeting the following requirements in case of contracting firms or the contracting firms proposed by the Bidding Company:
 - a. Constructors duly licensed by the Pakistan Engineering Council (PEC) in the category relevant to the value of the Works with specialized Solar Code EE-2 and Category - 3 or below.
 - b. Constructors/Operators duly licensed by the Alternative Energy Development Board (AEDB)- ARE-V1 for Net-Metering.
 - c. The applicant bidders should have successfully completed **at least One (01) independent project of one (01) MWp and aggregate Industrial/ Commercial inland projects of at least 10 MWp (completed and ongoing projects) during last five years. However, the core equipment should have complied to our required specification/ brand**
 - d. The successful bidder shall be required to enter into a contract with the client as per relevant rules and other terms and conditions mentioned in the contract.
 - e. The bidder should not be black listed by any public or private sector organizations/ financial institutions (attach an affidavit on the stamp paper)
 - f. The client shall deduct applicable taxes from the payments. Rates quotes should be in **Pak Rupees inclusive of all applicable taxes**. If not specifically mentioned, it will be presumed that offered price includes all the taxes.
- 3.2 To be eligible for award of the EPC Turnkey Contract, Bidders shall provide evidence satisfactory to the Project Management Committee (PMC) of their capability and adequacy of resources to fulfill all obligations under the Contract Agreement.

IH.4 COST OF BIDDING

- 4.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid and PMC will in no case be responsible or liable for those costs, regardless of the outcome of the Bidding process.

IH.5 PROGRAM

- 5.1 The PMC will, however, give favorable consideration to proposals that achieve an earlier availability date.
- 5.2 Bidders should note that the EPC Turnkey Contract specifies Key Dates to be achieved throughout the Construction Phase and penalties to be imposed for delayed completion.

IH.6 DISCLAIMER

- 6.1 All information, assumption and projections contained in these Bidding Documents are indicative only and are provided solely to assist in a preliminary assessment of the Project. Nothing in the Bidding Documents or elsewhere shall create any contractual relationship between PMC and any Bidder, nor shall it commit PMC to any policy described in the Bidding Documents or elsewhere and neither PMC nor any of its consultants or advisers will have any liability or responsibility if the information, assumptions and projections contained herein or otherwise in respect of the Project prove to be incorrect. It is the responsibility of the Bidder to verify the information, assumptions and projections contained in the Bidding Documents or otherwise.

IH.7 CONFIDENTIALITY

- 7.1 The Bidder shall treat the Bidding Documents and, if successful, the subsequent Contract Agreement, and anything contained therein as private and confidential. In particular, the successful Bidder shall not publish any information, drawings or photographs concerning the Project or any Ancillary Facilities, without the express permission of PMC.

IH.8 BRIBERY AND COLLUSION/ INTEGRITY PACT

- 8.1 PMC on behalf of SITECH shall be entitled to terminate the Contract Agreement and recover from the successful Bidder the amount of any loss resulting from such termination if the successful Bidder shall have offered or given to any person any gift or consideration of any kind as an inducement or reward for doing, or forbearing to do, any action in relation to obtaining, or in the execution of the Project or any other contract with SITECH/ PMC, or for showing favor to any person in relation to the Contract Agreement or any other contract with SITECH/ PMC, or if any of the like acts shall have been done by any person employed by the successful Bidder or acting on its behalf (whether with or without the knowledge of the successful Bidder), or if the successful Bidder shall have come to any agreement with another Bidder or number of Bidders whereby an agreed quotation or estimate shall be offered as a Bid to SITECH/ PMC by one or more Bidders.
- 8.2 In addition, in case of GOP financing, the Bidder shall sign an Integrity Pact (Form-04

of this document) to remain liable for its undertaking given therein.

B. BIDDING PROCEDURES

IH.9 Contents of Bidding Documents

9.1 This Standard Bidding Documents includes the following:

- a. Instructions to Bidders
- b. Bidding Data
- c. General Conditions of Contract
- d. Particular Conditions of Contract
- e. Specifications – Special Provisions
- f. Specifications -Technical Provisions
- g. Annexures to Instructions to Bidder
- h. Appendices to Contract
- i. Form of Bid Security
- j. Form of Performance Security
- k. Design/ Drawings

IH.10 Qualifications Requirements

10.1 The Bidder must meet the qualification requirements independently as bidding company or as a Bidding Consortium with one of the members acting as the lead member of the Bidding Consortium. Bidder will be declared as a qualified Bidder based on meeting the qualification requirement specified in the tender documents by submitting documentary evidence in this regard.

10.2 Bidders shall be pre-qualified as per attached Annexures. However, the Contractor's authorized representative and his other professional engineers working at site shall register themselves with the **Pakistan Engineering Council (PEC)**. The Contractor's authorized representative at site shall be authorized to exercise adequate administrative and financial powers on behalf of the Contractor so as to achieve completion of the works as per the Contract.

IH.11 Cost of Bidding

11.1 The Bidder shall be responsible for all fees, costs and expenses incurred in preparing and negotiating any proposal submitted by it, and the SITECH/ PMC shall under no circumstances become liable to reimburse any Bidder for any such fees, costs or expenses regardless of the conduct or outcome of the bidding process.

IH.12 Site Visit

12.1 The Bidders are advised to visit and examine all the sites of the works and its surroundings and to obtain for itself on its own responsibility, all information that may be necessary for preparing the Bids prior to Pre-Bid Meeting. The costs incurred in visiting the site shall be at the Bidder's own expense. Necessary coordination be made with PMC.

IH.13 Acceptability of Bid

- 13.1 The Bidder is expected to examine carefully all instructions, conditions, forms, terms, specifications and requirements of bid submission. Bids will be at the Bidder's own risk. Bids that are not substantially responsive to the requirements of the Bidding Documents will be rejected.

IH.14 Clarification of Bidding Documents

- 14.1 A prospective Bidder requiring any clarification of the Bidding Documents may notify the SITECH/ PMC in writing or by telex, cable or facsimile at the address given in the Bidding Data.
- 14.2 The PMC will respond in writing to any requests for clarification that it receives earlier than **07 days prior to the Bid Submission Date**. Written copies of the PMC's response (including an explanation of the query but without identifying the source of the inquiry) will be sent to all prospective Bidders who have received the Bidding Documents.

IH.15 Amendment of Bidding Documents

- 15.1 At any time prior to the Bid Submission Date, the PMC may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by amendment.
- 15.2 The amendment will be notified in writing or by telex, email, cable or facsimile to all prospective Bidders who have received the Bidding Documents, and will be binding upon them.
- 15.3 In order to afford prospective Bidders reasonable time in which to take the amendment into account in preparing their Bids, the PMC may, at its discretion, extend the deadline for the submission of Bids.

C PREPARATION OF BID

IH.16 Documents Comprising the Bid

- 16.1 The Bid to be prepared by the Bidder shall comprise Single Stage Two Envelope (Technical and Financial sealed in separate envelope respectively) as follows:

Submission of Technical Proposal:

- a. Evidence of Bid Security.
- b. Bidder's Qualification Information and Technical Proposal as required under the Bidding Documents along with Letter of Technical Proposal.
- c. Project Appreciation Statement.
- d. Project design
- e. Statement of Technical Requirements.
- f. Statement of Bid Conformity.

- g. Any Other Information as required by the PMC as mentioned in the Bidding Data.

Submission of Financial Proposal:

- a. Statement of Capital and Operating Costs.
b. Bid Security @2% of Bid Cost.
c. Proposed Financial Package along with the Letter of Financial Proposal.
d. Financial Analysis of each Project.
e. Any Other Information as required by the PMC as mentioned in the Bidding Data.

16.2 The Bidding Documents shall themselves be deemed to be part of the Bid.

16.3 General guidance relating to the information to be provided by Bidders is given in the Annexure/ Appendices.

IH.17 Language of Bid

17.1 The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the PMC, shall be written in English. Supporting documents and printed literature furnished by the Bidder with the Bid may be in Urdu or other languages, provided they are accompanied by an appropriate translation of pertinent passages in the above stated language. For the purpose of interpretation of the Bid, the English language shall prevail.

IH.18 Currency of Bid

18.1 All monetary values quoted in the Bid shall be in **Pak Rupees**.

IH.19 Bid Validity

19.1 The Bid shall remain valid and open for acceptance for a **period of 90 Days from the date of Bid Submission**. In exceptional circumstances, prior to expiry of the original bid validity period, the PMC may request Bidders to grant a specified extension in the period of validity. However, the period of extension should not exceed the original period of bid validity. The request and the responses thereto shall be made in writing or by cable, electronic mail or facsimile. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder agreeing to the request will not be required nor permitted to modify its bid, but will be required to extend the validity of its Bid Security correspondingly.

IH.20 Bid Security

20.1 The Bid shall be accompanied by a Bid Security @2% of the Bid Cost enclosed in Financial Proposal.

20.2 The Bid Security shall be denominated in the currency of the bid and shall be in the form of a cash deposit, a certified cheque, a bank draft, an irrevocable letter of credit or a Guarantee from a schedule bank in the Islamic Republic of Pakistan or a bank of a country abroad acceptable to the PMC.

20.3 The format of the bank guarantee shall be in accordance with the Sample Bid Security

included in these Bidding Documents. No other formats shall be accepted.

- 20.4 Any Bid not accompanied by the required Bid Security, or accompanied by a Bid Security in an amount less than that required, will be rejected by the PMC as non-responsive.
- 20.5 The Bid Securities of all participating Bidders will be discharged/ returned as promptly as possible after the successful Bidder has signed the Contract Agreement and has provided the required Performance Security for Construction Phase as per Bidding Data in favor of the PMC.
- 20.6 The Bid Security may be forfeited:
- a. If a Bidder withdraws its Bid during the period of bid validity: or
 - b. In the case of a successful Bidder, if it fails within the specified time to:
 - i. Furnish the necessary Performance Security for Construction Phase
 - ii. Sign the Contract Agreement; or
 - iii. Achieve Financial Close.
 - c. In case of default as expressed in **Clause IH 3**.

IH.21 Pre-Bid Meeting

- 21.1 The Bidders or their authorized representatives are advised to attend a Pre-Bid Meeting.
- 21.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage. The Bidders are requested to submit any substantive questions in writing or by cable, e-mail, telex or facsimile to reach at HMC Taxila, not later than one week before the meeting.
- 21.3 Minutes of the meeting, including copies of the questions raised and responses given, will be furnished expeditiously to all those attending the meeting (and to other prospective Bidders on request), and shall form an integral part of the Bidding Documents, in the form of Addenda.

IH.22 Conformity with the Bidding Documents

- 22.1 The Bidder must submit a Conforming (Bona Fide) Bid that conforms in all respects with the requirements of the Bidding Documents.

IH.23 Conforming (Bona Fide) Bids

- 23.1 A Conforming Bid is a bid that conforms in full, both in engineering and operational terms with the Conforming Scheme, and in financial, organizational and obligation terms with the General Conditions of Contract, except for minor departures that do not materially affect the design, construction method or operational characteristics of the Project or the financial, organizational or obligation regime under which the Contract will be conducted. All such minor departures, if they exist, must be clearly identified and fully described in the Bid, and in particular the financial, programming and any other practical implications of a departure must be explained. If the Bid contains no deviations from the Conforming Scheme a positive statement to this effect must be made.

23.2 The PMC shall determine whether a Bid is a Conforming (Bona Fide) Bid. However, the decision may be reviewed and bidder's grievances/ complaints, that may occur prior to the entry into force of the procurement contract, shall be addressed by the PMC.

IH.24 Format and Signing of Bids

The Bidder shall prepare, in separate volumes, two (02) copies of the documents comprising Part 1 and Part 2 of the Bid, as described in **Clause IH 16.1**, clearly marked and numbered 'Part 1' and 'Part 2' and 'Original Bid' and 'two Copies of Bid' as appropriate. In the event of any discrepancy between them, the original shall govern.

24.2 The original and copies of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to bind the Bidder to the offer. Proof of authorization shall be furnished in the form of a written Power-of- Attorney, which shall accompany the Bid. All pages of the Bid, except for un-amended printed material, shall be initialed by the person or persons signing the Bid.

24.3 The complete Bid shall be without alterations, interlineations or erasures, except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

D SUBMISSION AND OPENING OF BIDS

IH.25 Sealing and Marking of Bids

25.1 The Bidder shall seal the Technical Proposal and Financial Proposal, in pursuant to **Clauses IH 16.1** and **IH 24.1** in separate envelopes, which must bear the signature of the Bidder's authorized representative.

25.2 The original and 02 (two) copies of the Technical Bid shall be sealed into an envelope and addressed to the Project Management Committee C/O HMC Taxila, with the following identifications:

- a. TECHNICAL PROPOSAL
- b. BID FOR *[mention name of the Project]*
- c. REF. No *[mention the same number as on Notice for Expression of Interest]*
- d. The Words "DO NOT OPEN BEFORE *[mention date and time of Bid Opening for Technical Proposal]*"

25.3 The original Financial Proposal of the Bid shall be sealed into an envelope and addressed to the Project Management Committee C/O HMC Taxila, with the following identifications:

- a. FINANCIAL PROPOSAL
- b. BID FOR *[mention name of the Project]*
- c. REF. No *[mention the same number as on Notice for Expression of Interest]*
- d. The Words "DO NOT OPEN BEFORE *[mention date and time of Bid Opening for Financial Proposal]*"

25.4 The envelopes shall also indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared 'late'.

25.5 If the envelope is not sealed and marked as instructed above, the PMC will assume no responsibility for the misplacement or premature opening of the Bid. Any Bid that is opened prematurely will be rejected by the PMC and returned to the Bidder.

IH.26 Bid Submission Date

26.1 Bids for Part-1 and Part-2 for Technical and Financial Proposals must be received at the address specified in the Bidding Data not later than the date(s) and time(s) specified in the Bidding Data in accordance with type of bidding procedure as mentioned in the Bidding Data.

26.2 The PMC may, at its discretion, extend the deadline for the submission of Bids through the issue of an Amendment in accordance with **Clause IH 15**, in which case all rights and obligations of the PMC and the Bidders previously subject to the deadline will thereafter be subjected to the deadline as extended.

IH.27 Late Bids

27.1 Any Bid received by the PMC after the specified Bid Submission Date and Time will be returned unopened to the Bidder.

IH.28 Modifications and Withdrawal of Bids

28.1 The Bidder may modify and withdraw its Bid after submission, provided that written notice of the modification or withdrawal is received by the PMC prior to the prescribed deadline for submission of Bids.

28.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provision for the submission of Bids. A withdrawal notice may also be sent by telex, e-mail, cable or facsimile but followed by a signed confirmation copy, postmarked not later than the deadline for submission of Bids.

28.3 No Bid may be modified subsequent to the deadline for submission of Bids.

28.4 No Bid may be withdrawn in the interval between the Bid Submission Date and the expiration of the period of Bid Validity. Withdrawal of a Bid during this interval may result in the forfeiture of the Bid Security.

28.5 Subsequent to the expiration of the period of validity of Bids prescribed by the PMC, a Bidder that has not been notified by the PMC of the award of a Contract may withdraw its Bid without penalty.

IH.29 Opening of Bids

29.1 The PMC will open the Bids in two stages, Stage-1 Technical Proposal and Stage-2 Financial Proposal in the presence of Bidders' representatives. The Bidders' representatives who are present shall sign a register evidencing their attendance.

29.2 The PMC will examine the Bids to determine whether they are complete, or the requisite Bid Securities have been furnished, or the documents have been properly signed, or the Bids are generally in order.

29.3 The Bidder's names, bid modifications or withdrawals (if any), the presence of the requisite Bid Security and such other details as the PMC at its discretion may consider

IH.33 Correction of Arithmetical Errors

- 33.1 Bids determined to be substantially responsive and, subject to the discretion of the PMC, will be checked by the PMC for any arithmetical errors in computation and summation.
- 33.2 Errors will be corrected by the PMC as follows:
- a. Where there is a discrepancy between amounts in figures and in words, the amount in words will govern; and
 - b. Where there is a discrepancy between the unit monetary values and the total amount derived from either summation or through the multiplication of the unit monetary value by a factoring value, the unit monetary value as quoted will normally govern unless in the opinion of the PMC there is an obviously gross misplacement of the decimal point in the unit monetary value, in which event the total amount as quoted will govern.
- 33.3 If a Bidder does not accept the correction of errors as above, the Bid will be rejected.

