
PROCUREMENT DOCUMENTS

Bidding Document for Procurement of Plant Design, Supply and Installation (Without Prequalification)

Procurement of:

Design, Supply and Installation of 7 x 1.0 MWp
Grid Tied Solar Farm for Luzon, Visayas and
Mindanao Electric Cooperatives

RFB No: PH-NPC-279934-GO-RFB

Project: Philippines-Access to Sustainable Energy Project

Employer: National Power Corporation

Country: Philippines

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Bidding Document

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PART 1 – Bidding Procedures

Section I. Instructions to Bidders

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Section I. Instructions to Bidders

General

- 1. Scope of Bid**
- 1.1 In connection with the Invitation for Bids **indicated in the Bid Data Sheet (BDS)**, the Employer, as **indicated in the BDS**, issues this Bidding Document for the procurement of Plant and Installation Services as specified in Section VII, Employer's Requirements. The name, identification, and number of lots (contracts) of the International Competitive Bidding (ICB) are **provided in the BDS**.
- 1.2 Unless otherwise stated, throughout this Bidding Document definitions and interpretations shall be as prescribed in the General Conditions of Contract, Section VIII. This includes, but is not limited to:
- "ES"** means environmental and social including Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH)) and Forced Labor;
- "Sexual Exploitation and Abuse" "(SEA)"** means the following:
- Sexual Exploitation** is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another.
- Sexual Abuse** is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.
- "Sexual Harassment" "(SH)"** is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by the Contractor's Personnel with other Contractor's or Employer's Personnel.
- "Contractor's Personnel"** is as defined in GCC Sub-Clause 1; and
- "Employer's Personnel"** is as defined in GCC Sub-Clause 1.
- A non-exhaustive list of (i) behaviors which constitute SEA and (ii) behaviors which constitute SH is attached to the Code of Conduct form in Section IV.
- "Forced Labor"** is defined as any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty, will not be used in connection with the project. This prohibition covers any kind of involuntary or

compulsory labor, such as indentured labor, bonded labor, or similar labor-contracting arrangements. No trafficked persons will be employed in connection with the project.

“Trafficking” as “Trafficking in persons is defined as the recruitment, transportation, transfer, harboring or receipt of persons by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purposes of exploitation. Women and children are particularly vulnerable to trafficking practices.”

“Voluntarily performed” as “Work is on a voluntary basis when it is done with the free and informed consent of a worker”.

2. Source of Funds

- 2.1 The Borrower or Recipient (hereinafter called “Borrower”) **indicated in the BDS** has applied for or received financing (hereinafter called “funds”) from the World Bank (hereinafter called “the Bank”) toward the cost of the project named in the BDS. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.
- 2.2 Payments by the Bank will be made only at the request of the Borrower and upon approval by the Bank in accordance with the terms and conditions of the financing agreement between the Borrower and the Bank (hereinafter called the Loan Agreement), and will be subject in all respects to the terms and conditions of that Loan Agreement. No party other than the Borrower shall derive any rights from the Loan Agreement or have any claim to the funds.
- 2.3 The Loan Agreement prohibits a withdrawal from the loan account for the purpose of any payment to persons or entities, or for any import of equipment, plant, or materials, if such payment or import is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.

3. Fraud and Corruption

- 3.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section VI.
- 3.2 In further pursuance of this policy, Bidders shall permit and shall cause its agents (where declared or not), sub-contractors, sub-consultants, service providers, suppliers, and personnel, to permit the Bank to inspect all accounts, records and other

documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.

4. Eligible Bidders

4.1 A Bidder may be a private entity or a government-owned entity—subject to ITB 4.5—or any combination of such entities in the form of a joint venture, or association (JVA) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture or association:

- (a) **unless otherwise specified in the BDS**, all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms, and
- (b) the JVA shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the partners of the JVA during the bidding process and, in the event the JVA is awarded the Contract, during contract execution.

4.2 A Bidder, and all partners constituting the Bidder, shall have a nationality of an eligible country as defined in *Guidelines: Procurement under IBRD Loans and IDA Credits*, January 2011 and revised in July 2014, (hereinafter referred to as the Guidelines), in accordance with Section V, Eligible Countries. A Bidder shall be deemed to have the nationality of a country if the Bidder is a national or is constituted, incorporated, or registered and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract including related services.

4.3 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if :

- (a) they have a controlling partner in common; or
- (b) they receive or have received any direct or indirect subsidy from any of them; or
- (c) they have the same legal representative for purposes of this bid; or

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- (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
 - (e) a Bidder submits more than one bid in this bidding process, either individually or as a partner in a joint venture, except for alternative offers permitted under ITB Clause 13. This will result in the disqualification of all such bids. However, this does not limit the participation of a Bidder as a subcontractor in another bid or of a firm as a subcontractor in more than one bid. or
 - (f) a Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Plant and Installation Services that are the subject of the bid.
 - (g) a Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Employer or the Borrower as Project Manager for the contract.
- 4.4 A Bidder that has been sanctioned by the Bank in accordance with the above ITB 3.1 (d), or in accordance with the Bank's Guidelines on Preventing and Combating Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, shall be ineligible to be awarded a Bank-financed contract, or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall determine.
- 4.5 Government-owned entities in the Borrower's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under the principles of commercial law, and (iii) are not dependent agencies of the Employer or the Borrower.
- 4.6 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.
- 4.7 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.
- 4.8 Firms shall be excluded if:
- (a) as a matter of law or official regulation, the Borrower's country prohibits commercial relations with that country,

provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or related services required; or

- (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of works or services from that country or any payments to persons or entities in that country.

4.9 A Bidder shall not be under suspension from bidding by the Employer as the result of the operation of a Bid-Securing Declaration

5. Eligible Plant and Installation Services

5.1 The Plant and Installation Services to be supplied under the Contract shall have their origin in eligible source countries as defined in ITB 4.2 above and all expenditures under the Contract will be limited to such Plant and Installation Services.