IH.34 Presentation by the Bidders

- 34.1 To assist the evaluation of Bids, each Bidder will be required to present its Technical Proposals to the PMC in a meeting to be arranged at time and date as communicated by the PMC. These meetings must be attended by the Bidder and its engineers/consultants. The main purpose of these meetings will be:
- a. To provide the Bidder with the opportunity to present the details and merits of the technical and operational aspects of its Bid to the PMC; and
 - b. To allow the PMC to seek clarification on any technical and operational matters.
- 34.2 No commercial aspects of the Bid will be discussed at these presentations and no negotiations will take place.
- 34.3 The Technical Scope of the project will be discussed and updated during the course of meeting.

F DETAILED BID EVALUATION

IH.35 Process

- 35.1 The detailed evaluation of the Bids will be carried out with scores being assigned to each Bid during the evaluation. Those Bids that, in the view of the PMC, fail to satisfy minimum requirements of the evaluation will not be taken to financial evaluation process.

IH.36 Bidder's Capability and Technical Proposal

- 36.1 The aim of the evaluation will be to determine the ability of the Bidder to construct the Project, and to evaluate the level of competence shown by the Bidder, in terms of its understanding of the engineering, operational and maintenance aspects of the Project.
- 36.2 The assessment will consider the Bidder's previous experience in projects of this complexity and magnitude. Particular credit will be given to those Bidders who have

in-house experience in manufacturing, the engineering design and construction, and particular emphasis will be placed on the robustness of the proposed Works Program, the Project Appreciation Statement and the appropriateness of the proposed operating and maintenance regimes that will be employed during the whole life of the project.

- 36.3 The Technical Proposals are opened at the date and time specified in the Bidding Data. The Technical Proposals shall be evaluated and discussed with the Bidders for clarifications, if necessary. Any deficiencies, extraneous provisions and unsatisfactory technical features shall be pointed out to the Bidders whose comments are carefully evaluated during a **Post-Bid Meeting** at the date and time set by the PMC.
- 36.4 After the evaluation of Technical Proposals as above, Financial Bids will be opened of the firms securing **75% or above marks** as per Evaluation Criteria provided in **Annexure J**.

IH.37 The Financial Proposal

- 37.1 The Financial Proposals are opened at the date and time informed by the PMC. The Financial Proposals are evaluated by the PMC and its advisers in strict confidence. Subject to **Sub-Clause IH 31.1**, the PMC will not provide the assessment results or reasons in support of its assessments to any Bidders or third party.

IH.38 Assessment Process

- 38.1 The assessment process will be carried out by the PMC in strict confidence. Subject to **Sub-Clause IH 31.1**, the PMC will not provide the assessment results or reasons in support of its assessments to any Bidder or third party. However; the agreed set Evaluation Criterion is attached as **Annexure J**.
- 38.2 Bidders should note that the PMC is not bound to accept any Bid and may at any time, by notice in writing to any Bidders, terminate the bidding and assessment process in relation to their Bids or any proposals contained therein.

IH.39 Signing of Contract Agreement

- 39.1 PMC on behalf of SITECH shall enter into an EPC based Turnkey Contract Agreement with the selected bidder based on selection of Successful Bidder. The Contract Agreement shall be signed **within 15 days of issuance of LOI**.
- 39.2 Subsequent to the detailed evaluation of the Financial Proposals and Technical Proposals, the PMC will award the Contract Agreement to the successful Bidder, on the basis of being most beneficial.
- 39.3 Upon selection by the PMC the successful Bidder will be required, within a period of **15(fifteen) days** or as stated in the Bidding Data, to enter into a Contract Agreement with the PMC, having previously secured a **Performance Security** for Construction Phase to the value of **10 percent**, or as stated in the Bidding Data of the value of the Project Costs.
- 39.4 Failure to fulfill any of the above requirements within the specified time will, unless otherwise agreed by both parties, result in the forfeiture of the Bidder's Bid Security.
- 39.5 In the event of the successful Bidder forfeiting its Bid Security the PMC may at its discretion, either invite another Bidder to negotiate or terminate the bidding process.

G.INFORMATION TO BE PROVIDED BY BIDDERS

IH.40 Information to be provided by the Bidders

- 40.1 This section sets out, for the information and guidance of Bidders, the minimum requirements in terms of the contents of the Bid. It is emphasized that these are minimum requirements to be supplemented by more detailed information, as deemed necessary by the Bidder.
- 40.2 Bidders should note that the information and guidance provided in this Section has been prepared to assist them in completing their submissions. The PMC reserves the right to request any further information and clarification that it may deem necessary to carry out the detailed evaluation of Bids.
- 40.3 The Bid shall be presented in two parts, namely Part-1 and Part-2. The minimum contents of each Part are to be as follows:

IH.41 Part-1 Submission

41.1 General

The Part-1 submission should be divided into sections, which should set out the minimum information indicated in the following sections.

41.2 Bid Security

The Bid Security should comply with the requirements of **Clauses IH 20**.

41.3 Bidder's Capability Statement

The Bidder's Capability Statement will set out minimum information concerning the financial and corporate structure, experience and financial standing of the Bidder's organization or consortium as given in the following paragraphs.

41.4 Constitution or Legal Status

Copies of original documents defining the constitution or legal status and place of registration of the company or firm or, in the case of a joint venture, of each party there to constituting the Bidder will be submitted.

41.5 Corporate Structure

Where the Bidder is a joint venture of two or more companies or firms, a statementsigned by all parties to the joint venture of the proposed administrative arrangements for the management and execution of the Contract, the duties, responsibilities and share of each party, the authorized representative of the jointventure, and an undertaking that the parties are jointly and severally liable to the SITECH/ PMC for the performance of the Contract.

41.6 Relevant Experience

Details of the experience and past performance of the Bidder (or of each party to a joint venture) on projects of a similar nature successfully completed **at least One (01) independent project of one (01) MWp and aggregate Industrial/ Commercial inland projects of at least 10 MWp (completed/ongoing) during last five years. However, the core equipment should have complied to our required specification/**

brand. Details of current projects in hand and other contractual commitments have to be submitted.

41.7 Organizational Structure

A chart indicating the basic organizational structure(s) of the Bidder specifying the responsibilities of each organizational unit of the proposed Company is required.

41.8 Key Project Personnel

The qualifications and experience of the key personnel proposed for administration and execution of the project, during the design, construction and operating phases during liability period.

41.9 Audited Accounts

- a. Bidders shall provide **audited accounts for a minimum of the latest 5 years**, together with the most recently published interim accounts (if available), an **estimated financial projection for the next two years**, and an authority from the Bidder (or authorized representative of a joint venture) to seek references from the Bidder's bankers, together with a statement giving details of any off-balance sheet liabilities including contingent liabilities.
- b. In the absence of audited accounts, a statement detailing the financial strength of the institutions and/or individuals involved should be provided.

41.10 Project Appreciation Statement

- a. Specifications and drawings describing the design and layout of the Conforming Scheme are included within these Bidding Documents. These are provided for the Bidders' guidance and information.
- b. In considering these proposals the Bidder should note that the PMC will take no responsibility for the accuracy or practicality of the proposals, and that it is the Bidders' responsibility to verify or replace the information, assumptions and projections that are contained within these Bidding Documents and elsewhere; In the event that errors or omissions are found, to correct and supplement data as appropriate.
- c. In order to demonstrate their understanding of the form, scope and complexity of the Project, Bidders shall prepare a '**Project Appreciation Statement**' setting out the construction, operation and maintenance philosophy that is to be adopted for each significant element of the Project. This statement will include, but not be limited to, details of:
 - i. The construction method and operations management and maintenance of the project.
 - ii. The construction methods to be adopted in the construction of all major components of the Infrastructure/ Facility.
 - iii. The construction material requirements of the Project and their availability, the location of borrow pits and spoil areas and the implications of importing any raw or finished materials.
 - iv. The machinery, Plant and labor needs of the Project and the requirement for associated working and accommodation areas.

- v. Any particular problems that might be experienced during construction and the measures to be taken to overcome these problems.
- vi. The operational methodology to be adopted.
- vii. The proposed maintenance regime including the organizational system that will be adopted for routine maintenance and repair, longer-term inspection, monitoring and rectification of identified defects and normal deterioration of Infrastructure/ Facility.

41.11 Statement of Proposed Technical Changes to the Conforming Scheme

- a. In the event that the Bidder shall conclude, as a result of its ‘**Project Appreciation** Statement’, or otherwise, that it wishes to modify the proposals contained in the Conforming Scheme, either materially or otherwise, the Bidder shall provide supporting drawings and calculations to justify the proposed deviations from the Conforming Scheme.
- b. Such deviations shall be designed and evaluated, by the Bidder, in sufficient detail as to indicate, as a minimum:
 - i. Any changes in the layout, line and level for the Infrastructure/ Facility or its ancillary features.
 - ii. Any changes in the land requirements for the proposal.
 - iii. Any changes in the choice of materials.
 - iv. Any consequential changes in terms of the design life, operational characteristics and maintenance needs of the facility.
- c. The results of these studies shall be included, by the Bidder, in a ‘Statement of Proposed Technical Changes to the Conforming Scheme’.
- d. In the event that the Bidder should decide to adopt the Conforming Scheme, without amendment, a statement to this effect should be given.

41.12 Statement of Space Offered

- a. The PMC on behalf of SITECH offers Rooftops of Selected Buildings and earmarked land to execute the project. However, the bidder has the option to choose between rooftop and ground. The relevant information in this regard is enclosed in technical provisioning.
- b. All cost relating to any amendment against offered rooftops of the buildings, shifting of utilities (If any), resettlement issues etc. shall be borne by the Bidder. Respective entities of SITECH shall however provide all possible assistance in this regard except financial.

41.13 Work Program

- a. The Bidder shall provide a detailed Work Program, reflecting anticipated start-up and construction schedule to achieve the Availability Date specified in **Clause IH5**.
- b. In preparing this Work Program, Bidders are advised that it will be a condition of the Contract Agreement that specified sections of the Project are completed and available for use at specified times. Failure to meet these specified targets will result in the imposition of penalties on the Contractors.

41.14 Statement of Bid Conformity

- a. The Bidder shall submit a Statement of Bid Conformity, stating whether or not the Bid conforms to all the requirements of the Bidding Documents. The requirements for bid conformity are set out in **Clauses IH 31.1 and 31.2**.
- b. Bidders should note when preparing their submissions that all deviations from the Bidding Documents should be listed. Such deviations may include, but not be limited to:
 - i. Any changes to the layout, form or scope of the Conforming Scheme;
 - ii. Any changes to the Land Requirements Plan; and
 - iii. Any proposed changes to the Form of Contract Agreement.

IH.42 Part-2 Submission

42.1 General

The Submission should be divided into sections as set out below and each sections should provide, as a minimum, the information indicated in the following sections:

42.2 Statement of Capital and Operating Costs

The Bidder's Statement of Capital and Operating Costs should provide the following minimum information, set out in the format indicated below.

42.3 Capital Costs

- a. A Breakdown of capital/ construction costs divided into the appropriate sections is to be provided by the Bidder for each section of the Project.
- b. In addition, information should be provided regarding design, consultancy and project management fees, contingency costs and insurance costs.

42.4 Operation and Maintenance Costs

- a. The Bidder shall provide details of estimated Operation and Maintenance Costs during the first and each subsequent year of operation. The following minimum information should be provided:
 - i. Operation costs;
 - ii. Routine monitoring, and allied service costs;
 - iii. Other administration costs;
 - iv. Costs associated with routine inspection and maintenance programs
 - v. The anticipated cost of periodic maintenance programs.
- b. General Design Criteria, Operational & Maintenance Requirements are attached with the document.

42.5 Financial Analysis of the Project

The Bidder shall provide a detailed forecast annual balance sheet and cash flow projections for the Project.

42.6 Letter of Financial Proposal

A definitive summary of the key elements of the Bid shall be provided by the Bidder.

42.7 Other Information

Any other information that is needed to provide a clear understanding of the Bidder's financial analysis should be included in this section of the submission.

H MISCELLANEOUS

IH.43 Mode of Payment

- a. The payment to the successful bidders will be made in parts after the completion of designated portion of work as per payment schedules/milestones mentioned below.
 - i. 20% after signing of this agreement subject to provision of Advance Payment Guarantee (20%) and Performance Guarantee (10%) of the Contract/Bid Price. These Guarantees shall be made through irrevocable bank guarantees from Pakistani Banks having long term rating of AA or better.
 - ii. 25% after delivery all imported equipment to the Site.
 - iii. 15% after delivery all local equipment to the Site.
 - iv. 10% upon satisfactory completion of the civil works.
 - v. 20% on successful installation and testing/commissioning of the equipment at the Site
 - vi. 10% on Grid Connection and Net-metering (this payment shall be released on provision of Warranty Bond equal to 5% of Contract/ Bid price to the Employer valid for another 24 months i.e. duration of O&M); Performance Guarantee shall be released at this time subject to any deduction due to LDs. Warranty Bond shall be made through irrevocable bank guarantee from Pakistani Banks having long term rating of AA or better.
 - vii. **The O&M payments of the contract period equal to 5% of contract/ bid price will be made on quarterly basis**

IH.44 Site Office and Temporary Works

The Contractor shall be permitted to construct Temporary Works which he may require for the construction of the Works at suitable locations at the Site. The Contractor shall provide at his own cost suitable site office with waterborne sanitary facilities. On completion of the Works, the Contractor shall remove all temporary structures.

44.1 Care of the Site

The Site of the Works is to be kept clean at all times and as clear as possible to enable rapid progress of the Works. No employee of the Contractor shall reside on the Site unless permitted by the Employer.

44.2 Water-Free Foundation and Works

The Contractor shall provide and maintain power driven pump sets to keep the Works, excavation and foundations free from water etc. at his own expense. The water shall be disposed-off to the satisfaction of the Employer.

44.3 Watch, Ward and Care of the Works

The Contractor shall provide on his own expenses day and night watchman for the protection of all Works on the Site including materials already fixed in the Works. The Contractor shall be held responsible for the care of the Works.

44.4 Site Order Book

The Contractor shall maintain at the Site of the Works a “Site Order Book” (of triplicate leaves) for taking instructions and direction of the Employer or its authorized representative(s).

44.5 Sign Board and Markings

The Contractor shall provide suitable sized Sign Board(s) at the location(s) approved by the Employer. The Contractor shall provide “Danger Boards” and “Shock Charts” wherever required to comply with the requirements of local electricity rules and according to normal practice.

44.6 Material Issued by the Employer

Where any material or equipment is specified to be supplied by the Employer, the Contractor would be required to expedite the handling and receipt of such furnished materials and equipment. Where the materials are to be furnished and installed by the Contractor, it shall be the responsibility of the Contractor to coordinate that all the work can be completed with-in the time fixed for completion of the Project.

44.7 Drawings availability at the Site

The Contractor shall maintain throughout the period of the Contract a complete set of Construction Drawings, Bidding documents and up to date revisions of drawings and documents in his site office.

IH.45 Water and Power during Construction

- a. The Contractor shall make his own arrangements for water for construction, drinking, and other purposes. The Contractor shall have to obtain electricity for temporary power and lighting at his own cost. The Contractor shall also install sufficient lighting in and around the construction site and shall maintain it for the construction and watch and ward purposes. The Contractor shall supply and install at his own cost all primary cables, poles, lamps, flood lights, switch boards and other equipment necessary for temporary power and lighting and shall temporary electrical installations.
- b. The Contractor shall remove any temporary lighting in areas where the permanent lighting conduits, outlets, boxes and wires have been installed. The

Contractor shall install the temporary lamps at these outlets and provide the necessary temporary connections at the distribution switchboard locations, where the permanent circuit wires originate. The temporary lighting in other areas where permanent installation is not complete shall be maintained until such time as the same can be replaced. All temporary lighting shall be removed when permanent supply system is made available. The Contractor shall assume all responsibility for provision, maintenance, repair and operation of these services at his own cost throughout the construction period.

IIH.46 Progress Report

It is obligatory for the Contractor to prepare and submit a monthly report on the progress of the Works to the Employer on approved Performa which may be amended from time to time if found necessary. The Contractor shall provide all assistance to the Employer when assessment of such is to be made.

IIH.47 Security Clearance

Due to location of the Site of the Projects, it may be necessary for the Contractor to obtain security clearance for all his men, material and equipment from the concerned authority. The SITECH/ PMC will, however, provide all assistance in securing such clearance.

IIH.48 Bidders to be Careful

- 48.1 Bidder should take care of local laws, statutes, regulations, Government investment policies in order to make the bids complying with Country regulation.
- 48.2 PMC shall not assume any responsibility and shall stand indemnified against any or all information provided in the Bidding Documents as far as the Project data and figures are concerned. The Bidders are instructed to carry out their own detailed studies to confirm the Project viability and submit the bids accordingly. The Project documents merely provide information which is deemed useful for the Bidders to initiate study of the Project. It may be further understood that PMC on behalf of SITECH is providing this information with best of intents and has tried its best to provide as correct as possible information.
- 48.3 If there arises any further need of addition to the existing Bidding Documents, the same shall be attended through addendum. All such addenda shall form part of the Bidding Documents.
- 48.4 The documents as mentioned in this Bidding Documents shall form the integral part of the overall Agreement and all the conditions contained shall prevail, unless specifically amended or changed or added or deleted through mutual agreement of the PMC and the successful Bidder.
- 48.5 Strict action will be taken in case of fake documents.

ANNEXURES

TO

INSTRUCTIONS TO BIDDERS

Annexure-A

General Information

All individual firms and each partner of a joint venture are requested to complete the information in this form. Nationality information should be provided for all owners or applicants who are partnerships or individually-owned firms.

1.	Name of firm	
2.	Head office address	
3.	Telephone	Contact
4.	Fax	Telex
5.	Place of incorporation / registration	Year of incorporation / registration

Nationality of owners ¹		
	Name	Nationality
1.		
2.		
3.		
4.		
5.		

¹ To be completed by all owners of partnerships or individually-owned firms.

Annexure-B

General Experience Record

Name of Bidder or partner of a joint venture
--

All individual firms and all partners of a joint venture are requested to complete the information in this form. The information supplied should be the annual turnover of the Applicant (or each member of a joint venture), in terms of the amounts billed to clients for each year for work in progress or completed, in Rs. Million.

Use a separate sheet for each partner of a joint venture.

Annual turnover data (construction only)		
Year	Turnover (Rs. Million)	Remarks
1.		
2.		
3.		
4.		
5.		

Note:

- a. Certified copies of Audit report from a Chartered Accountant or Income Tax Department should be enclosed.
- b. Testimonials, Certificates and publicity material should not be enclosed; they will not be taken into account in the evaluation of qualification and will be discarded.

Annexure-C

Joint Venture Summary

Names of all partners of a joint venture
1. Lead partner
2. Partner
3. Partner
4. Partner
5. Partner
6. Partner

Annual turnover data (construction only; Rs. Million)						
Partner	For	Year 1	Year 2	Year 3	Year 4	Year 5
1. Lead partner						
2. Partner						
3. Partner						
4. Partner						
5. Partner						
6. Partner						

FOREIGN COMPANIES, DULY REGISTERED WITH PEC, CAN ALSO PARTICIPATE IN COLLABORATION WITH LOCALELIGIBLE BIDDERS

Annexure-D

Details of Contracts of Similar Nature, Single Units Size and Complexity

Name of Bidder or partner of a joint venture
--

Use a separate sheet for each contract.

1.	Number of Contract	
2.	Name of Contract	
3.	Country	
4.	Name of Employer	
5.	Employer Address	
6.	Nature of works and special features relevant to the contract for which the Bidder wishes to bid	
7.	Contract Role (check one) <div style="display: flex; justify-content: space-around; text-align: center;"> Sole contractor in a joint venture Management Contractor Subcontractor Partner </div>	
8.	Value in specified currencies at completion, or at date of award for current contracts,	
	* Total Contract Amount: ___(Rs. Million)	
	* Sub-Contract Amount (if the role was sub contractor): __ (Rs. Million)	
	* Responsible Contract Amount (if the role was partner in a joint venture): _____ (Rs. Million) _____ (percentage of share)%	

9.	Rs. Million
10.	Date of Award
11.	Date of Completion
12.	Contract/subcontract duration (years and months) <div style="text-align: center;"> ___Year ___months </div>
13.	Specified Requirements

² The Applicant should insert any specific contractual criteria required for particular operations, such as annual volume of earthmoving, underground excavation, or placing concrete.

Annexure-E

Summary Sheet

Current Contract Commitments / Works in Progress

Name of Bidder or partner of a joint venture

Bidders and each partner of a joint venture should provide information on their current commitments on all contents that have been awarded or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Name of contract with size of the project	Value of Total/ outstanding work (Rs. Million)	Estimated completion date
1.		
2.		
3.		
4.		
5.		
6.		

Annexure -F

Personnel Capabilities*

Name of Bidder

For specific positions essential to contract implementation, Bidders should provide the names of at least two candidates. The data on their experience should be supplied in separate sheets using this Form for each candidate.

1.	Title of position
	Name of prime candidate
	Name of alternate candidate
2.	Title of position
	Name of prime candidate
	Name of alternate candidate
3.	Title of position
	Name of prime candidate
	Name of alternate candidate
4.	Title of position
	Name of prime candidate
	Name of alternate candidate

*WITH EVIDENCE OF PAYMENT OF MONTHLY SALARY TO SUCH EXPERTS

Annexure-G

Candidate Summary

Name of Bidder

Position (engineers dedicated for the project)	Candidate Prime Alternate	
Candidate information	1. Name of candidate	2. Date of birth
	3. Professional qualifications	
Present employment	4. Name of Employer	
	Address of Employer	
	Telephone	Contact (manager / personnel officer)
	Fax	Telex
	Job title of candidate	Years with present Employer

Summarize professional experience over the last 10 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the Project.

From	To	Company / Project / Position / Relevant technical and management experience

Annexure-H

Equipment Capabilities

Name of Bidder

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for each and all items of equipment required to perform the works.

Item of solar power related equipment		
Equipment information	1. Name of manufacturer	2. Model and power rating
	3. Capacity	4. Year of manufacture
Current status	5. Current location	
	6. Details of current commitments	
Source	7. Indicate source of the equipment <div style="display: flex; justify-content: space-around; width: 100%;"> Owned Rented Leased Specially manufactured </div>	

Omit the following information for equipment owned by the Applicant or partner.

Owner	8. Name of owner	
	9. Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the Project	

Annexure-I

Financial Capability

Name of Applicant or partner of a joint venture

Bidders, including each partner of a joint venture, should provide financial information to demonstrate that they meet the requirements of the proposed project. Each Bidder or partner of a joint venture must fill in this form. If necessary, use separate sheets to provide complete banker information. A copy of the audited balance sheets and statement of profit and losses should be attached.

Banker	Name of banker	
	Address of banker	
	Telephone	Contact name and title
	Fax	e mail

Summarize actual assets and liabilities in Rs. Million equivalent (at the rates of exchange current at the end of each year) for the previous five years.

Financial information in Rs. Million	Actual: previous five years				
	1.	2.	3.	4.	5.
1. Total assets					
2. Current assets					
3. Total liabilities					
4. Current liabilities					
5. Sales					
6. Ordinary Profits					

7. Profits before taxes					
8. Profits after taxes					
Specify proposed sources of financing to meet the cash flow demands of the Project, net of current commitments for other contracts.					

Source of financing	Amount (Rs. Million)
1.	
2.	
3.	
4.	

Attach audited financial statements for the last five years (for the individual Bidders or each partner of a joint venture). Firms owned by individuals, and partnerships, may submit their balance sheets certified by a registered accountant, and supported by copies of tax returns, if audits are not required by the laws of their countries of origin.

Annexure-J

Evaluation Criteria

(The Bidder who fulfills the Eligibility Requirement shall be further valuated as per following criteria)

S.No.	Description	Marks (100)
1	Certifications	5
	Pakistan Engineering Council (PEC) Registration certificate having specialization code EE-11 (Solar) and Financial Category “C-3” or better.	3
	AEDB ARE-V1 Certification.	2
2	General Experience of Projects	10
	Project Completed in Pakistan with work completion certificate.	5
	Ongoing projects (list to be provided for ongoing project in Pakistan).	5
3	Execution Team Composition	5
	Team Composition with responsibility indicators.	2
	Experienced Staff with evidence of project execution.	3
4	Authorization	5
	Letter from Authorized dealer of solar panels.	2.5
	Letter from Authorized dealer of inverters.	2.5
5	Efficient and Cost Effective Solar Solution	57
	Technical specification sheet of the equipment (including brand names).	5
	Complete simulation report (PVsyst software)	5
	Net Minimum Guaranteed generation for 15 years (PVsyst report at P90) as per Annexure-K	7
	Return on Investment Report/ Cumulative saving report	7
	Solar Efficiency and Performance ratio at P90 (PVsyst).	5
	Bill of Quantities / Services with quantities.	5
	PV Solar system Layout.	2
	Single Line Diagram.	2

	Electrical Diagram showing the grid connectivity with Solar Power System Balancing/ Synchronization with the existing system.	2
	Electrical Panel Layout with rating of the equipment.	2
	Communication Network diagram.	2
	Structure Diagram/ Distribution Load.	2
	Fencing Diagram for PV placement area / Lighting & Fence Boundary wall Layout.	2
	Earthing Layout Plan.	2
	AC / DC cable Losses calculation.	2
	Lighting protection, Mounting system strength & wind test reports.	2
	Water Distribution Layout Diagram.	2
	List of Maintenance Cleaning tool.	1
6	Timelines of the project with detail (Gantt Chart) Starting from issuance of LOI and end with Energization of Solar plant.	5
7	Complete Plan & Methodology of Preventive, Predictive & corrective Maintenance for 2 years of operation to assure Net minimum Guaranteed Generation (NMGG).	5
8	¹ Financial Position	8
	Annual turnover of the company greater than Rs 200 million	
	Annual turnover of the company greater than Rs.million150 and less than Rs.200 million	
	Annual turnover of the company greater than Rs. million 100 and less than Rs.150 million	
	Annual turnover of the company greater than Rs. million 50 and less than Rs.100 million	

Note:

The Firm who secure 75 or above marks will be made eligible in technical evaluation.

Annexure-K
Solar Unit Generation NMGG

Year	Solar Unit Generation (KWH) at P90	PR (Performance Ratio) at P90
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Annexure-L Litigation History

Name of Bidder or partner of a joint venture

Bidders, including each of the partners of a joint venture, should provide information on any history of litigation or arbitration resulting from contracts executed in the last 5 years or currently under execution. A separate sheet should be used for each partner of a joint venture.

Year	Award FOR or AGAINST Applicant	Name of client, cause of litigation, and matter in dispute	Disputed amount (current value, s. Million)

PROJECT INFORMATION

Annexure-M

TECHNICAL SPECIFICATIONS & REQUIREMENTS

TECHNICAL INFORMATION, SPECIFICATIONS & REQUIREMENTS FOR SOLAR POWERGENERATION SYSTEM

1. SITE TECHNICAL INFORMATION

The necessary technical information about the project site is discussed below. However, any query about site information would be available on request within bidding time.

1.0 Site Introduction:

The suggested locations for execution of Solar Based Power Projects are the rooftop buildings or designated land of SITECH Integral Companies and Sister Organizations located at Lahore, Rawalpindi, Taxila and Karachi.

1.1 Site Locations:

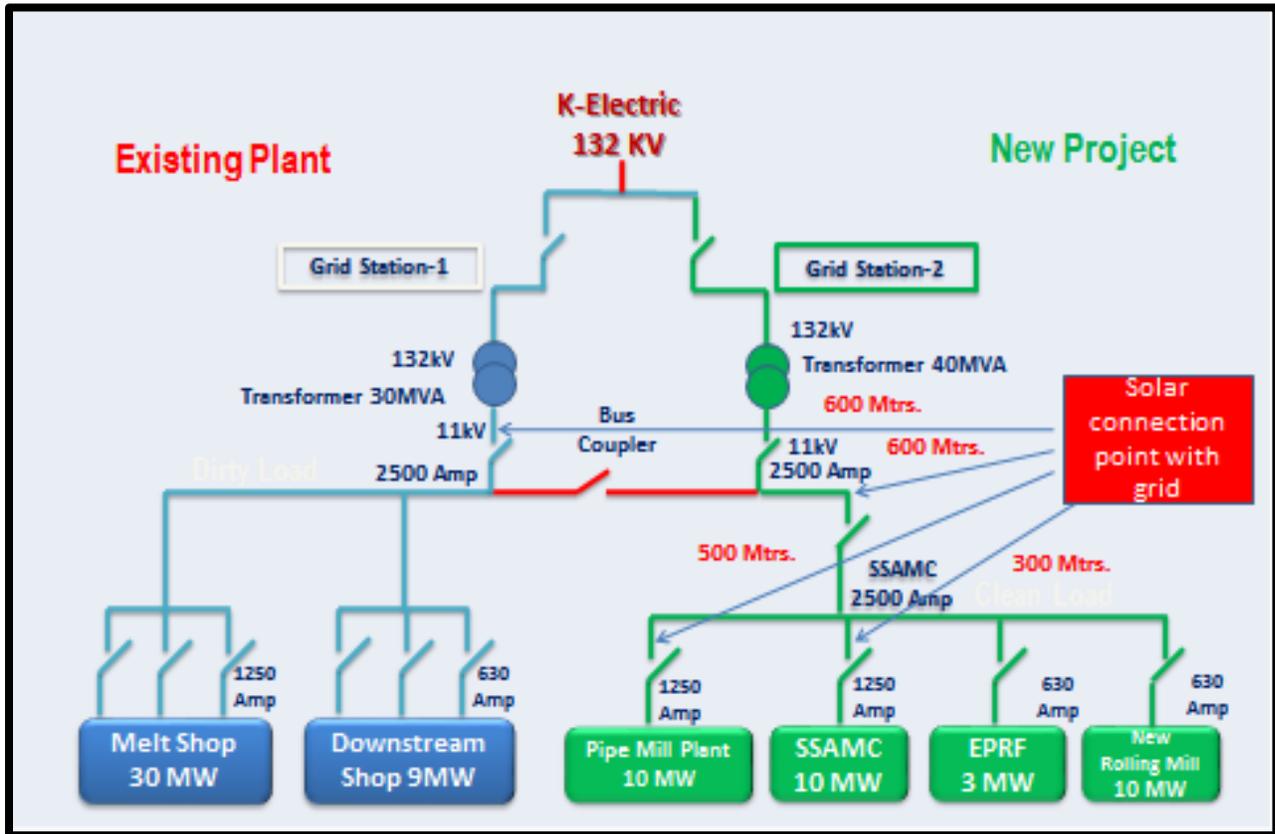
Ser	Entity	Location	Geographical Coordinates	
			Latitude	Longitude
a.	HMC	Taxila	34° 47'32" N	72° 38' 41" E
b.	RCC	Lahore	31°75'66"N	74°26'41" E
c.	PSM	Karachi	24°57'55"N	67°1'18" E
d.	EPRF	Karachi	24°57'50"N	67°1'32" E
e.	PMTF	Karachi	24°50'24"N	67°15'11"E
f.	NCP	Islamabad	33° 74' 99" N	73° 16' 43" E

LOAD DETAILS OF SITECH ORGANIZATIONS

Description	PSM	EPRF	PMTF	HMC	RCC	NCP
Sanctioned Load	30 MW	5 MW	4 MW	12 MW	2 MW	2 MW
Max Demand	17 MW	1.8 MW	1.8 MW	6 MW	1.7 MW	0.65 MW
Voltage Level	132 KV	11 KV	11 KV	11 KV	11 KV	11 KV
Max Op Load	15 MW	1.6 MW	1.8 MW	4 MW	1.4 MW	0.7 MW
Min Op Load	3 MW	1.6 MW	1 MW	2 MW	0.65 MW	0.3 MW
Unit Per Annum	50 Mn	10 Mn	1.5 Mn	7.1 Mn	3.3 Mn	1.6 Mn