5.2 For purposes of ITB 5.1 above, "origin" means the place where the plant, or component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Plant components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

Contents of Bidding Document

6. Sections of Bidding Document

6.1 The Bidding Document consists of Parts 1, 2, and 3, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.

PART 1 Bidding Procedures

- Section I. Instructions to Bidders (ITB)
- Section II. Bid Data Sheet (BDS)
- Section III. Evaluation and Qualification Criteria
- Section IV. Bidding Forms
- Section V. Eligible Countries
- Section VI. Bank Policy-Corrupt and Fraudulent Practices

PART 2 Employer's Requirements

- Section VII. Employer's Requirements

PART 3 Conditions of Contract and Contract Forms

- Section VIII. General Conditions of Contract (GCC)
- Section IX. Particular Conditions of Contract (PCC)
- Section X. Contract Forms

- 6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.
- 6.3 The Employer is not responsible for the completeness of the Bidding Document and its addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.

7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting

- 7.1 A prospective Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer's address **indicated in the BDS** or raise his enquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond to any request for clarification, provided that such request is received no later than twenty-eight (28) days prior to the deadline for submission of bids. The Employer's response shall be in writing with copies to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 23.2.
- 7.2 The Bidder is advised to visit and examine the site where the plant is to be installed and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for the provision of Plant and Installation Services. The costs of visiting the site shall be at the Bidder's own expense.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express

condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

- 7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if **provided for in the BDS**. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer not later than one week before the meeting.
- 7.6 Minutes of the pre-bid meeting, including the text of the questions raised without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3. Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting.
- 7.7 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

8. Amendment of Bidding Document

- 8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing addenda.
- 8.2 Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 23.2

Preparation of Bids

9. Cost of Bidding

- 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be

responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Bid

10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language **specified in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the BDS, in which case, for purposes of interpretation of the Bid, such translation shall govern.

**11. Documents
Comprising the
Bid**

11.1 The Bid submitted by the Bidder shall comprise the following:

- (a) Letter of Bid
- (b) Completed schedules as required, including Price Schedules, in accordance with ITB 12 and 17;
- (c) Bid Security or Bid Securing Declaration, in accordance with ITB 20;
- (d) alternative bids, if permissible, in accordance with ITB 13;
- (e) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 21.2;
- (f) documentary evidence established in accordance with ITB 14.1 that the Plant and Installation Services offered by the Bidder in its bid or in any alternative bid, if permitted, are eligible;
- (g) documentary evidence in accordance with ITB 15 establishing the Bidder's eligibility and qualifications to perform the contract if its Bid is accepted;
- (h) documentary evidence established in accordance with ITB 16 that the Plant and Installation Services offered by the Bidder conform to the Bidding Document;
- (i) in the case of a bid submitted by a JVA, JVA agreement, or letter of intent to enter into a JVA including a draft agreement, indicating at least the parts of the Plant to be executed by the respective partners;
- (j) List of subcontractors, in accordance with ITB 16.2; and
- (k) any other document **required in the BDS**.

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- 12. Letter of Bid and Schedules** 12.1 The Bidder shall complete the Letter of Bid, including the appropriate Price Schedules, using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed as instructed in each form.
- 13. Alternative Bids** 13.1 **The BDS indicates** whether alternative bids are allowed. If they are allowed, the BDS will also indicate whether they are permitted in accordance with ITB 13.3, **or** invited in accordance with ITB13.2 and/or ITB 13.4.
- 13.2 When alternatives to the Time Schedule are explicitly invited, a statement to that effect will be **included in the BDS**, and the method of evaluating different time schedules will be described in Section III, Evaluation and Qualification Criteria.
- 13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the Employer's requirements as described in the bidding document must also provide: (i) a price at which they are prepared to offer a plant meeting the Employer's requirements; and (ii) all information necessary for a complete evaluation of the alternatives by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed installation methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.
- 13.4 When bidders are **invited in the BDS** to submit alternative technical solutions for specified parts of the facilities, such parts shall be described in Section VII, Employer's Requirements. Technical alternatives that comply with the performance and technical criteria specified for the Plant and Installation Services shall be considered by the Employer on their own merits, pursuant to ITB 35.
- 14. Documents Establishing the Eligibility of the Plant and Installation Services** 14.1 To establish the eligibility of the Plant and Installation Services in accordance with ITB Clause 5, Bidders shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Bidding Forms.
- 15. Documents Establishing the Eligibility and Qualifications of the Bidder** 15.1 To establish its eligibility and qualifications to perform the Contract in accordance with Section III, Evaluation and Qualification Criteria, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Bidding Forms.

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- 15.2 Domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 34.
- 16. Documents establishing conformity of the Plant and Installation Services**
- 16.1 The Bidder shall furnish the information stipulated in Section IV, in sufficient detail to demonstrate substantial responsiveness of the Bidders' proposal to the work requirements and the completion time.
- 16.2 For major items of Plant and Installation Services as listed by the Employer in Section III, Evaluation and Qualification Criteria, which the Bidder intends to purchase or subcontract, the Bidder shall give details of the name and nationality of the proposed Subcontractors, including manufacturers, for each of those items. In addition, the Bidder shall include in its bid information establishing compliance with the requirements specified by the Employer for these items. Quoted rates and prices will be deemed to apply to whichever Subcontractor is appointed, and no adjustment of the rates and prices will be permitted.
- 16.3 The Bidder shall be responsible for ensuring that any Subcontractor proposed complies with the requirements of ITB 4, and that any plant, or services to be provided by the Subcontractor comply with the requirements of ITB 5 and ITB 15.1
- 17. Bid Prices and Discounts**
- 17.1 Unless otherwise **specified in the BDS**, bidders shall quote for the entire Plant and Installation Services on a "single responsibility" basis such that the total bid price covers all the Contractor's obligations mentioned in or to be reasonably inferred from the bidding document in respect of the design, manufacture, including procurement and subcontracting (if any), delivery, construction, installation and completion of the Plant. This includes all requirements under the Contractor's responsibilities for testing, pre-commissioning and commissioning of the Plant and, where so required by the bidding document, the acquisition of all permits, approvals and licenses, etc.; the operation, maintenance and training services and such other items and services as may be specified in the Bidding Document, all in accordance with the requirements of the General Conditions of Contract. Items against which no price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed to be covered by the prices for other items.

17.2 Bidders are required to quote the price for the commercial, contractual and technical obligations outlined in the bidding document.