PSM KARACHI

PSM - SINGLE LINE DIAGRAM



PSM ENERGY COMSUMPTION UTILIZATION FY 2021/2022

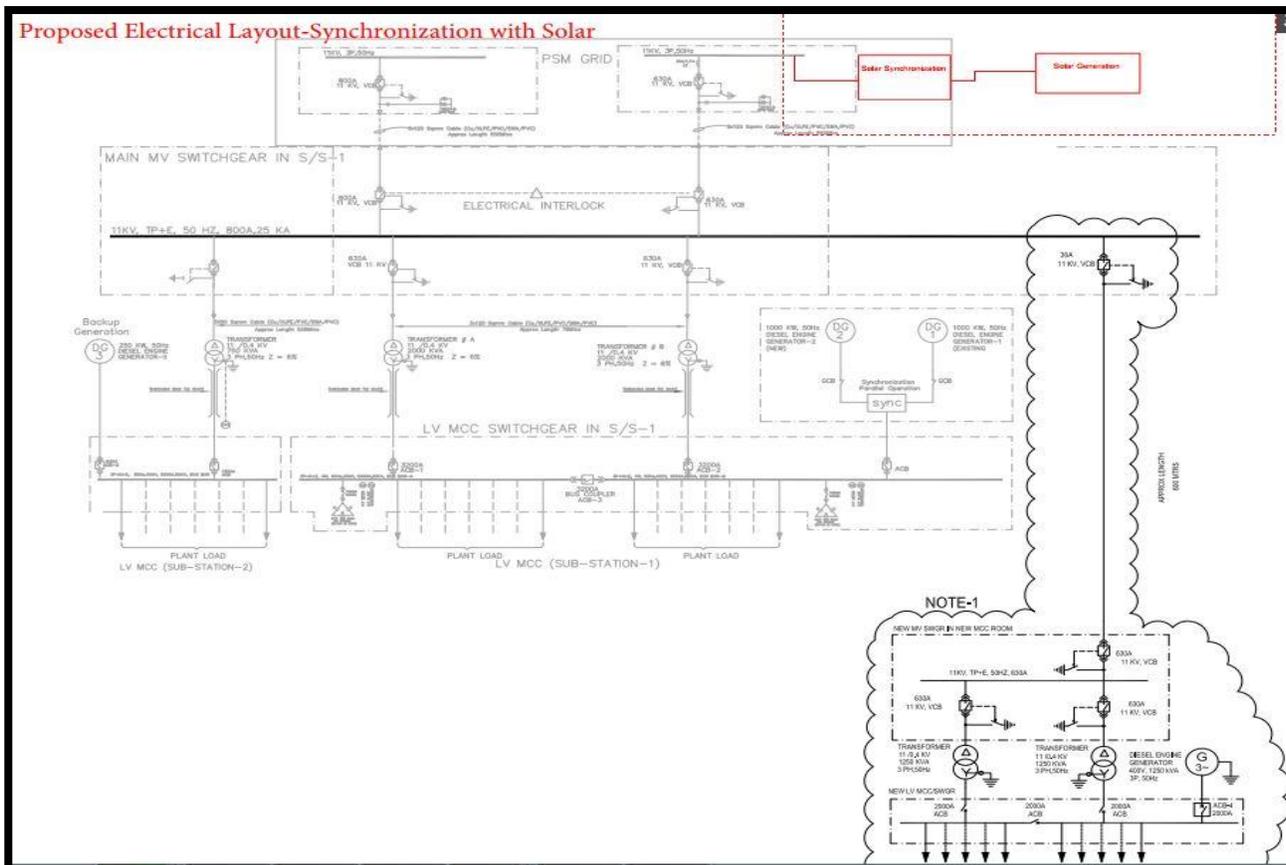
Billing Month	Units in KWH (Million)
21-Jul	1.46
21-Aug	1.47
21-Sep	3.03
21-Oct	4.58
21-Nov	6.00
21-Dec	5.64
22-Jan	5.90
22-Feb	5.06
22-Mar	5.94
22-April	4.71
22-May	3.49
22-June	4.18

PSM GOOGLE IMAGE FOR SOLAR PLANT INSTALLATION



EPRF KARACHI

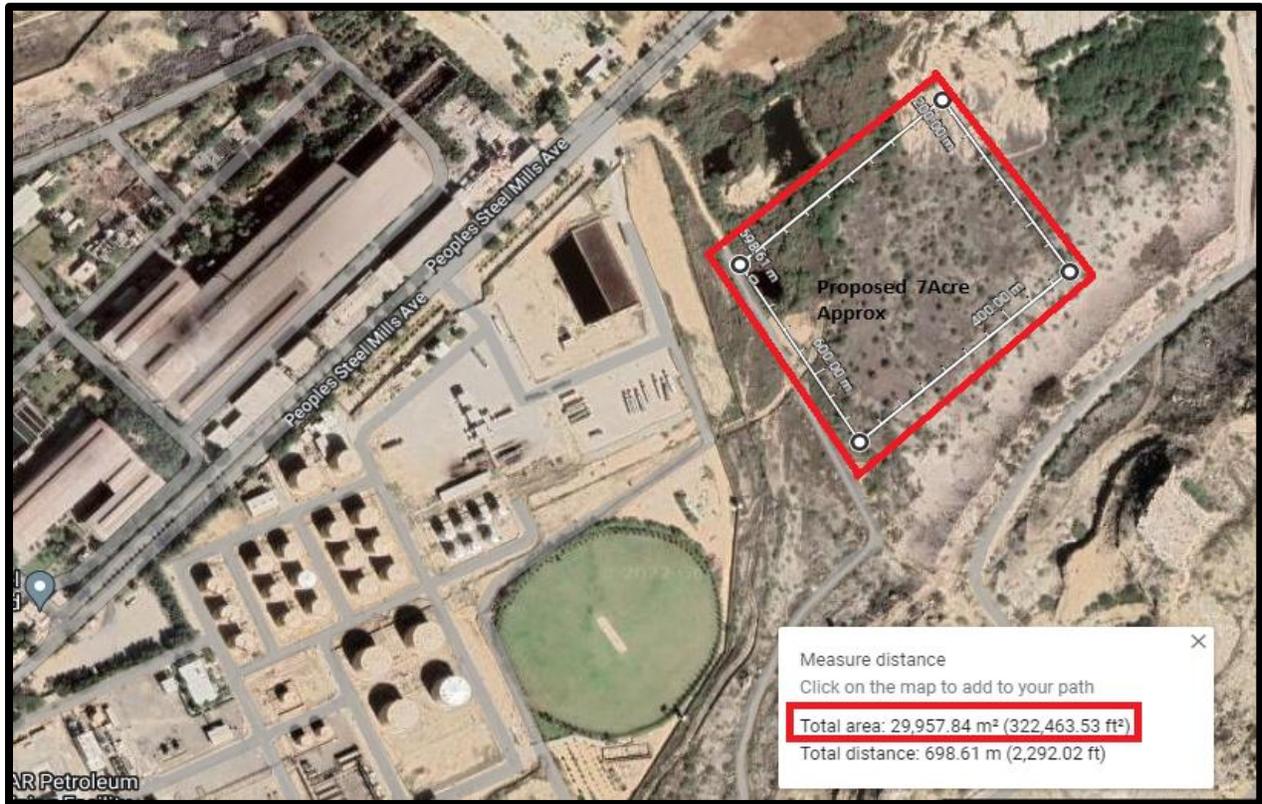
EPRF - SINGLE LINE DIAGRAM



EPRF ENERGY COMSUMPTION UTILIZATION FY 2021/2022

Months	Unit Consumed (KWH)
21-Jul	915,503
21-Aug	962,572
21-Sep	854,817
21-Oct	880,043
21-Nov	894,688
21-Dec	839,511
22-Jan	913,509
22-Feb	813,951
22-Mar	903,051
22-April	991,226
22-May	921,439
22-June	950,894
21-Jul	908,966

EPRF GOOGLE IMAGE FOR SOLAR PLANT INSTALLATION
Size of Land = 6 Acre (Option 1)

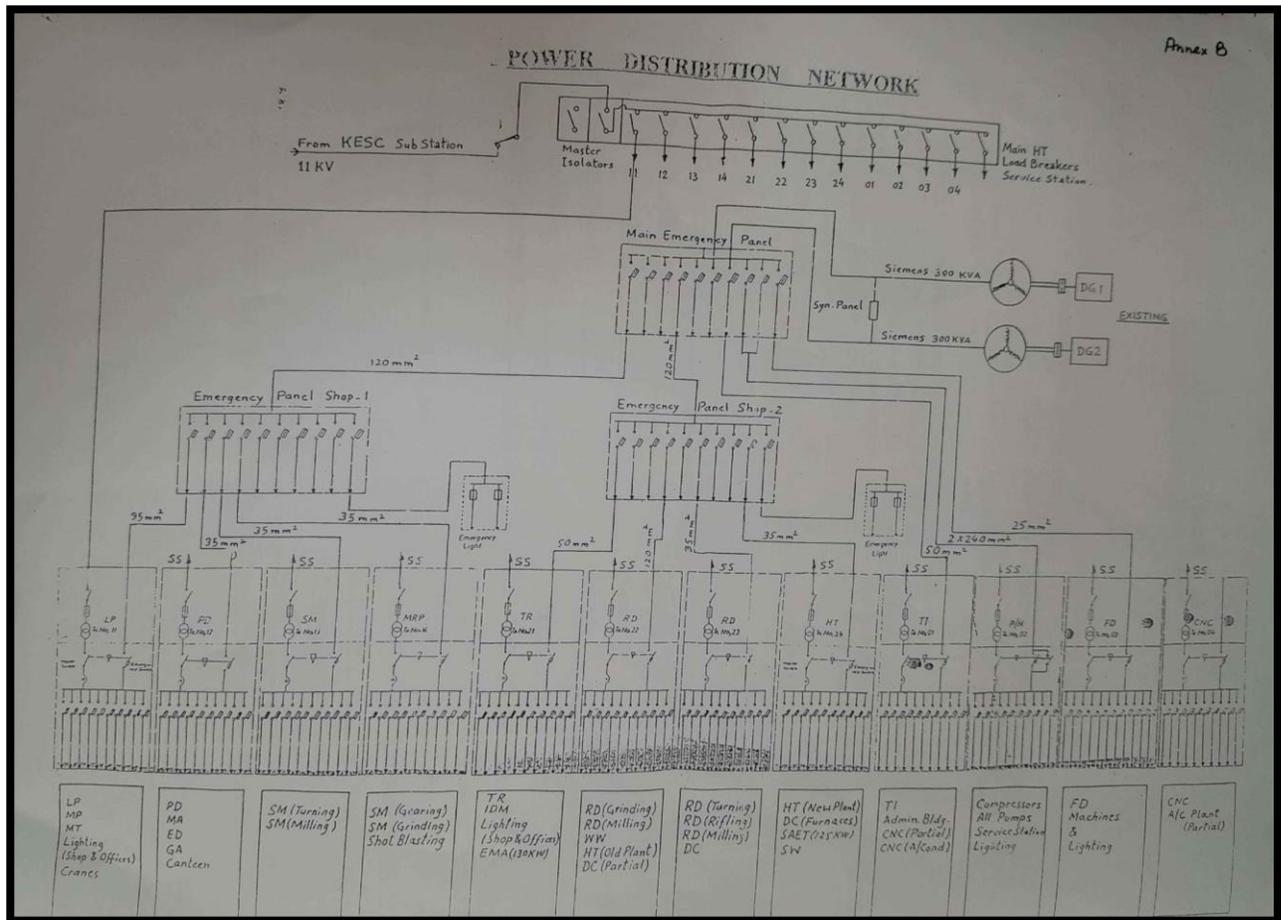


Size of Land = 6 Acre (Option 2)



PMTF KARACHI

PMTF - SINGLE LINE DIAGRAM



PMTF ENERGY CONSUMPTION UTILIZATION FY 2021/2022

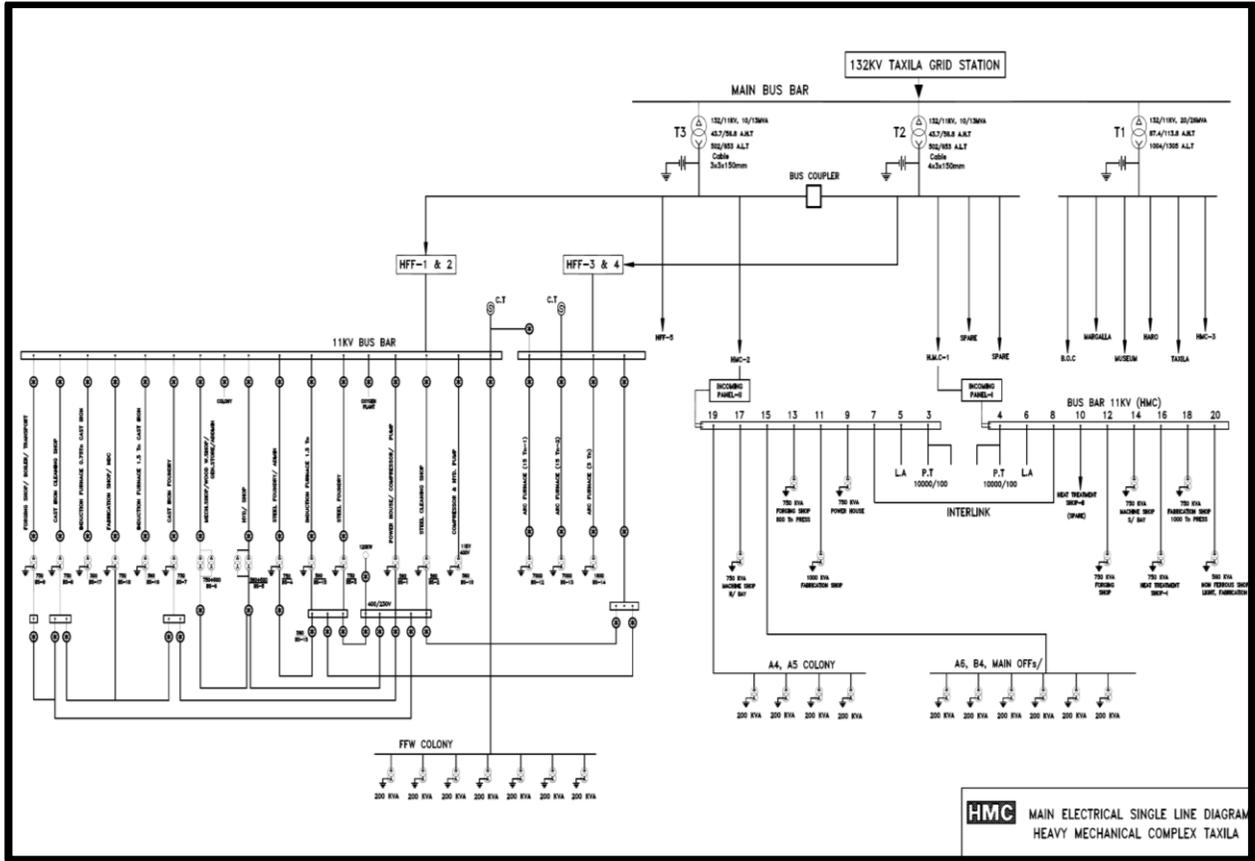
Month	Units Consumed (KWH)
21-Jul	103,745
21-Aug	96,774
21-Sep	111,703
21-Oct	131,202
21-Nov	142,026
21-Dec	128,241
22-Jan	118,513
22-Feb	115,931
22-Mar	140,921
22-April	143,687
22-May	120,225
22-June	170,553

PMTF GOOGLE IMAGE FOR SOLAR PLANT INSTALLATION



HMC TAXILA

HMC - SINGLE LINE DIAGRAM



HMC ENERGY CONSUMPTION UTILIZATION FY 2021/2022

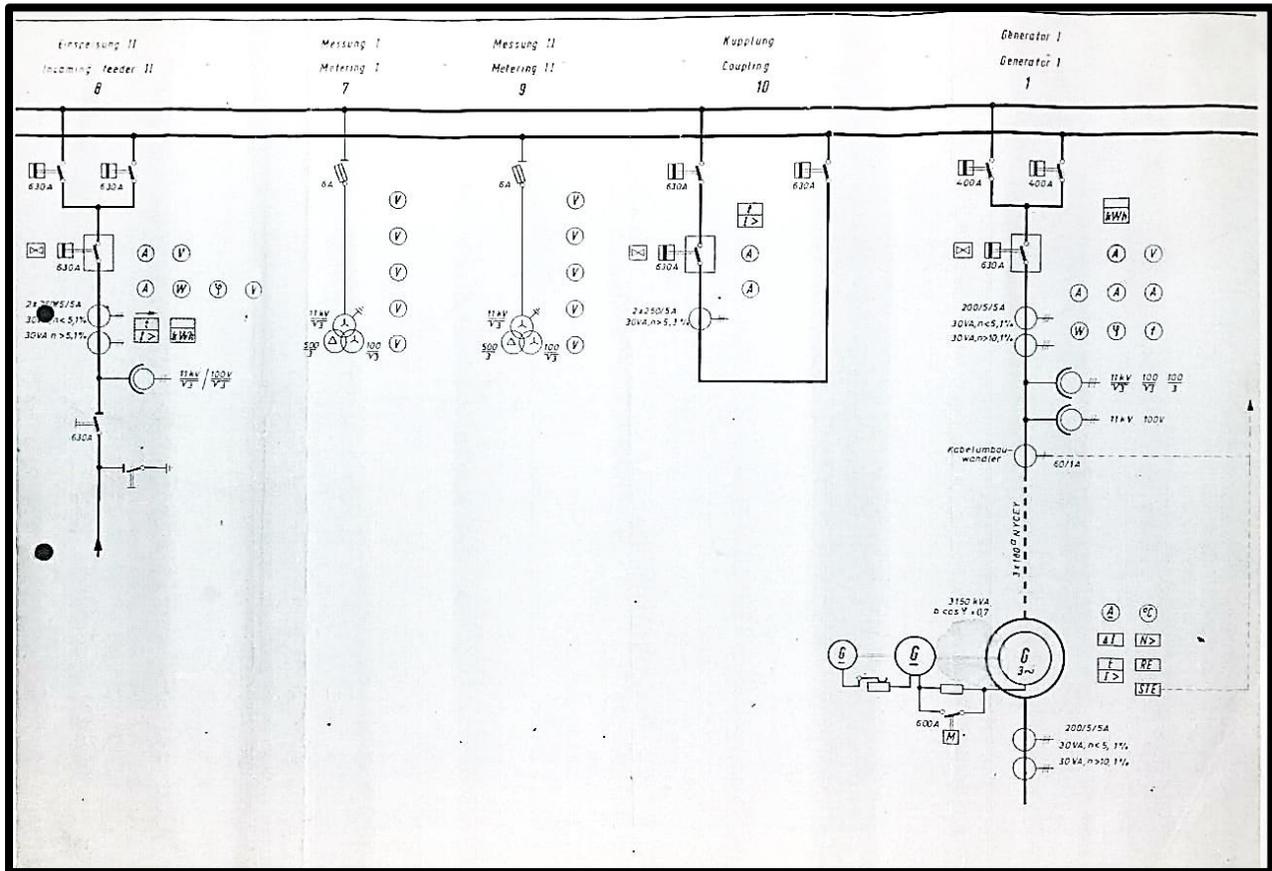
Month	Units Consumed (KWH)
21-Jul	849,760
21-Aug	789,120
21-Sep	948,800
21-Oct	633,440
21-Nov	505,600
21-Dec	591,680
22-Jan	546,560
22-Feb	531,840
22-Mar	467,360
22-April	624,000
22-May	696,320
22-June	895,840

HMC GOOGLE IMAGE FOR SOLAR PLANT INSTALLATION



RCC LAHORE

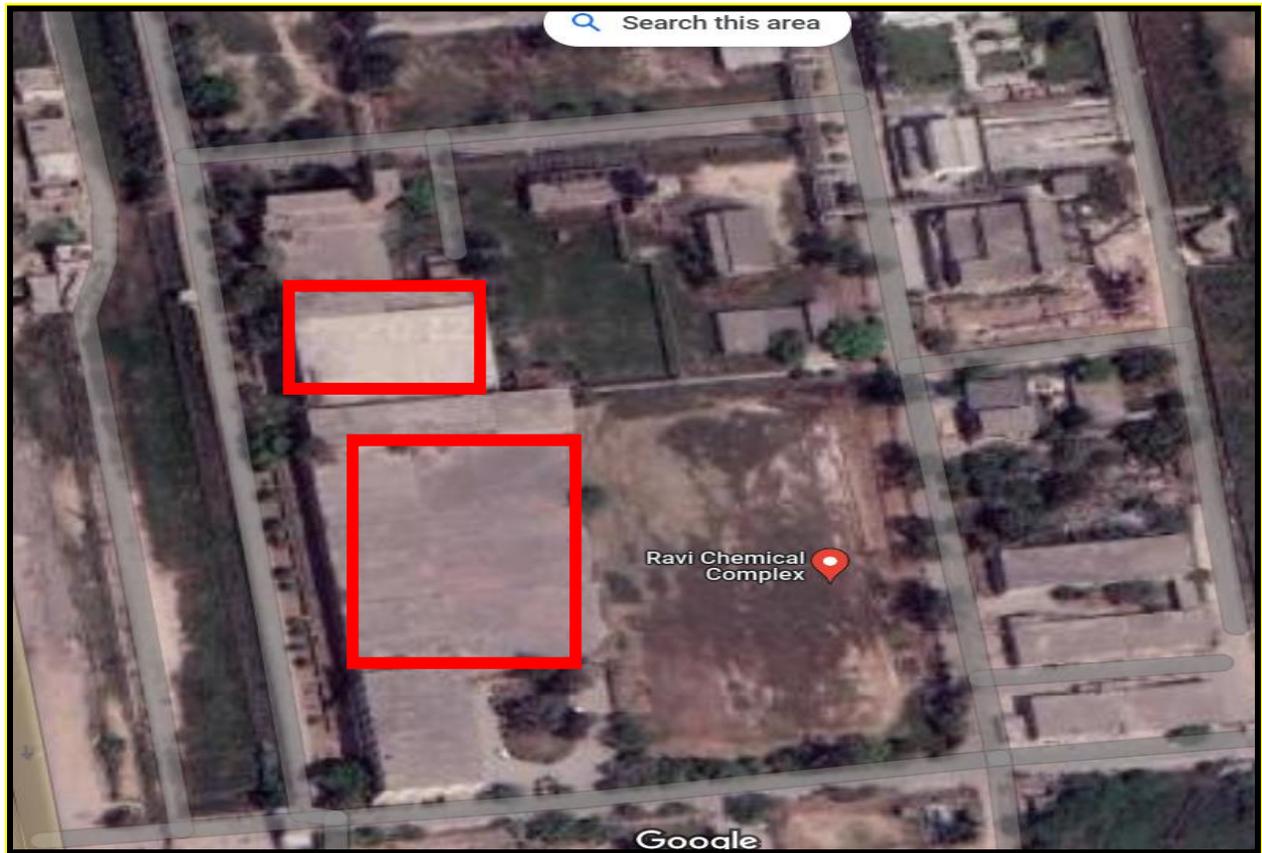
RCC - SINGLE LINE DIAGRAM



RCC ENERGY CONSUMPTION UTILIZATION FY 2021/2022

Month	Units Consumed (KWH)
21-Jul	64,000
21-Aug	48,000
21-Sep	44,000
21-Oct	40000
21-Nov	36,000
21-Dec	44,000
22-Jan	36,000
22-Feb	36,000
22-Mar	56,000
22-April	52,000
22-May	60,000
22-June	48,000

RCC GOOGLE IMAGE FOR SOLAR PLANT INSTALLATION



NCP ISLAMABAD

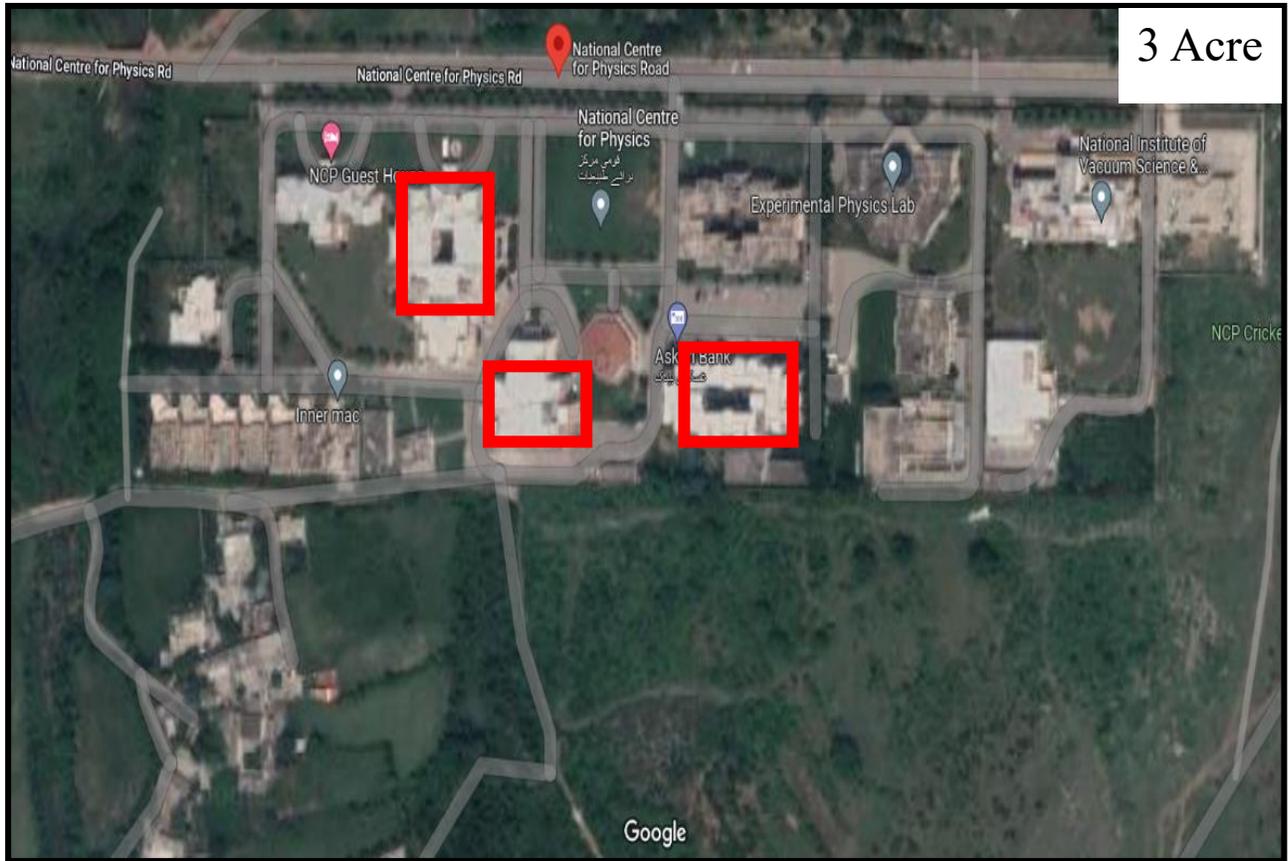
NCP - SINGLE LINE DIAGRAM

(Single line diagram shall be provided at site)

NCP ENERGY COMSUMPTION UTILIZATION FY 2021/2022

Month	Units Consumed (KWH)
21-Jul	129,720
21-Aug	145,200
21-Sep	174,480
21-Oct	148,960
21-Nov	106,720
21-Dec	122,320
22-Jan	156,520
22-Feb	140,880
22-Mar	986,00
22-April	962,40
22-May	111,360
22-June	136,480

NCP GOOGLE IMAGE FOR SOLAR PLANT INSTALLATION



1.2 Existing Power Supply Arrangements:

Ser	Entity	Main Power Supply	Emergency Power Supply
a.	HMC, Taxila	National Grid 11KV	Generators
b.	RCC, Lahore	National Grid 11KV	Generators
c.	PSM, Karachi	National Grid 132KV	Generators
d.	EPRF, Karachi	National Grid 11KV	Generators
e.	PMTF	National Grid 11KV	Generators
f.	NCP, Rawalpindi	National Grid 11KV	Generators

Note: The Bidder is required to visit the site for the assessment of existing power supply arrangement for proper synchronization of solar inverter with the national grid and diesel generator sets.

2.0 TECHNICAL REQUIREMENT

2.1 Base Structure:

The fixed based mechanical structure (adjustable) has been recommended to install with appropriate angle on the space available at site. It has also informed that Water Proofing Treatment is also expected on the roofs. To install the Solar PV modules, a good concrete structure of appropriate size would be paved on which mechanical structure for solar PV modules will be screwed. Proper civil work will be done so as to cater wind speed of up to 130 Km/hr which is well above the maximum recorded wind speed of 45 Km/hour during the last few years.

2.2 Placement of Power Inverter

The Bidder should clearly indicate the number of quantities placement of Power Inverters for each entity installed at suitable place.

2.3 Using of Cable Trays/ Tranches

The Bidder must ensure proper dressing of each cable using hot dip galvanized iron cable trays.

3.0 Scope of Work/ Services:

The scope covers supply, installation; testing, commissioning and performance testing of expected 1.0 MW Grid tied Solar Power plant ground mounted/ Roof top at each entity.

Client Scope:		
<ol style="list-style-type: none"> 1. To provide land / Roof top for the installation of Solar PV panels. 2. To provide water reservoir for the cleaning of solar panels. 3. To provide the electrical data & relevant drawing required by the supplier. 		
S/NO	Description	Bidder Scope of Work
1.	Technical specs of the plant	<ul style="list-style-type: none"> • To provide Solar Panel capacity 1MWp type Brand (Tier 1 AA or AAA rated Manufactured, as per Bloomberg list) • NMGG to be provided with supporting documents. 15 years committed table at P90 against its PR. • 15 years committed generation table at P90 against its Performance ratio.
2.	Engineering, Procurement & Installation.	<p>Bidder Scope:</p> <ul style="list-style-type: none"> • Design, Engineering, Procurement, Construction, Technical study (Load flow, short circuit & protection system study), Net metering Energy Simulation report for next 15 years at P90 against its PR. • Land Leveling & water distribution supply network. • Land Cleaning/Leveling & water distribution supply network. • Access to PEB shed along with guard rails including logistic support and walkways. • Installation, testing, commissioning & Load testing.
3.	Operation & Maintenance	The Contractor after successful commissioning of Solar Power Plant (SPP) shall become the Operator and shall be responsible for operation and maintenance of the solar power plant for a period of Two 02 years from the date of commercial operation and shall be responsible to give guaranteed Net Minimum Guaranteed Generation (NMGG) of Units (KWh) for 1st year and maximum degradation per annum for subsequent years should be 0.7%.
4.	Approvals	<ul style="list-style-type: none"> • Bidder shall be responsible for obtaining power generation license and all the related approvals from NEPRA/KE for the permission of the project.
5.	Spare parts & warranty	<ul style="list-style-type: none"> • Bidder shall maintain all the related spare parts of solar plant for 02 years of operation & Maintenance. • Bidder shall provide the warranty period of the solar panels, inverter and related accessories.
6.	Net Minimum Guaranteed Generation (NMGG).	<ul style="list-style-type: none"> • The operator shall be responsible for achieving NMGG. For any shortfall in the net minimum guaranteed generation corresponding to the offer, the compensation shall be recovered from the operator on block yearly basis

		<p>as per agreed rates negotiated at the time of finalization of contract.</p> <ul style="list-style-type: none"> • The Contractor has to maintain the Solar Plant equipment's including its repair, replacement, overhauling, etc, so as to give the offered NMGG per year,
7.	Net Metering	The bidder shall ensure that the system installed will confirm to all requirements / pre-requisites for net-metering as per DISCO/NEPRA requirements. Furthermore a Zero Energy Export Device shall be installed by the bidder until the activation of Net-metering.
8.	Delivery Time of the equipment	After issuing the contract agreement, plant should be ready for operation within 5 months.
9.	Electrical Drawings Layout plan & Manuals	<p>Bidder shall submit the following documents:</p> <ul style="list-style-type: none"> • PV Solar system Layout • Single Line Diagram • Electrical Diagram showing the grid connectivity with Solar Power System Balancing/ Synchronization with the existing system • Electrical Panel Layout with rating of the equipments • Communication Network diagram • Structure Diagram/ Distribution Load • Fencing Diagram for PV placement area / Lighting & Fence Boundary wall Layout • Earthing Layout Plan • Lighting protection , Mounting system strength & wind test reports • Water Distribution Layout Diagram • Equipment Manuals & Broachers
10	Civil & Mechanical Work	<ul style="list-style-type: none"> • The bidder shall have the sole responsibility for the following civil and mechanical works for ground based/ Rooftop solar mounting structures as per the requirement of each site • To build transformers, sub-stations & control rooms. • Site grading, leveling, drilling exploratory bore holes and consolidation of the area pertaining to the installation of SPV modules. • Embedment of structures suitable for mounting PV modules. • Laying of earthing equipment /structures and connecting to the main ground mat as per the statutory requirements. • Construction work where necessary. • Cutting of cable trenches etc. wherever necessary. • Cutting of the concrete where trenches will be built. • To build all electrical trenches and Earthing pits as per required design. • Underground civil works for cable layout (Sand, Bricks & Warning Tape etc.)