17.3 Bidders shall give a breakdown of the prices in the manner and detail called for in the Price Schedules included in Section IV, Bidding Forms.

17.4 Depending on the scope of the Contract, the Price Schedules may comprise up to the six (6) schedules listed below. Separate numbered Schedules included in Section IV, Bidding Forms, from those numbered 1-4 below, shall be used for each of the elements of the Plant and Installation Services. The total amount from each Schedule corresponding to an element of the Plant and Installation Services shall be summarized in the schedule titled Grand Summary, (Schedule 5), giving the total bid price(s) to be entered in the Letter of Bid.

Schedule No. 1 Plant (including Mandatory Spare Parts)
Supplied from Abroad

Schedule No. 2 Plant (including Mandatory Spare Parts)
Supplied from within the Employer's Country

Schedule No. 3 Design Services

Schedule No. 4 Installation Services

Schedule No. 5 Grand Summary (Schedule Nos. 1 to 4)

Schedule No. 6 Recommended Spare Parts

Bidders shall note that the plant and equipment included in Schedule Nos. 1 and 2 above **exclude** materials used for civil, building and other construction works. All such materials shall be included and priced under Schedule No. 4, Installation Services.

17.5 In the Schedules, bidders shall give the required details and a breakdown of their prices as follows:

(a) Plant to be supplied from abroad (Schedule No. 1):

The price of the Plant shall be quoted on CIP-named place of destination basis as **specified in the BDS**

(b) Plant manufactured within the Employer's country (Schedule No. 2):

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- (i) The price of the plant shall be quoted on an EXW Incoterm basis (such as “ex-works,” “ex-factory,” “ex-warehouse” or “off-the-shelf,” as applicable) including all customs duties, sales and other taxes already paid or payable on the components and raw materials used in the manufacture or assembly of the Plant;
 - (ii) Sales tax and all other taxes payable in the Employer’s country on the Plant if the contract is awarded to the Bidder.
- (c) Design Services (Schedule No. 3).
 - (d) Installation Services shall be quoted separately (Schedule No. 4) and shall include rates or prices for local transportation to named place of final destination as **specified in the BDS**, insurance and other services incidental to delivery of the plant, all labor, contractor’s equipment, temporary works, materials, consumables and all matters and things of whatsoever nature, including operations and maintenance services, the provision of operations and maintenance manuals, training, etc., where identified in the Bidding Document, as necessary for the proper execution of the installation and other services, including all taxes, duties, levies and charges payable in the Employer’s country as of twenty-eight (28) days prior to the deadline for submission of bids.
 - (e) Recommended spare parts shall be quoted separately (Schedule 6) as specified in either subparagraph (a) or (b) above in accordance with the origin of the spare parts.
- 17.6 The current edition of Incoterms, published by the International Chamber of Commerce shall govern.
- 17.7 The prices shall be either fixed or adjustable as **specified in the BDS**.
- 17.8 In the case of **Fixed Price**, prices quoted by the Bidder shall be fixed during the Bidder’s performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.
- 17.9 In the case of **Adjustable Price**, prices quoted by the Bidder shall be subject to adjustment during performance of the contract to reflect changes in the cost elements such as labor,

material, transport and contractor's equipment in accordance with the procedures specified in the corresponding Appendix to the Contract Agreement. A bid submitted with a fixed price quotation will not be rejected, but the price adjustment will be treated as zero. Bidders are required to indicate the source of labor and material indices in the corresponding Form in Section IV, Bidding Forms.

17.10 If so indicated in ITB 1.1, bids are being invited for individual lots (contracts) or for any combination of lots (packages). Bidders wishing to offer any price reduction (discount) for the award of more than one Contract shall specify in their Letter of Bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package, and the manner in which the price reductions will apply.

17.11 Bidders wishing to offer any unconditional discount shall specify in their Letter of Bid the offered discounts and the manner in which price discounts will apply.

**18. Currencies of
Bid and Payment**

18.1 The currency(ies) of the bid shall be, as **specified in the BDS**.

18.2 Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency requirements.

**19. Period of
Validity of Bids**

19.1 Bids shall remain valid until the date specified **in the BDS** or any extended date if amended by the Employer in accordance with ITB 8. A Bid that is not valid until the date specified **in the BDS**, or any extended date if amended by the Employer in accordance with ITB 8, shall be rejected by the Employer as nonresponsive.

19.2 In exceptional circumstances, prior to the date of expiration of the bid validity, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 20, the Bidder granting the request shall also extend the bid security for twenty-eight (28) days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid, except as provided in ITB 19.3.

19.3 In the case of fixed price contracts, if the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial bid validity specified in accordance with ITB 19.1, the Contract price shall be adjusted by a factor or factors specified

in the request for extension. Bid evaluation shall be based on the Bid Price without taking into consideration the above correction.

20. Bid Security

20.1 The Bidder shall furnish as part of its bid, either a Bid-Securing Declaration or a bid security as **specified in the BDS**, in original form and in the amount **specified in the BDS**.

20.2 A Bid-Securing Declaration shall use the form included in Section IV Bidding Forms.

20.3 If a bid security is specified pursuant to ITB 20.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder's option:

- (a) an unconditional guarantee issued by a bank or surety;
- (b) an irrevocable letter of credit;
- (c) a cashier's or certified check; or
- (d) another security **indicated in the BDS**,

from a reputable source from an eligible country. If the unconditional guarantee is issued by an insurance company or a bonding company located outside the Employer's Country, the issuer shall have a correspondent financial institution located in the Employer's Country to make it enforceable. In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms or in another substantially similar format approved by the Employer prior to bid submission. In either case, the form must include the complete name of the Bidder. The bid security shall be valid for twenty-eight days (28) beyond original date of expiry of the bid validity, or beyond any period of extension if requested under ITB 19.2.

20.4 If a bid security is specified pursuant to ITB 20.1, any bid not accompanied by a substantially responsive bid security or Bid-Securing Declaration shall be rejected by the Employer as non-responsive.

20.5 If a bid security is specified pursuant to ITB 20.1, the bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the performance security pursuant to ITB 42.