		<ul style="list-style-type: none"> • To make water distribution network from water tank to all solar facility for the maintenance/cleaning of solar panels. • All the distribution & water piping on PEB shed and ground mounted solar system for cleaning of solar is the responsibility of supplier. • To complete all the fabrication works related to the mounting structure.
11	Safety Standards	<ul style="list-style-type: none"> • It should be responsibility of the successful Bidder to ensure all the works as per scope of the specification are completed for safe and efficient working of the system by following BS OHSAS/ ISO standards. Health & Safety expert would be responsible to restrict Client to follow safety standards.

The PMC on behalf of SITECH during the execution is authorized to verify equipment, detailed drawings, specification and will have the power to reject any work or materials, which in its judgment are not in accordance therewith.

3.1 Solar PV System Specification

- a. PV Modules should have a minimum of 21.3% module efficiency (η) or higher and a linear warranty of 25-years with minimum performance ratio 75% at P90 and the degradation factor not greater than 0.7% and the power of each module should be greater than 550 Watt. **Technology must be mono PERC N-type.**
- b. Efficient Grid Tied Inverters
- c. SCADA System
- d. Mounting structure
- e. Cables and associated infrastructure/ hardware.
- f. Miscellaneous Item
 - i. Junction box and distribution boxes
 - ii. Earthing & Lightning Protection System with Earthing kit
 - iii. Lightning arrestors
 - iv. PVC pipes and accessories
 - v. Tool kit
- h. Spares for smooth operation

3.2 Solar PV Module

- a. The total PV capacity should not be less than allocated capacity (1.0MWp) for each entity.
- b. The provided PV Module should be of Tier-1 quality as per latest Bloomberg List AA or AAA rated.
- c. The PV Module should have a minimum of over 21.3% module efficiency.
- d. Fill Factor (FF) more than 78-80%.
- e. Make: Trina, Longi, JA Solar, Jinko or equivalent
- f. Product Manufacturing Warranty 15 Years
- g. Performance Warranty 25 years
- h. Each PV module size must be more than 550Wp and shall contain Mono crystalline (PERC-N) silicon solar cells with positive power tolerance only
- i. The PV module have an ability to work well with high-voltage input Inverters/ charge controllers
- j. The PV Panel must have clear anodized aluminum frame with Anti-reflection cover glass
- k. The terminal box on the module should have a provision for opening for replacing the cable, if required and it should be waterproof
- l. The Solar Panel shall meet the requirement set in IEC 61215:2000, IEC61730, IECTS 62941. All the supportive valid, genuine and traceable documents must be provided.
- m. The modules to be used in a highly corrosive atmosphere throughout their lifetime must qualify to IEC 61701.

- n. The PV module(s) should have an ability to work well with high-voltage input Inverters.
- o. PV Module(s) should be provided with MC-4 Cable and connectors.
- p. Outdoor cable connectors should be ingress protected by IP67 or better.
- q. Modules should be free of PID and must include PID free certificate.
- r. Power thermal coefficient may be 0.37% / degree C or better'
- s. Dynamic and loading capacity may be 2600 Pa or better'
- t. Minimum 10 years replacement warranty and 25 years performance warranty
- u. Array configuration must be compatible with Inverters and vice versa.
- v. Size of total PV modules: As per quoted size at STC.
- w. Flash Test report and Module Test report as per standards 61215 and 61730 should be provided at the time of supply.
- x. The terminal box on the Module(s) should have a provision for replacing the cable and it should be waterproof
 - i. Each PV module in any Solar PV plant must use RF identification tag. The following information must be mentioned in the RFID used in each module (This can be inside or outside the Laminate but must be able to withstand harsh environmental conditions (Thunder storm, hail storm, hurricanes and wind storm).
 1. Name of the manufacturer of PV Module(s).
 2. Name of the manufacturer of PV Cell
 3. Model or Type No.
 4. Month and year of manufacturing (separately for solar PV module and solar cells)
 5. Country of origin (Separately for solar Cells and PV modules)
 6. Peak Watt Rating
 7. Voltage and Current at Peak Power
 8. Open Circuit Voltage & Short Circuit Current
 9. Maximum input voltages
 10. Module(s) deployed must use a RF identification tag.
 11. Name of Test Lab issuing IEC certificate / EN certification.
 12. All tests as per latest version of IEC standards / EN certification
 - ii. Solar panel be packed for safe transportation on non-metallic roads.
 - iii. The PV Module should have at least ten-year workmanship warranty.
 - iv. Limited performance guarantees: panel power, in standard conditions, will not be less than 90% of nominal power for first 10 years of operation and at least 80% for the next 15 years of operation with 25-year limited power warranty.
 - v. Bidder should carefully design and accommodate requisite number of module(s) to achieve the rated power as per design under NOCT as well.

Note: Bidder should justify the specs with appropriate lab test reports/certifications from the principal manufacturer.

3.3 Solar On-Grid Inverters/PV Conditioning Equipment

The DC power produced is fed to inverter for conversion into AC. In a grid interactive system AC power should be fed to the grid at three phase. Inverter should comply with IEC 61727, IEC 61000-6-1, IEC 610006-2, IEC 62109 and IEC 62116 standards. IEC 61683/IS 61683 for efficiency and Measurements and should comply IEC 60068-2 (1, 2, 14, 30) / Equivalent BIS Standard for environmental testing. Inverter should supervise the grid condition continuously and in the event of grid failure (or) under voltage(or) over voltage.

Other important Features/Protections required in the INVERTER

- a. The grid-connected inverters shall comply with UL 1741 standard Tier 1 Manufactured
- b. Type of Inverters = Grid Tied String Inverters, type-2 or better DC and AC SPDs
- c. Built with data logger, communication interfaces protections and remote monitoring capability.
- d. Power generated from the solar system during the daytime should be utilized fully by powering the critical building loads and feeding excess power to the grid as long as grid is available. In cases, where solar power is not sufficient due to more demand or cloud cover etc. the Power loads should be served by drawing power from the grid. The inverter should always give preference to the Solar Power and will use Grid/DG power only when the Solar Power is insufficient to meet the load requirement.
- e. The output of the inverter must synchronize automatically its AC output to the exact AC voltage and frequency of the grid/DG Set
- f. Inverter equipped with array ground fault detection option.
- g. Inverters should have anti-islanded features built in and should continuously monitor the condition of the grid and in the event of grid failure; The solar system should be resynchronized with the grid within two minutes after the restoration of grid or DG set.
- h. Grid voltage should also be continuously monitored and in the event of voltage going below a pre-set value and above a pre-set value, the solar system should be disconnected from the grid within the set time. Both over voltage and under voltage relays should have adjustable voltage (50% to 130%) and time settings (0 to 5 seconds).
- i. Number of MPPT inputs = 6 or More than 6.
- j. Make: Sungrow/ Huawei/ Goodwe or equivalent
- k. Power capacity 100KW and above
- l. Product Warranty 15 Years
- m. Size of each Inverter: As per array design.
- n. Total Inverter Size: As per PV array. PV to Inverter ratio may be set to optimum
- o. Maximum Efficiency: not less than 98%.
- p. Total Harmonic Distortion: THD < 3%
- q. Standards compliance: UL 1741, IEC 62109-1/2, IEC 62116, IEC 61683 for safety, grid connectivity and parallel operation.
- r. The inverter should be a true sine wave for a grid interactive PV system.
- s. The degree of protection of the outdoor inverter panel should be at least IP-67.
- t. Typical technical features of the suggested inverters must mention as per following sequence:-

- i. Continuous output power rating (1.1 times for 60seconds)
- ii. Nominal AC output voltage and frequency
- iii. Accuracy of AC voltage control $\pm 1\%$
- iv. Accuracy of frequency control $\pm 0.5\%$
- v. Grid Frequency Control range ± 3 Hz
- vi. Maximum Input DC Voltage range
- vii. MPPT Range DC
- viii. Ambient temperature -10 deg C to 55 deg C
- ix. Humidity 95 % non- condensing
- x. Protection of Enclosure IP-67 (or better)
- xi. Grid Voltage tolerance -20 % and + 15 %
- xii. Power factor control 0.95 inductive to 0.95 capacitive

3.4 Operation Mode

- a. Night or sleep mode: where the Inverter is almost completely turned off, with just the timer and control system still in operation, losses shall be less than 2 W per 5 kW.
- b. Standby mode: where the control system continuously monitors the output of the solar generator until pre-set value is exceeded (typically 10 W).
- c. Operational of MPP tracking mode: the control system continuously adjusts the voltage of the generator to optimize the power available. The power conditioner should automatically re-enter standby mode input power reduces below the standby mode threshold. Front panel should provide display of status of the inverter.
 - i. The offered inverter must comply with following standards.
 UL1741, IEEE1547, UL 1998, CE, EN 50178, EN 62109-1, EN 62109-2, EN 61000-6-2, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12, FCC Part 15, NEMA3R/ NEMA 3R, DIN VDE V 0126-1-1, ENEL Guidelines (DK 5940) AS 4777, RD 1663/2000, RD 661/2007, EN 50178, IEC 62103, EN 55011, IEC 61000-3-11, IEC 61000-3-12, IEC 61000-6-3

Note: Bidder should justify the specs with appropriate lab test reports/certifications from the principal manufacturer.

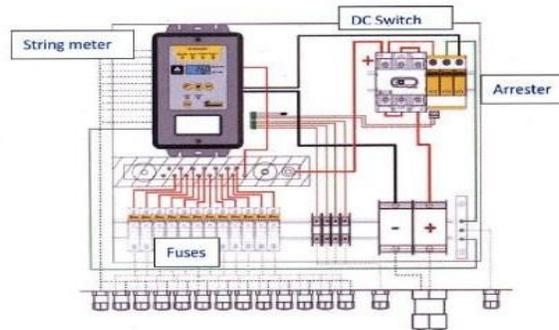
3.5 Junction Boxes

SMART Junction boxes with the multi-function of string monitor to detect each string's voltage, current, and power, plus fault detection and surge protection function. The array junction box has been suitably designed to be integrated into the PV plant. The junction boxes shall have suitable arrangement for the followings.

- a. Provide arrangement for disconnection for each of the groups.
- b. Provide a test point for each sub-group for quick fault location.
- c. To provide group array isolation.
- d. The current carrying ratings of the junction boxes shall be suitable with adequate

- safety factor to inter connect the Solar PV array.
- e. To include data collector for Monitoring System.
- f. A DC string meter is integrated into a DC box to provide the capability of collecting the required data/information of string level.

The System Diagram of Junction Box



3.6 Monitoring & Data Logging

A state-of-the-art data monitoring/ logging system, capable of local and remote monitoring so as to provide timely and accurate performance of the plant on continuous basis is required on site. All monitoring data will be transmitted to the control room for logging and monitoring of the performance of each inverter. Datalogging software is employed for automatic storage of the measured data from PVPlant over a prolonged period of time. Control room shall have a control panel containing all the measuring instruments such as voltmeter, ammeter, frequency meter and electronic energy meter for measuring the deliverable units sold to utilitygrid. Block diagram of monitoring system is given below:

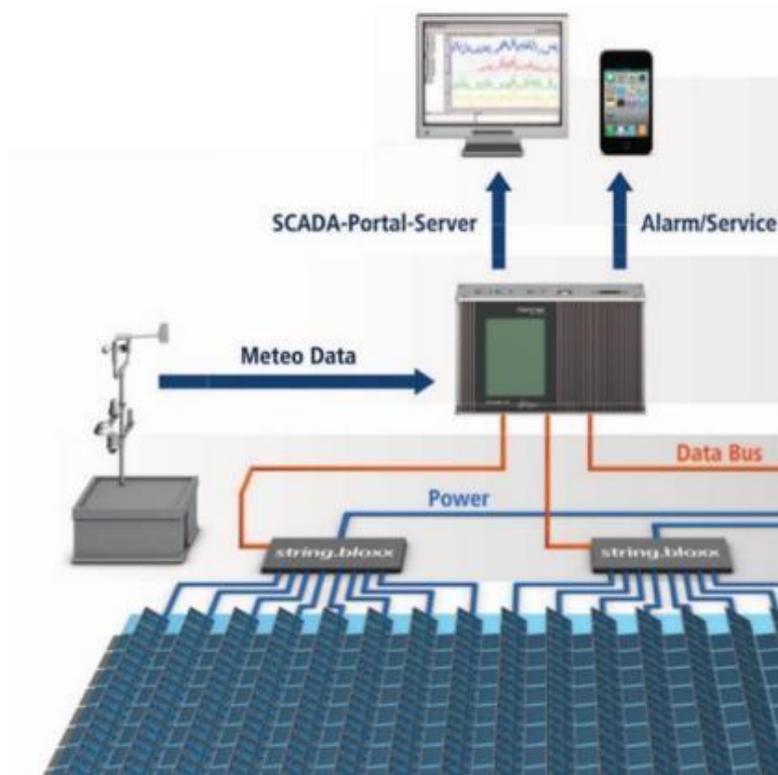


Figure 1 Monitoring & Data Logging

3.7 Technical Specifications

- | | |
|----------------------|---|
| a. Data Monitoring | : Local & Remote up to string level (Access to live data_every 10 minutes) |
| b. Irradiation Meter | : 2 units with D/A Translation card |
| c. Temperature Meter | : 6 units with D/A Translation card |
| d. PC + Monitor | : 2 sets of PC + 21" monitor and 42" LCD TV Display, 1 set of server-grade hardware |
| e. Sensors | : 1- Irradiance,
2- Temperature,
3- Power,
4- AC/DC current
5- AC/DC voltage meters,6- Electrical parameters, 7- Wind speed meter |
| f. Software | : Compatible |
| g. PC Based | : MS Excel compatible |
| h. Data desk | : MS Excel compatible. Graphic and tabular form |
| i. Communication | |
| j. Interface | : SCADA Portal-Interface |
| k. Data Logging and | |
| l. Accusation | : Ambient temperature near array field, Module temperature, Acquisition Solar irradiance, grid |

m. Data Recording /

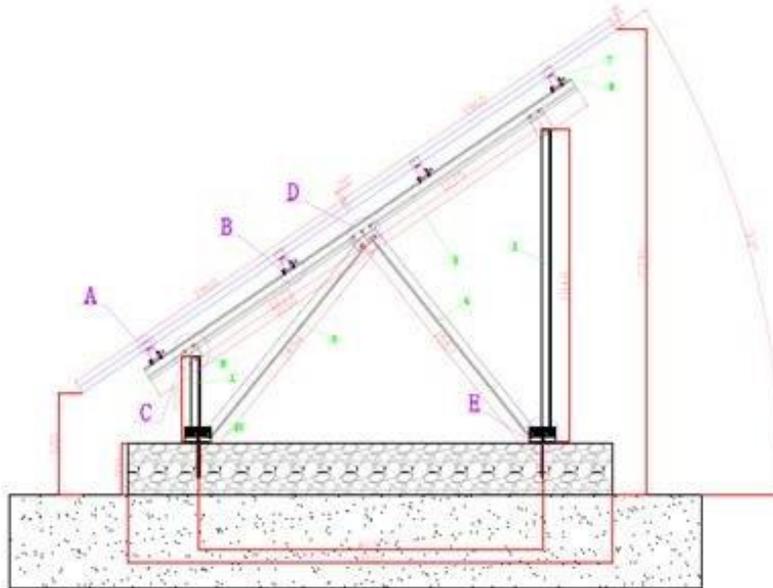
Frequency, DC bus output, energy delivered to the grid in kWh, Wind speed for tracker.

Logging : Continuous logging with data logging software capable to generate daily, monthly, quarterly and annual performance reports.

n. Data Storage

o. Capacity : 3 years

p. Control Room System : Computerized data acquisition system



3.8 Solar Mounting Structure

- a. The system design is based on rooftop / PEB shed & ground mounting.
- b. Civil Pads with bituminous treatment must be used for structure legs to avoid seepage on roof and would be able to withstand wind pressure
- c. The structure design shall be appropriate and innovative. It must follow the existing land profile.
- d. The structure shall be designed to allow easy replacement of any module and shall be in line with the site requirements.
- e. Design drawings with material selected and their standards shall be shared with PSM before commissioning.
 - i. Ground Mounted with Foundation pads if required but structure should be of high integrity.
 - ii. Nuts, Bolts, Washers, Foundations, Base plates (if Any in Design) and other supporting must be of steel with appropriate gauges as per design with rust proof capability.
 - iii. Solar Mounting Design Concept must include following:
 1. Plans (including Layout Plans)
 2. Sections

3. Elevation
4. 3D Render of each Design (At least 1 Isometric View)
5. All drawings should be on drafting standards
- iv. Suitable RCC (Reinforced Cement Concrete) or other equivalent ground mounted techniques / foundation, mounting structure frame including paint finish.
- v. Imported Anodized Aluminum AL6005-T5, Minimum thickness & channel type as per Design & Load requirements.
- vi. The Final Submission after Contract should include the following
 1. All Working Drawings (Site Plan, Solar Panel Layout Plans, Structure Design Plans, Sections, Elevations)
 2. All working drawings should be on Architectural & Structural Standards.
 3. All typical detail drawings of joinery, channel sections (mentioning Channel sections / pipe sections on drawings), steel sections, base plates and foundations
 4. All working structural design drawings.
 5. Complete Bill of Quantity
 6. 3D Animation (optional)

3.9 Fixed Mounting Structure

- a. The main mounting structure will be fixed/adjustable, tilted at an appropriate angle, facing south and will be made of Aluminum material with vertical posts supported by concrete foundations base 3 inches above roof top level. However, Tilt angle should be optimum for summer and winter seasons. Mechanical provisions should be provided in the structure to shift the tilt angles to the seasonal optimum values.
- b. The mounting structure must be engineered for wind resistance of 130km/h
- c. Module should be fixed with the frame through pure SS rawal bolts. The bolts should be tightened at the required angle.
- d. The Nuts, Bolts & Washers/Spring Washers for modules & Mounting structures must be stainless steel material with appropriate gauge (14 or plus)
- e. The entire mechanical structure should be made of aluminum/steel hot dip galvanized with appropriate rating for longer life of the structure.
- f. Shading shall be avoided all over the year (around) from 30 minutes after the sunrise to 30 minutes before sunset (For installation purpose only).
- g. To allow regular cleaning of the solar modules, they should be easily accessible for personnel (For installation purpose only). Therefore, no more than 75% of a given space, may be utilized panel installation. The remaining 25% space provide for cleaning and safety personnel in case of emergency.
- h. Each panel frame structure shall be so fabricated as to be grouted using rawal bolts in cement concrete foundation with steel frame structure at the site
- i. Foundation/mounting structure should be fabricated and installed to achieve full life of 25 years under the local climatic conditions.

3.10 Wires & Cables

- a. The main cable and LT cables of appropriate sizes from transformer (Changeover switch) supply of all buildings to inverter rooms shall be 1.1 grade, heavy duty,

stranded copper conductor, PVC type A insulated, galvanized steel wire/strip armored, flame retardant low smoke (FRLS) extruded PVC type ST-1 outer sheathed. The cables shall, in general conform to IS-1554 P+I & other relevant standards.

- b. EN 50618 1500V DC cables, TUV certified, only imported cables will be accepted
- c. Cables must be double insulated suitable for 1500V DC transmission
- d. External cables should be specifically adapted to outdoor exposure (see IEC60811). Especially the outer insulation must be sunlight (UV)-resistant, weatherproof and designed for underground installation. Preferably tin coated copper UV resistant DC cables shall be used.
- e. The temperature range of all interconnecting wires and cables should be in between - 10°C and 120°C . The minimum acceptable cross-section of the wire in each of the following sub-circuits is as in ISO IEC prescription:
- f. All wiring should be color-coded (and/ labeled in case of service providers.)
- g. All supplied wires must be in UV-resistant conduits or be firmly fastened to the building and/or support structure. Cable binders, clamps and other fixing material must also be UV-resistant, preferably made of polyethylene (for the case of serviceproviders)
- h. All connections should be properly terminated, soldered and/or sealed from outdoor and indoor elements. Relevant codes and operating manuals must be followed.
- i. The cable rating should be explicitly mentioned in the technical document i.e. the size, current rating & voltage rating and ohmic drop information etc.
- j. GI cable trays for DC, earth and communication cables to be placed on rooftops as well are required.
- k. Test reports namely Conductor resistance test, Insulation resistance test, Pressure test and spark test must be provided.
- l. Warranty should be 10 years and design life should be 25 years
- m. Outer insulation must be UV resistant.
- n. Cables must be Weather resistant, UV resistant, Ozone corrosion resistant, halogen free and flame resistant.

3.11 Protections And Controls

- a. PV system software and control system should be equipped with islanding protection as described above. In addition to disconnection from the grid (islanding protection i.e. on no supply) , under and over voltage conditions , PV systems should be provided with adequate rating fuses, fuses on inverter input side (DC) as well as output side (AC) side for overload and short circuit protection and disconnecting switches to isolate the DC and AC system for maintenance as needed. Fuses of adequate rating should also be provided in each string of solar module to protect them against short circuit.
- b. A manual disconnect switch beside automatic disconnection to grid should also be provided at utility end to isolate the grid connection by the utility personal to carry out any maintenance. This switch should be locked by the utility personal.
- c. Emergency switch should be part of scheme to disconnect the entire PV plant in case of emergency.

- d. The solar plant should be able to supply power to all faculties during the WAPDA outage.

3.12 Earthing & Protection System From Lightning

Earthing is essential for the protection of the equipment & manpower. Two main grounds used in the power equipment are System earth and Equipment earth. The complete set suitably designed Lightning protection and earthing system should be installed for 1.0MW solar power plant each. For this purpose, appropriate units of lightning arrestor shall be set up to sufficiently cover the radius of the power plant (as per site map) for its protection from lightning. These shall operate by acting as receptors capturing the lightning and defusing it before it reaches the PV or other sub-system components.

- a. System earth is earth which is used to ground one leg of the circuit. For example, in AC circuits the Neutral is earthed.
- b. In case of equipment earth all the non-current carrying metal parts are bonded together and connected to earth to prevent shock to the man power & also the protection of the equipment in case of any accidental contact.
- c. To prevent the damage due to lightning the one terminal of the lightning protection arrangement is also earthed. The provision for lightning & surge protection of the SPV power source is required to be made.
- d. In case the SPV Array cannot be installed close to the equipment to be powered & a separate earth has been provided for SPV System, it shall be ensured that all the earths are bonded together to prevent the development of potential difference between two earths.
- e. Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earths are bonded together to make them at the same potential.
- f. The Earthing conductor should be 1.56 times the short circuit current. The area of cross-section shall not be less than 1.6 sq mm in any case.
- g. The array structure of the PV modules shall be grounded properly using adequate numbers of earthing pits. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.

3.13 Both Equipment Earth (DC) And System Earth (AC) Shall Be Checked For Proper Earthing.

Equipment earth (DC): All metallic parts of DG Facility such as PV modules, DCDB, generator, iron clad Switches will be connected to earth with two separate and distinct earth connections to Avoid any loss of property or Human being including earth chambers.

3.14 Miscellaneous Items For Installation

a. Wiring PVC/GI Channel Ducts

A product of good quality standard material with suitable size to be provided / used.

b. Flexible PVC Pipe

The flexible PVC pipe should be of good quality material with suitable size.

c. **Combiner Box**

Combiner Box should be manufactured through GI material with 100% copper strip in it for termination of PV Arrays.

3.15 Other Features

- a. The PV Module(s) should be warranted for a minimum period of 25 years from the date of supply, inverter with 15 years from the date of installation. The warranty card to be supplied with the system must contain the details of the system. The manufacturers can also provide additional information about the system and conditions of warranty as necessary.
- b. Adequate space should be provided behind the PV module/ array for allowing unobstructed airflow for passive cooling.
- c. All wiring should be in proper conduit of capping casing. Wire should not be hanging loose.
- d. Instruction and O&M manual.
 - i. Two copies of Instruction and Operation and Maintenance Manual in English in language should be provided with the system.
 - ii. The manual shall be furnished at the time of dispatch of the equipment and shall include the following aspects:
 - 1. Precautions during unpacking.
 - 2. Instructions for handling at site.
 - 3. Erection drawings with written assembly instructions that would enable the user to carry out erection with his own personnel if opted by him.
 - 4. Detailed instructions and procedures for the installation operation and maintenance.
 - 5. Pre-Commissioning tests.
 - 6. About solar PV system – its components and expected performance.
 - 7. Clear instructions about mounting of PV module (s)
 - 8. About electronics
 - 9. DO's and DONT's
 - 10. Principle of Operation of various equipment
 - 11. Safety and reliability aspects
 - 12. Metering scheme
 - 13. About power conditioning units' software and controls
 - 14. Clear instructions on regular maintenance and troubleshooting of solar power plant.
 - 15. Name and address of the person or service center to be contacted in case of failure or complaint.
 - 16. Outline dimension drawings showing relevant cross-sectional views, earthing details, constructional features. Rated voltages and current etc.

3.16 Harmonics Standard

As per the standard of IEEE 519, the permissible individual harmonics level shall be less than 3% (for both voltage and current harmonics) and Total Harmonics Distortion (THD) for both voltage and current harmonics of the system shall be less than 5%.

3.17 Performance Monitoring

All grid solar PV power projects must install necessary equipment to continuously measure solar irradiance, ambient temperature, wind speed and other weather parameters and simultaneously measure the generation of DC power as well as AC power generated from the plant. They will be required to submit this data to Procurer or any other designated agency online and/or through a report on regular basis every month for the entire duration of CONTRACT. In this regard they shall mandatorily also grant access to Procurer or any other designated agency to the remote monitoring portal of the power plants on a 24X7 basis.

3.18 Monitoring, Recording & Documenting The Electrical Energy

- a. Twenty (20) days prior to the scheduled Commercial Operations Date, the Contractor shall install Electrical Energy Management System capable of at least the following.
- b. Solar Electric Energy Generation: Automatically monitor and record both active and reactive Solar Electric Energy (KWh-AC) for instantaneous generation, cumulative generation as well as generation at predefined programmable intervals.
- c. Utility / Grid Electric Energy Import & Export: Automatically monitor and record both active and reactive Utility / Grid Electric Energy (KWh-AC) for instantaneous Import and Export, cumulative Import & Export as well as Import and Export at predefined programmable intervals.
- d. Data Logging: The system shall be capable of logging / saving Solar as well as Utility / Grid Electric Energy (KWh-AC) for at least 13 months.
- e. Redundancy: The system would have duplicate monitoring and recording capabilities for Solar as well as Utility / Grid Electric Energy data / information through Metering Equipment.
- f. Connectivity: The system shall have web-based Power Management Application with proper safety and security features.
- g. Insulation & Temperature Sensors: The Contractor shall install calibrated solar insulation & environmental temperature sensors at appropriate locations at Project Site and keep them calibrated and clean.
- h. Scheduled Maintenance, Calibration & Testing: All metering equipment shall be maintained, calibrated, tested by the Contractor and sealed by both parties jointly as per prudent industry practices. Testing / recalibration of the metering system shall be done every 24 months or in case any abnormality is observed. The calibration / testing shall be carried out by the entity as agreed by the Parties and the process shall also be witnessed by the Parties. To this effect a certificate shall be signed declaring status of the system and the cost shall be borne by the Contractor. In case of any deficiency or fault, the Contractor shall be responsible to rectify the problem and restore proper metering at Contractor's risk and cost. Any calibration / testing of the Energy Management System other than Scheduled Calibration & Testing shall be done on the expense of the desiring party.
- i. Solar Electric Energy Generation and Consumption as well as Utility / Grid Electric Energy Import and Export data shall also be manually recorded and documented by both

Parties jointly. In this regard, meter readings from dual metering system shall be taken and in case there is a difference of more than 0.2% in the two systems, both the metering systems shall be tested and recalibrated for proper reading.

3.19 Water Cleaning Network

- a. Panel water cleaning system, its design and BOQ to be provided
- b. Access to solar panels for cleaning/maintenance should be catered for in design.

3.20 Tools And Spares

List of tools & machinery to be provided along with a complete list of commissioning and O&M spares should be part of quotation.

3.21 AC Power Distribution Cabinet

AC Power Distribution cabinet must contain AC circuit breakers, contactors, bus bars, energy meter and main switch with monitoring of Voltage, current, Power, Energy and power factor. The components must of high quality complying with national standards of switchgears.

3.22 Electric Substation & Transmission

Electric sub-station is available at locations and if needed the bidder has to build substation and include costs of building substation and transmission system for connectivity with the Grid and must account for in its tariff.

3.23 MV Switchgear Cubicle

Bidder shall supply the MV panel with VCB including CTs/PTs, all protection /monitoring and interlocking devices and accessories of appropriate rating. The component must of high quality complying with national standard (Make: Schneider Electric / ABB / Siemens or equivalent).

3.24 Step Up Transformer

Bidder shall supply step up transformers with appropriate MVA ratings along with all protection and monitoring devices. The component must of high quality complying with national standard (Make: PEL Electric/ Siemens or Equivalent).

3.25 Medium Voltage Cable

Bidder shall supply the medium voltage cable. Material copper, Insulation XLPE insulated, PVC sheathed, steel wire armored. The component must of high quality complying with national standard (Make: Pakistan Cables, FAST Cables or equivalent).

3.26 Asset Performance Management

Bidder must ensure that asset performance management team maximizes solar asset energy production throughout the plant life cycle through cloud based real time portfolio remote monitoring, maintenance strategy tools, network operating center and dedicated onsite maintenance and operation team.

3.28 Special Conditions For Operation & Maintenance of Solar Power Plant For 2 Years

The Contractor after successful commissioning of Solar Power Plant (SPP) shall become the Operator and shall be responsible for operation and maintenance of the solar power plant for a period of 02 years from the date of commercial operation and shall be responsible to give guaranteed Net Minimum Guaranteed Generation (NMGG) of Units (KWh) for 1st & 2nd year and maximum degradation per annum for subsequent years should be 0.7%

3.29 Scope of Work

Operator shall provide all day to day operation and maintenance procedures tasks. Operator shall perform the Work and supply all required spare parts in a prudent and efficient manner and in accordance with:-

- a. **The operator shall maintain all requisite spare parts;** undertake/repairs replacement of any or all defective equipment/s at his cost as required from time to time. He will carry out schedule and preventive maintenance, major overhauling of the plant, maintaining log sheets for operational detail, deployment of staff for continuous operations and qualified engineer for supervision of O&M work. Client shall not pay any amount except the O&M charges agreed upon by both parties.
- b. **Operator shall use all reasonable and practical efforts**
 - i. To maximize plant capacity utilization,
 - ii. To Reduce plant downtime,
 - iii. To optimize the useful life of the equipment of the power plant.
- c. **The Operator shall perform the following obligations prior to takeover of the O&M activity:** Prepare maintenance plan in consultation with the Client provide the details of services and personnel to be engaged in the maintenance and operation.
 - i. Prepare in consultation with the Owner, the initial Annual Operating Plan.
 - ii. Develop and implement plans and procedures including those for firefighting, maintenance planning, procuring and inventory control of stores and spares, plan to meet emergencies, plant safety and security; and such other facilities and systems as may be necessary to commence Operator's ongoing responsibilities.
- d. **After COD of the project the bidder will provide O&M of the power plant for a period of 02 years, the Operator shall be responsible for the operation and maintenance of the plant and shall perform all necessary services including applicable services listed below:-**
 - i. Provide all operations and maintenance services necessary and advisable to efficiently operate and maintain the plant, including all associated mechanical and electrical equipment's keeping in view the objectives set-forth herein above.
 - ii. Maintain up-to-date operating logs, records and monthly reports regarding the operation and maintenance of the Plant, which shall include detail of power output, Environmental monitoring parameters, Irradiance temperature, wind and other operating data, repairs performed and status of equipment.
 - iii. Regularly update and implement an equipment repair or replacement / overhaul and preventive maintenance program that meet the specifications of the equipment manufacturers and the recommendations of the manufacturers.