20.6 The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.

20.7 The bid security may be forfeited:

- (a) if a Bidder withdraws its bid prior to the expiry date of the bid validity specified by the Bidder on the Letter of Bid or any extended date provided by the Bidder;
- (b) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB 41; or
 - (ii) furnish a performance security in accordance with ITB 42.

20.8 The Bid Security or the Bid Securing Declaration of a JVA shall be in the name of the JVA that submits the bid. If the JVA has not been legally constituted into a legally enforceable JVA at the time of bidding, the Bid Security or the Bid Securing Declaration shall be in the names of all future partners as named in the letter of intent referred to in ITB 4.1.

20.9 If a bid security is not required in the BDS, and

- (a) if a Bidder withdraws its bid prior to the expiry date of the bid validity specified by the Bidder on the Letter of Bid, or any extended date provided by the Bidder, or
- (b) if the successful Bidder fails to: sign the Contract in accordance with ITB 41; or furnish a performance security in accordance with ITB 42;

the Borrower may, **if provided for in the BDS**, declare the Bidder disqualified to be awarded a contract by the Employer for a period of time **as stated in the BDS**.

21. Format and Signing of Bid

21.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it "ORIGINAL." Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE". In addition, the Bidder shall submit copies of the bid, in the number **specified in the BDS** and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.

21.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as **specified in the BDS** and shall be

attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.

21.3 A bid submitted by a JVA shall comply with the following requirements:

- (a) Unless not required in accordance with ITB 4.1 (a), be signed so as to be legally binding on all partners and
- (b) Include the Representative's authorization referred to in ITB 4.1 (b), consisting of a power of attorney signed by those legally authorized to sign on behalf of the JVA.

21.4 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

Submission and Opening of Bids

22. Submission, Sealing and Marking of Bids

22.1 Bidders may always submit their bids by mail or by hand. When so **specified in the BDS**, bidders shall have the option of submitting their bids electronically. Procedures for submission, sealing and marking are as follows:

- (a) Bidders submitting bids by mail or by hand shall enclose the original and each copy of the Bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL," "ALTERNATIVE" and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope. The rest of the procedure shall be in accordance with ITB sub-Clauses 22.2 and 22.3.
- (b) Bidders submitting bids electronically shall follow the electronic bid submission procedures **specified in the BDS**.

22.2 The inner and outer envelopes shall:

- (a) bear the name and address of the Bidder;
- (b) be addressed to the Employer in accordance with ITB 24.1;
- (c) bear the specific identification of this bidding process indicated in accordance with ITB 1.1; and

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- (d) bear a warning not to open before the time and date for bid opening.
- 22.3 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.
- 23. Deadline for Submission of Bids**
- 23.1 Bids must be received by the Employer at the address and no later than the date and time **indicated in the BDS.**
- 23.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
- 24. Late Bids**
- 24.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 23. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.
- 25. Withdrawal, Substitution, and Modification of Bids**
- 25.1 A Bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 21.2, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the bid must accompany the respective written notice. All notices must be:
- (a) prepared and submitted in accordance with ITB 21 and ITB 22 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION;” and
- (b) received by the Employer prior to the deadline prescribed for submission of bids, in accordance with ITB 23.
- 25.2 Bids requested to be withdrawn in accordance with ITB 25.1 shall be returned unopened to the Bidders.
- 25.3 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

26. Bid Opening

- 26.1 The Employer shall conduct the bid opening in public, in the presence of Bidders' designated representatives and anyone who choose to attend, and at the address, date and time **specified in the BDS**. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be as **specified in the BDS**.
- 26.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding bid being substituted, and the substituted bid shall not be opened, but returned to the Bidder. No bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at bid opening. Envelopes marked "MODIFICATION" shall be opened and read out with the corresponding bid. No bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at bid opening. Only bids that are opened and read out at bid opening shall be considered further.
- 26.3 All other envelopes shall be opened one at a time, reading out: the name of the Bidder and the Bid Price(s), including any discounts and alternative bids, and indicating whether there is a modification; the presence or absence of a bid security or Bid-Securing Declaration; and any other details as the Employer may consider appropriate. Only discounts and alternative bids read out at bid opening shall be considered for evaluation. No bid shall be rejected at bid opening except for late bids, in accordance with ITB 24.1.
- 26.4 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Price, per lot if applicable, including any discounts and alternative bids; and the presence or absence of a bid security or a Bid-Securing Declaration. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the

record shall be distributed to all Bidders who submitted bids in time, and posted online when electronic bidding is permitted.

Evaluation and Comparison of Bids

- 27. Confidentiality**
- 27.1 Information relating to the evaluation of bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.
- 27.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.
- 27.3 Notwithstanding ITB 27.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it should do so in writing.
- 28. Clarification of Bids**
- 28.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 32.
- 28.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.
- 29. Deviations, Reservations, and Omissions**
- 29.1 During the evaluation of bids, the following definitions apply:
- (a) "Deviation" is a departure from the requirements specified in the Bidding Document;
 - (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and
 - (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.

30. Determination of Responsiveness

30.1 The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.

30.2 A substantially responsive bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

(a) if accepted, would:

(i) affect in any substantial way the scope, quality, or performance of the Plant and Installation Services specified in the Contract; or

(ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

30.3 The Employer shall examine the technical aspects of the bid in particular, to confirm that all requirements of Section VII, Employer's Requirements have been met without any material deviation, reservation, or omission.

30.4 If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

31. Nonmaterial Nonconformities

31.1 Provided that a bid is substantially responsive, the Employer may waive any nonconformity in the bid that does not constitute a material deviation, reservation or omission.

31.2 Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.

31.3 Provided that a bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted,

for comparison purposes only, to reflect the price of a missing or non-conforming item or component, by adding the average price of the item or component quoted by substantially responsive Bidders. If the price of the item or component cannot be derived from the price of other substantially responsive Bids, the Employer shall use its best estimate.

**32. Correction of
Arithmetical
Errors**

32.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

- (a) where there are errors between the total of the amounts given under the column for the price breakdown and the amount given under the Total Price, the former shall prevail and the latter will be corrected accordingly;
- (b) where there are errors between the total of the amounts of Schedule Nos. 1 to 4 and the amount given in Schedule No. 5 (Grand Summary), the former shall prevail and the latter will be corrected accordingly; and
- (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

32.2 If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its bid shall be declared non-responsive.

**33. Conversion to
Single Currency**

33.1 For evaluation and comparison purposes, the currency(ies) of the bid shall be converted into a single currency as **specified in the BDS**.

**34. Margin of
Preference**

34.1 No margin of domestic preference shall apply.

**35. Evaluation of
Bids**

35.1 The Employer shall use the criteria and methodologies indicated in this Clause. No other evaluation criteria or methodologies shall be permitted.

Technical Evaluation

35.2 The Employer will carry out a detailed technical evaluation of the bids not previously rejected to determine whether the technical aspects are in compliance with the Bidding Document. **The bid that does not meet minimum acceptable standards of completeness, consistency and detail, and the specified minimum (or maximum, as the case may be)**

requirements for specified functional guarantees, will be rejected for non-responsiveness. In order to reach its determination, the Employer will examine and compare the technical aspects of the bids on the basis of the information supplied by the bidders, taking into account the following:

- (a) overall completeness and compliance with the Employer's Requirements; conformity of the Plant and Installation Services offered with specified performance criteria, including conformity with the specified minimum (or maximum, as the case may be) requirement corresponding to each functional guarantee, as indicated in the Specification and in Section III Evaluation and Qualification Criteria; suitability of the Plant and Installation Services offered in relation to the environmental and climatic conditions prevailing at the site; and quality, function and operation of any process control concept included in the bid;
- (b) type, quantity and long-term availability of mandatory and recommended spare parts and maintenance services; and
- (c) other relevant factors, if any, listed in Section III, Evaluation and Qualification Criteria.

35.3 Where alternative technical solutions have been allowed in accordance with ITB 13, and offered by the Bidder, the Employer will make a similar evaluation of the alternatives. Where alternatives have not been allowed but have been offered, they shall be ignored.

Economic Evaluation

35.4 To evaluate a bid, the Employer shall consider the following:

- (a) the bid price, excluding provisional sums and the provision, if any, for contingencies in the Price Schedules;
- (b) price adjustment for correction of arithmetic errors in accordance with ITB 32.1;
- (c) price adjustment due to discounts offered in accordance with ITB 17.9 or ITB17.10;
- (d) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 31.3;

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- (e) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 33; and
 - (f) the evaluation factors indicated in Section III, Evaluation and Qualification Criteria.
- 35.5 If price adjustment is allowed in accordance with ITB 17.6, the estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
- 35.6 If this Bidding Document allows Bidders to quote separate prices for different lots (contracts), and the award to a single Bidder of multiple lots (contracts), the methodology to determine the lowest evaluated price of the lot (contract) combinations, including any discounts offered in the Letter of Bid, is specified in Section III, Evaluation and Qualification Criteria.
- 35.7 If the bid, which results in the lowest Evaluated Bid Price, is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Price Schedules, to demonstrate the internal consistency of those prices with the methods and time schedule proposed. After evaluation of the price analyses, taking into consideration the terms of payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.
- 36. Comparison of Bids**
- 36.1 The Employer shall compare all substantially responsive bids in accordance with ITB 35.4 to determine the lowest evaluated bid.
- 37. Eligibility and Qualification of the Bidder**
- 37.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid is eligible and meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.
- 37.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 15.

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- 37.3 Prior to Contract award, the Employer will verify that the successful Bidder (including each member of a JV) is not disqualified by the Bank due to noncompliance with contractual SEA/SH prevention and response obligations. The Employer will conduct the same verification for each subcontractor proposed by the successful Bidder. If any proposed subcontractor does not meet the requirement, the Employer will require the Bidder to propose a replacement subcontractor.
- 37.4 An affirmative determination shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the bid, in which event the Employer shall proceed to the next lowest evaluated bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.
- 37.5 The capabilities of the manufacturers and subcontractors proposed in its Bid to be used by the lowest evaluated Bidder for identified major items of supply or services will also be evaluated for acceptability in accordance with Section III, Evaluation and Qualification Criteria. Their participation should be confirmed with a letter of intent between the parties, as needed. Should a manufacturer or subcontractor be determined to be unacceptable, the Bid will not be rejected, but the Bidder will be required to substitute an acceptable manufacturer or subcontractor without any change to the bid price. Prior to signing the Contract, the corresponding Appendix to the Contract Agreement shall be completed, listing the approved manufacturers or subcontractors for each item concerned.

**38. Employer's
Right to Accept
Any Bid, and to
Reject Any or
All Bids**

- 38.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

Award of Contract

39. Award Criteria

- 39.1 Subject to ITB 38.1, the Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be eligible and qualified to perform the Contract satisfactorily.

40. Notification of Award

- 40.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, that its bid has been accepted. The notification letter (hereinafter and in the Conditions of Contract and Contract Forms called the “Letter of Acceptance”) shall specify the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Plant and Installation Services (hereinafter and in the Conditions of Contract and Contract Forms called “the Contract Price”).
- 40.2 At the same time, the Employer shall also notify all other Bidders of the results of the bidding, and shall publish in UNDB online and in dgMarket the results identifying the bid and lot numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at Bid Opening; (iii) name and evaluated prices of each Bid that was evaluated; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the winning Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded.
- 40.3 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.
- 40.4 The Employer shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 40.2, requests in writing the grounds on which its bid was not selected.

41. Signing of Contract

- 41.1 Promptly upon notification, the Employer shall send the successful Bidder the Contract Agreement.
- 41.2 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.
- 41.3 Notwithstanding ITB 41.2 above, in case signing of the Contract Agreement is prevented by any export restrictions attributable to the Employer, to the country of the Employer, or to the use of the Plant and Installation Services to be supplied, where such export restrictions arise from trade regulations from a country supplying those Plant and Installation Services, the Bidder shall not be bound by its bid, always provided, however, that the Bidder can demonstrate to the satisfaction of the Employer and of the Bank that signing of the Contract Agreement has not been prevented by any lack of diligence on the part of the Bidder in completing any formalities, including applying for permits, authorizations and licenses necessary for

the export of the Plant and Installation Services under the terms of the Contract.