- iv. Perform the services required to provide all spare parts, or equipment's as required. Tools and equipment, required to operate and maintain the Plant in accordance with the recommendations of individual original equipment manufacturer.
 - v. Operate and maintain Plant fire protection and safety equipment. Maintain accounting records regarding the facility in accordance with the generally acceptable accounting principles under the Laws of Pakistan.
 - vi. The Contractor shall provide Performance Guarantee for a period of 2 Years from the date of supply of PV module.
 - vii. Any damage or defect that may arise throughout the term will be borne by the Bidder.
 - viii. Daily Generation report: During the O&M period, the operator shall keep the measured daily data at 15 minutes or lesser interval and energy exported to the grid and provides the same to PMC in electronic form. These data shall be transferred to Client in a suitable form on weekly basis. The right of use of the data shall remain with PMC.
- e. **Personnel.**
- The Operator shall employ only such personnel who are adequately qualified and experienced for operating and maintaining the Solar Power Plant.
- f. **Net Minimum Guaranteed Generation (NMGG).**
- The bidder shall be responsible for achieving NMGG for 02 years after COD. For any shortfall in the net minimum guaranteed generation corresponding to the offer, the compensation shall be recovered from the operator on block yearly basis as per agreed rates. The Contractor has to maintain the Solar Plant equipment including its repair, replacement, overhauling, etc,
- g. **Insurance**
- i. Operator shall maintain in force throughout the period of contract all the legally required insurance coverage.
 - ii. Operator shall also provide insurance of solar power plant, which shall cover, fire, burglary, earthquake, and flood damage etc or as required. In case of failure/ damage of any equipment, Contractor will repair/ replace the same without waiting for insurance claim at his own.
- h. **Measurement Of Energy And Metering Systems**
- i. The operator shall maintain the Metering System (which shall include energy meter, energy analyzers, current and potential transformers etc.) as per metering code, as per requirement of SITECH/ PMC. The Metering System will be designed so as to measure outgoing and incoming energy and power delivered by the Operator for the owner at the delivery point, i.e. point of inter connection and also for import of energy for any purpose. The accuracy class of the energy meters and current and potential transformers will be selected and agreed upon as per requirement of Client, so that all levels of energy produced or taken by the solar power plant will be measured accurately, and in no case shall this equipment have an accuracy of less than 0.2S (class 0.2 meters) including CTs and PTs. Meter reading shall be done jointly on monthly basis or at mutually agreed time interval

with SITECH/ PMC and SCADA will be used for curtailment of load and power factor adjustment/ impact on kWh.

- ii. SITECH/ PMC shall have the right to carry out surprise inspections of the Metering Systems from time to time to check their accuracy or may install check meter in parallel.
- iii. Bidder will perform calibration test of meter every two years.
- iv. All testing and metering equipment shall conform to the relevant K-Electric / WAPDA standards and applicable codes.
- v. If either the Operator or the SITECH/ PMC find any inaccuracy in the Metering System, the operator or the SITECH/ PMC, as the case may be, shall notify the other party in writing within 24 hours for a joint inspection and testing or other agreed agency.
- vi. The Metering System shall be sealed in the presence of both parties.
- vii. When the Metering System and/or any component thereof is found to be outside the acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, re-calibrated or replaced by the Operator at his cost as soon as possible or as per requirement of SITECH/ PMC.
- viii. Meters shall be duly tested/ calibrated yearly by the Operator at his cost from WAPDA/ K-Electric accredited testing agency.
- ix. Any meter seal shall be broken by the Contractor's representative only in the presence of SITECH/ PMC representative whenever the Metering System is to be inspected, tested, adjusted, repaired or replaced with due permission of SITECH/ PMC.

TECHNICAL PROPOSAL

APPENDICES TO TECHNICAL PROPOSAL

**Project Conceptual Design, Design Criteria & Technical Details and
Implementation Schedule**

[To be completed by the Bidder]

Method of Performing the Work

[To be completed by the Bidder]

Project Management Facilities

[To be completed by the Bidder]

List of Proposed Contractors/Subcontractors

[To be completed by the Bidder]

Organization Chart for the Supervisory Staff & Labor

[To be completed by the Bidder]

Operation and Maintenance Methods

[To be completed by the Bidder]

Annexure N

Financial Offer

[To be completed by the Bidder]

Financial Offer (For each Entity/ Enterprise)

S.Nos	Description	Unit Price	Qty	UoM	Total Price	Sub Total
1.0	PV Modules & System					
1.1	Solar Module (550Wp) or plus			Nos		
1.2	Inverter (Grid-Tied) KW			Nos		
1.3	PV-Genset Controller			Job		
1.4	Cable for Interconnection (DC)			Job		
1.5	DC Breakers for string protections			Job		
2.0	AC Termination & Accessories					
2.1	LT Termination					
2.1.1	Secondary Comprehensive Protection Cabinet			Nos		
2.1.2	Low Voltage Switchgear Cabinet			Nos		
2.1.3	AC Combiner Breakers for MCCB			Nos		
2.1.4	AC Combiner Breakers for ACB			Nos		
3.0	Fabricated Items					
3.1	Mounting Structure			Job		
3.2	Cable Tray			Job		
3.3	Distribution Boxes			Job		
4.0	Cable & Accessories					
4.1	AC Cables for Inverter Interconnection xx sqmm,4 core, Armored			Meters		
4.2	AC Cable for Combined Output xx sqmm,4 Core, Armored			Meters		
4.3	Installation Material					
5.0	Earthing/ Grounding System					
5.1	Component Grounding Cable			PCS		
5.2	Grounding Pits & Cables			Nos		
5.2.1	Yellow Green Grounding Cable (xxmm ²) for Inverter Grounding			Meters		
5.2.2	Grounding Flat Iron Grounding Network for the plantArea, Power distribution Room, HV power Distribution room			Meters		

5.2.3	Earthing Poles GND Network & GND Electrode			Nos		
5.2.4	OT Copper Nose for Cables			Lot		
6.0	Monitoring & Data Acquisition System					
6.1	Video Monitoring System			Sets		
6.2	Meteorological Monitoring Devices			Sets		
6.3	Data Monitoring System			Sets		
7.0	Services					
7.1	Project Design & Execution			Job		
7.2	Erecting of Mechanical Mounting Structure			Job		
7.3	Installation, testing and Commissioning of Solar System			Job		
7.4	Operations and Maintenance "O&M" Services (2 Years)			Job		
7.5	Load Flow Study (Required for Net-Metering)			Job		
7.6	Net-Metering Process (Including Equipment, Fee, Approvals, Documentation, Inspection)			Job		
8.0	Civil and Mechanical Work					
8.1	Calculation of Cost as per Scope of Work 3.0 of Annexure-M					
9.0	Transportation					
9.1	Charges			Job		
A	Total Project Cost Solar Based Power Solution					
	Total Project Cost/Watt					

Table 2 – Price Breakup for Commercial Bid Submission

- The bidders to clearly specify the dollar rate assumption for the PKR costing at dollar @ Rs230 (only for imported items).
- Final rates applicable at the time of LC retirement.

Letter of Financial Proposal

Bid Reference No: _____
[should be same as mentioned on Notice for Expression of Interest]

Name of Project/Infrastructure/Facility: _____
[mention name of the Project/Infrastructure/Facility]

To: _____

Gentleman,

1. Having examined the Bidding Documents including Instructions to Bidders, Bidding Data, Conditions of Contract, general design criteria, operation/maintenance requirements, our Technical Proposal and Addenda Nos. _____ (if any) for designing, execution and operation/maintenance of the above-named Works, we, the undersigned, offer our Financial Proposal to design, execute, complete and operate/maintain such Works in conformity with the Conditions of Contract, general design criteria, operation/maintenance requirements, our Technical proposal and Addenda (if any), there to for the Total Bid Price in Pak Rupees _____ or such other sum as may be ascertained in accordance with the said Documents.
2. We understand that all the Annexures/Appendices attached hereto form part of this Bid.
3. As security for due performance of the undertakings and obligations of this Bid, we submit herewith a Bid Security in the amount of Rupees _____ (Rs. _____) drawn in your favor or made payable to you and valid for a period of _____ days beginning from the date Bids are opened.
4. We undertake, if our Bid is accepted, to commence the Works and to complete the whole of the Works comprised in the Contract within the time
5. We agree to abide by this Bid for the period of _____ days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
6. Unless and until a formal Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
7. We do hereby declare that the Financial Proposal is made without any collusion, comparison of figures or arrangement with any other bidder for the Works.
8. We understand that you are not bound to accept the lowest or any Financial Proposal you may receive.

9. We confirm, if our Bid is accepted, that all partners of the joint venture shall be liable jointly and severally for the execution of the Contract and the composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer/Engineer. (Please delete in case of Bid from a single firm).

Dated this _____ day of _____ 20____ Signature: _____
in the capacity of _____ duly authorized to sign Bids for and on behalf of

(Name of Bidder in Block Capitals)
(Seal)

Address: _____

Witness:

Signature: _____ Name: ____

Address. _____

Occupation _____

BID SECURITY
(Bank Guarantee)

Security Executed on _____
[Date]

Valid up to _____ [Date]

Name of Surety (Bank) with Address: _____
[Scheduled Bank in Pakistan]

Name and Address of Principal (Bidder) _____

Penal Sum of Security Rupees _____ (Rs. _____)
[Amount in words] [Amount in figures]

Bid Reference No. _____
[should be same as mentioned on Notice for Expression of Interest]

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bid and at the request of the said Principal (Bidder) we, the Surety above named, are held and firmly bound unto [mention name and address of the employer] (hereinafter called the Employer) in the sum stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Bidder has submitted the accompanying Bid dated _____ for Bid Reference No. _____ for _____ [mention Particulars of Bid] to the said Employer; and

WHEREAS, the Employer has required as a condition for considering said Bid that the Bidder furnishes a Bid Security in the above said sum from a Scheduled Bank in Pakistan or from a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan, to the Employer, conditioned as under:

- (1) that the Bid Security shall remain in force up to and including the date 28 days after the deadline for validity of bids as stated in the **Instructions to Bidders** or as it may be extended by the Employer, notice of which extension(s) to the Surety is hereby waived;
- (2) that the Bid Security of unsuccessful Bidders will be returned by the Employer after expiry of its validity or upon signing of the Contract Agreement by the successful Bidder and providing the Performance Security; and
- (3) that in the event of failure of the successful Bidder to execute the proposed Contract Agreement for such work and furnish the required Performance Security, the entire said sum be paid immediately to the said Employer pursuant to **Clause IH 20.6** of the Instruction to Bidders for the successful Bidder's failure to perform.
- (4) that in the event of a Bidder withdraws its bid during the period of bid validity, the entire said sum be paid immediately to the said Employer pursuant to **Clause IH 20.6** of the Instruction to Bidders.

NOW THEREFORE, if the successful Bidder shall, within the period specified therefore, on the prescribed form presented to him for signature enter into a formal Contract with the said Employer in accordance with his Bid as accepted and furnish within *[insert period for furnishing the Performance Security]* days of being requested to do so, a Performance Security with good and sufficient surety, as may be required, upon the form prescribed by the said Employer for the faithful performance and proper fulfilment of the said Contract or in the event of non-withdrawal of the said Bid within the time specified for its validity then this obligation shall be void and of no effect, but otherwise to remain in full force and effect.

PROVIDED THAT the Surety shall forthwith pay the Employer the said sum upon first written demand of the Employer (without cavil or argument) and without requiring the Employer to prove or to show grounds or reasons for such demand, notice of which shall be sent by the Employer by registered post duly addressed to the Surety at its address given above.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the principal (Bidder) has duly performed his obligations to sign the Contract Agreement and to furnish the requisite Performance Security within the time stated above, or has defaulted in fulfilling said requirements and the Surety shall pay without objection the said sum upon demand from the Employer forthwith and without any reference to the principal (Bidder) or any other person.

IN WITNESS WHEREOF, the above bounden Surety has executed the instrument under its seal on the date indicated above, the name and seal of the Surety being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

SURETY (Bank)

WITNESS:

Signature _____

1. _____

Name _____

Title _____

Corporate Secretary (Seal)

Corporate Guarantor (Seal)

2. _____

Name, Title & Address

FORMS

Form-01

Letter of Technical Proposal

Bid Reference No: _____
[should be same as mentioned on Notice for Expression of Interest]

Name of Project/Infrastructure/Facility: _____
[mention name of the Project/Infrastructure/Facility]

To: _____
[Bidder to insert name and address of the Employer]

Gentleman,

1. Having examined the Bidding Documents including Instructions to Bidders, Bidding Data, Conditions of Contract, general design criteria, operation/maintenance requirements and Addenda Nos. _____(if any) for designing, execution and operation/maintenance of the above-named Works, we, the undersigned, offer our Technical Proposal to design, execute, complete and operate/maintain such Works in conformity with the Conditions of Contract, general design criteria, operation/maintenance requirements and Addenda (if any).
2. We understand that all the Annexures/Appendices attached hereto form part of this Financial Proposal.
3. As security for due performance of the undertakings and obligations of this Bid, we submit herewith a Bid Security in the amount of Rupees _____ (Rs. _____) drawn in your favor or made payable to you and valid for a period of ____ days beginning from the date Bids are opened.
4. We agree to abide by this Bid for the period of ____ days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period or any extended period as per Bidding Documents.
5. Unless and until a formal Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
6. Unless and until a formal Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
7. We do hereby declare that the Technical Proposal is made without any collusion, comparison of figures or arrangement with any other bidder for the Works.
8. We understand that you are not bound to accept the Technical Proposals you may receive.

Dated this _____ day of _____ 20_____

Signature: _____ in the capacity of _____ duly

authorized to sign Bids for and on behalf of _____

(Name of Bidder in Block Capitals)
(Seal)

Address _____

Witness:

Signature: _____

Name: _____

Address _____

Occupatio _____

Form-02

**Performance Security for Construction Phase
(Bank Guarantee)**

Guarantee No. _____

Executed on _____

Expiry date _____

[Letter by the Guarantor to the Employer]

Name of Guarantor (Bank) with address: _____

[Scheduled Bank in Pakistan]

Name of Principal (Company) with address: _____

Penal Sum of Security *[to be express in words and figures]* _____

Letter of Acceptance No. _____ Dated _____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named, are held and firmly bound unto the _____ (here in after called the Employer) in the penal sum of the amount stated above for the payment of which sum well and truly to be made to the said Employer, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal has accepted the SITECH's above said Letter of Acceptance for *[name and number of the Contract]* for the *[name of the Project]*.

NOW THEREFORE, if the Principal (Company) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of relevant Clauses of Conditions of Contract are fulfilled.

Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We, _____ (the Guarantor), waiving all objections and defenses under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer without delay upon the Employer's first written demand without cavil or arguments and

without requiring the Employer to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's written declaration that the Principal has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to Employer's designated Bank & Account Number.

PROVIDED ALSO THAT the Employer's shall be the sole and final judge for deciding whether the principal (Company) has duly performed his obligations under the Contract or has defaulted in fulfilling said obligations and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer forthwith and without any reference to the principal or any other person.

IN WITNESS WHEREOF, the above-bounden Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Witness: 1. _____ _____ Corporate Secretary (Seal) 1. _____ _____ Name, Title & Address	_____ Guarantor (Bank) Signature _____ Name _____ Title _____ _____ Corporate Guarantor (Seal)
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Form-03

Performance Security for Operation Phase

[Performance Security Form for Construction Phase may be used with necessary modifications in respect of validity of Performance Security for Operation Phase]

Form 04

Integrity Pact

[To be filled and signed by the Bidder]

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC. PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES & WORKS IN CONTRACTS WORTH RS. 10.00 MILLION OR MORE

Contract No. _____ Dated _____ Contract Value: _____

Contract Title: _____

..... [Name of Supplier] 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) or any administrative subdivision or agency thereof or any other entity owned or controlled by GoP through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Supplier] 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, except that which has been expressly declared pursuant hereto.

[name of Supplier] 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 has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Supplier] 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 under any law, contract or other instrument, be voidable at the option of GoP.

Notwithstanding any rights and remedies exercised by GoP in this regard, [name of Supplier] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Supplier] 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.

Name of Buyer:
Signature:
[Seal]

Name of Seller/Supplier:
Signature:
[Seal]

THANKS