**42. Performance
Security**

- 42.1 Within twenty-eight (28) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the General Conditions of Contract, subject to ITB 35.7, using for that purpose the Performance Security Form included in Section IX, Contract Forms, or another form acceptable to the Employer. If the performance security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a performance security shall have a correspondent financial institution located in the Employer's Country.
- 42.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

Section II. Bid Data Sheet

A. Introduction	
ITB 1.1	<p>The reference number of the Invitation of Bids is: <i>PH-NPC-279934 -GO-RFB</i></p> <p>The Employer is: National Power Corporation</p> <p>The name of the Grant: EU Grant Agreement for Access to Sustainable Energy Project</p> <p>The identification of the Grant: TF0A2379</p> <p>The amount of the Grant is: US\$17.382M (Grants under Parts 1 (PVM), 2 (RNS) and 3 (PPM) of the Project)</p> <p>The number and identification of lots (contracts) comprising this ICB is:</p> <ul style="list-style-type: none"> • Lot 1 (INEC): Barangay Lang-ayan, Currimao, Ilocos Norte, Philippines • Lot 2 (PANELCO-I): Barangay Mal-ong, Anda, Pangasinan, Philippines • Lot 3 (BENECO): Barangay Taba-an Sur, Tuba, Benguet, Philippines • Lot 4 (SAMELCO-I): Barangay Carayman, Calbayog City, Western Samar, Philippines • Lot 5 (SAMELCO-II): Barangay 6 Poblacion, Paranas, Samar, Philippines • Lot 6 (SOCOTECO-II): Barangay Apopong, General Santos City, South Cotabato, Philippines • Lot 7 (SUKELCO): Barangay Kalandagan, Tacurong City, Sultan Kudarat, Philippines <p>Bidder may submit bid for any one or more lots. Bidder shall submit its bid for all quantities and items in each lot. Evaluation and award of contract will on a lot-wise basis. Cross discount will not be taken into account during evaluation.</p>

ITB 2.1	<p>The Recipient (herein referred as Employer) is: National Power Corporation</p> <p>The name of the Project is: Access to Sustainable Energy Project (ASEP) Philippines - Rural Network Solar</p>
ITB 4.1	<p>The firms in a joint venture, consortium or association shall be limited to maximum of three (3) who shall jointly and severally liable. There shall be no duplication of functions among JV members.</p>
B. Bidding Document	
ITB 7.1	<p>For <u>clarification purposes</u> only, the Employer's address is:</p> <p>Attention: NPC BIDS AND AWARDS COMMITTEE (BAC)</p> <p>National Power Corporation (NPC) – Head Office</p> <p>Street Address: BIR Road corner Quezon Ave., Diliman</p> <p>City: Quezon City</p> <p>ZIP Code: 1100</p> <p>Country: Philippines</p> <p>Telephone: +63-2-8924-5211</p> <p>Electronic mail address: bcسد@napocor.gov.ph</p> <p>Requests for clarification should be received by the Employer no later than: 21 (twenty one) days before the deadline for bid submission in ITB 23.1.</p> <p>Clarification should be provided by the Employer no later than: 14 (fourteen) days before the deadline for bid submission in ITB 23.1.</p>
ITB 7.4	<p>A Pre-Bid meeting will take place at the following date, time and place:</p> <p>Date: Friday, June 24, 2022</p> <p>Time: 9:30 AM Philippine Time</p> <p>Place: National Power Corporation (NPC) – Head Office Ground Floor, Fiesta Hall, Kaňao Room BIR Road corner Quezon Ave., Diliman, Quezon City</p> <p>In line with COVID-19 safety measures, the conduct of Pre-Bid meeting is also available online. However, bidders may attend the Pre-Bid meeting; subject to the following health protocols:</p>

	<p>a. Only a maximum of two (2) representatives from each bidder/company shall be allowed to participate; and</p> <p>b. No Face Mask/No Entry policy shall be implemented in the NPC premises.</p> <p>Upon receiving request from bidders, the site visits (either physical or virtual) will be organized by the employer to the following Electric Cooperative within June 25-July 10, 2022:</p> <p>Ilocos Norte Electric Cooperative, Inc. (INEC) Fleudeliz Credo-Taylan, ineclegal2018@yahoo.com, 09177791827</p> <p>Pangasinan Electric Cooperative, Inc. I (PANELCO-I) Editha U. Tadiam, panelco1_fsd@yahoo.com, 09175117653 Norgel O. Calixto, panelco1.alaminos@gmail.com, 0917525587</p> <p>Benguet Electric Cooperative, Inc. (BENECO) Olive O. Bete, olive.bete@beneco.com.ph, 09196035354</p> <p>Samar Electric Cooperative, Inc. I (SAMELCO-I) Sandy Montero, sandymontero34@gmail.com, 09278321419</p> <p>Samar Electric Cooperative, Inc. II (SAMELCO-II) Gemil M. Longara, Jr., gemplongara@yahoo.com / samelcotwo@yahoo.com, 09271510103</p> <p>South Cotabato Electric Cooperative, Inc. II (SOCOTECO-II) Angelico Boiser, aboiser79.jnj@gmail.com, 09484399896</p> <p>Sultan Kudarat Electric Cooperative, Inc. (SUKELCO) Joemar Sevillano, joemarsevillano@yahoo.com.ph, 09209639723</p>
ITB 7.6	<p>In addition to transmitting to all Bidders, the minutes of the Pre-Bid meeting shall also be published in the following web page:</p> <p>https://www.napocor.gov.ph/BCSD/bids.php or https://projects.worldbank.org/</p>
ITB 8.2	<p>Add at the end:</p> <p>Additionally, any addendum to the Bidding Documents shall be promptly published in the web page cited above</p>
C. Preparation of Bids	
ITB 10.1	The language of the bid is: English

	<p>All correspondence exchange shall be in English language.</p> <p>All submitted documents if in Foreign languages must be submitted with accompanied English translations, signed and declared by Bidder.</p> <p>Translations will be translated by a certified/licensed translator and the Bidder shall submit the name(s) and qualifications of their translator(s) in English translation.</p> <p>Additional: Bid submissions in foreign languages without accompanying English translations signed and declared by bidder may be considered OMISSIONS.</p>
ITB 11.1 (k)	<p>The Bidder shall submit with its bid the following additional documents:</p> <p>Additional:</p> <p>Functional Guarantee (For Commissioning and Operational Acceptance) – All Bidders shall submit guaranteed installed Peak Capacity, guaranteed Performance and guaranteed Net Energy Output for Operational Acceptance Test purposes.</p> <p>Functional Guarantee (For Year 1 - 25) – All Bidders shall provide their guaranteed Performance Ratios and guaranteed Net Energy Output for Years 1 – 25 for verification of the Solar Modules compliance to the allowable linear degradation allowance. The Year 1 guaranteed Net Energy Output will be used for LCOE computation purposes.</p> <p>Code of Conduct for Contractor’s Personnel (ES)</p> <p>The Bidder shall submit its Code of Conduct that will apply to the Contractor’s Personnel (as defined in GCC Sub- Clause 1) employed for the execution of Installation Services (defined in GCC Sub- Clause 1) at the Site (or other places in the country where the Site is located), to ensure compliance with the Contractor’s Environmental and Social (ES) obligations under the Contract. The Bidder shall use for this purpose the Code of Conduct form provided in Section IV. No substantial modifications shall be made to this form, except that the Bidder may introduce additional requirements, including as necessary to take into account specific Contract issues/risks.</p> <p>Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks</p> <p>The Bidder shall submit Management Strategies and Implementation Plans (MSIPs) to manage the following key Environmental and Social (ES) risks:</p> <p>The bidder shall be required to demonstrate experience in managing ES risks through a Certification from a previous client that bidder has</p>

	<p>implemented measures to prevent/mitigate environmental and social risks in the client's projects, and comply with government environmental, health and safety, and social safeguards regulations and standards.</p> <p>The winning bidder will submit an Environmental and Social Risk Mitigation Plan prior to the start of the construction activities to be approved by the PMO and ensure commensurate provision for financing its implementation.</p>
ITB 12.1	<p>Add the para at the end:</p> <p>The forms must be completed as instructed in each form without any alterations to the text and no substitutes shall be accepted as provided under ITB 21.4. All blank spaces shall be filled in the information requested.</p>
ITB 13.1	Alternative bids are not permitted.
ITB 13.2	Alternatives to the Time Schedule shall not be permitted.
ITB 13.4	Alternative technical solutions shall not be permitted.
ITB 17.1	Bidders shall quote for the entire Plant and Installation Services on a single responsibility basis for each Lot
ITB 17.5(a)	<p>Named places of destination are::</p> <p>Lot 1 (INEC): Barangay Lang-ayan, Curimao, Ilocos Norte, Philippines</p> <p>Lot 2 (PANELCO-I): Barangay Mal-ong, Anda, Pangasinan, Philippines</p> <p>Lot 3 (BENECO): Barangay Taba-an Sur, Tuba, Benguet, Philippines</p> <p>Lot 4 (SAMELCO-I): Barangay Carayman, Calbayog City, Western Samar, Philippines</p> <p>Lot 5 (SAMELCO-II): Barangay 6 Poblacion, Paranas, Samar, Philippine</p> <p>Lot 6 (SOCOTECO-II): Barangay Apopong, General Santos City, South Cotabato Philippines</p> <p>Lot 7 (SUKELCO): Barangay Kalandagan, Tacurong City, Sultan Kudarat, Philippines</p>
ITB 17.5 (d)	Same as above
ITB 17.7	The prices quoted by the Bidder shall not be subject to adjustment during the performance of the Contract and therefore Appendix 2 – Price Adjustments is not applicable.
ITB 18.1 & 18.2	Bidders should preferably quote in US Dollars though they may quote in other currencies. The currency(ies) of the bid and the currency(ies) of payments shall be the same.

	<p>The Bidder shall quote in the currency of the Employer's Country, the portion of the Bid price that corresponds to expenditures to be incurred in that currency.</p> <p>The Bidder shall use no more than three (3) currencies in addition to the currency of the Employer's Country.</p>
ITB 19.1	The bid validity period shall be ninety (90) days from bid submission / opening.
ITB 20.1	Bid shall include a "Bid-Securing Declaration"
ITB 20.10	If the Bidder incurs any of the actions prescribed in subparagraphs (a) or (b) of this provision, the Employer will declare the Bidder ineligible to be awarded contracts by the Employer for a period of one (1) year.
ITB 21.1	In addition to the original of the Bid, the Bidder shall submit Four (4) Copies plus One (1) soft copy (unsecured PDF Document + Excel files of pricing table) on a flash drive/USB stick.
ITB 21.2	<p>The written confirmation of authorization to sign on behalf of the Bidder shall consist of:</p> <p>(a) Notarized Power of Attorney, Secretary's Certificate or a Board Resolution for the authority of the signatory to sign the bid,</p> <p>(b) Bids submitted by an existing or intended JV shall include an undertaking signed by all parties</p> <p style="padding-left: 40px;">(i) stating that all parties shall be jointly and severally liable, and</p> <p style="padding-left: 40px;">(ii) nominating a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution.</p> <p>.</p> <p>In line with WB alternative arrangements for procurement activities during travel restrictions and/or lockdowns due to spike of Covid-19, Bidders may submit scanned copies of the above through email with their bid submission while the originals are sent through courier provided that the latter are received by the Employer not later than one (1) week after the bid opening date. Payment receipts of the courier should be attached to the bid to be considered valid. The copies will then be treated as originals during bid submission until the originals are received by the above-cited deadline.</p>
D. Submission and Opening of Bids	
ITB 22.1 (b)	In line with WB alternative arrangements, electronic bid submission shall also be considered aside from manually submitted or mailed bids. Electronic bid submissions shall comply with the following:

	<ol style="list-style-type: none"> 1. All documents shall be compressed to less than 10MB using a single ZIP file. 2. Electronic bid submission shall be addressed to: <p style="margin-left: 40px;">Attention: NPC BIDS AND AWARDS COMMITTEE (BAC) National Power Corporation (NPC) – Head Office BIR Road corner Quezon Ave., Diliman Quezon City, Philippines</p> <p>Email Subject: <Bidder company name> Bid Submission for <insert tender number></p> <p>Email Content shall be as follows:</p> <p>We hereby submit our Bid for the <insert tender number> and I hereby state that I am submitting this Bid as an authorized representative of the Bidder.</p> <p><insert Bidder company name as in the Bid, full name of authorized representative and contact details></p> 3. Email address for electronic bid submission: bcasd@napocor.gov.ph 4. Procedure: Any electronic submission not yet received by either email or via hard copy at NPC by the deadline of bid submission, will be considered late and fall under ITB 24.1 – the Procuring Entity will not be responsible for late submissions due to interconnectivity problems regardless of email time stamps of the Bidder – assessment of the time of receipt of the Bidder’s Submission will be by that as stated on the email electronic submission as stamped as the time as received by bcasd@napocor.gov.ph email inbox. 5. Data security: By submitting electronic version, the Bidder accepts all responsibility in regards to data security of their bid. The bid <u>must be</u> encrypted or password protected documents as an attachment(s); NPC will confirm receipt of each bid and all bids submitted by email are all opened at the same time with other submitted bids, to ensure the integrity of the process. The bidders must send the password of their password protected bids to the email address specified in the bidding documents. 6. Printing fee: The bidder shall furnish US\$100 to the Employer for the purpose of printing their electronic bid submissions. Alternatively, no printing fee will required if Bidder instructs a third party in-country representative to print its bid submissions and deliver copies to the place and time of bid submission/opening. In such case, the
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	representative shall submit letter of authorization when submitting the bid on the Bidder's behalf.
ITB 23.1	<p>For <u>bid submission purposes</u> only, the Employer's address is:</p> <p>Attention: <i>NPC BIDS AND AWARDS COMMITTEE (BAC)</i></p> <p>Room/Floor/Building: Fiesta Hall, Kañao Room, National Power Corporation</p> <p>Street Address:</p> <p><i>BIR Road corner Quezon Ave., Diliman</i></p> <p>City: <i>Quezon</i></p> <p>ZIP/Postal Code: <i>1100</i></p> <p>Country: <i>Philippines</i></p> <p>The deadline for bid submission is:</p> <p>Date: 28 July 2022</p> <p>Time: <i>9:30 AM Philippine Time</i></p>
ITB 26.1	<p>The bid opening shall take place at:</p> <p>Place: <i>National Power Corporation (NPC) – Head Office</i></p> <p>Street Address: <i>BIR Road corner Quezon Ave., Diliman</i></p> <p>Floor/ Room number: <i>Fiesta Hall, Kañao Room</i></p> <p>City: <i>Quezon</i></p> <p>Country: <i>Philippines</i></p> <p>Date: 28 July 2022</p> <p>Time: <i>9:30 AM Philippine Time</i></p> <p>Opening of Bid Submissions will be performed by NPC-TWG headed by the TWG Chairman.</p> <p>Bidders who are unable to attend the bid opening shall register their interest to attend a virtual online bid opening by no later than 5:00PM, 26 July 2022.</p> <p>The <u>bid opening</u> shall take place at:</p> <p>Date: 28 July 2022</p> <p>Time of Weblink opening: 9:00 AM Philippine Time</p> <p>Weblink: To be provided to bid opening registered bidders no less than 24hrs prior.</p> <p>Procedure: The bid opening procedure will take place in accordance with ITB 26 – Bid Opening and the process undertaken by NPC-TWG will be</p>

	available in ‘real-time’ via the web link provided to virtual bidders both visually and audibly. The Bid Opening will continue regardless of any interconnectivity issues of the virtual Bid Opening.
E. Evaluation, and Comparison of Bids	
ITB 33.1	<p>The currency(ies) of the Bid shall be converted into a single currency as follows:</p> <p>The US\$ (U.S. Dollar) will be used as the single currency for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies and conversion shall be based on the exchange rate prevailing on the day of Bid Opening as published in the Bangko Sentral ng Pilipinas (BSP) reference rate bulletin.</p>

Section III. Evaluation and Qualification Criteria (Without Prequalification)

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with ITB 35 and ITB 37, no other factors, methods or criteria shall be used. The Bidder shall provide all the information requested in the forms included in Section IV, Bidding Forms.

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1. Evaluation

1.1 Technical Evaluation

In addition to the criteria listed in ITB 35.2 (a) – (c) the following factors shall apply:

- (a) The Bidder's total capacity of the solar PV modules (STC rating) to be installed for each site is equal to 1,000 KWp but not to exceed 1,100 kWp
- (b) The Bidder's performance ratio for each facility as offered at the High Side of the MV transformer is equal or greater than 75% annual.
- (c) The Bidder's technical submissions including warranties in line with Section VII are in compliance with the requirements.

1.2 Economic Evaluation

The following factors and methods will apply:

(a) Time Schedule:

Time to complete the Plant and Installation Services from the effective date specified in Article 3 of the Contract Agreement for determining time for completion of commissioning activities is 180 days. No credit will be given for earlier completion. Bids offering a completion date beyond the maximum designated period shall be rejected.

(b) Operating and Maintenance Cost

Reference to the methodology specified in this Bidding Document, Levelized Cost of Electricity (LCOE) in lieu of the operating and maintenance (life cycle) costs of the Plant shall be adopted as the methodology for evaluation of bids.

For this purpose, the Bid Offer will be converted to a simplified LCOE value in US\$/kWh utilizing the following equation to rank the Bid Offer's simplified LCOE:

$$\text{LCOE} = \text{Bid Offer for each Lot} / \text{Expected Plant Life} / \text{Year 1 Energy Output for same Lot}$$

Where: Bid Offer = Evaluated Costs (with discount, if any), in US\$

Expected Plant Life = 25 Years

Year 1 Energy Output = Guaranteed Net Energy Output at High Side of MV Transformer for Each Lot, kWh

= Guaranteed AC Yield of PV Modules – (DC Line Loss + AC Line Loss + MPPT Tracking Loss + Mismatch Loss + Inverter Efficiency Loss + MV Transformer Loss)

The price of recommended spare parts quoted in Price Schedule No. 6 shall not be considered for evaluation.

(c) Functional Guarantees of the Facilities

The minimum requirements for each site stated in the Specification for functional guarantees required in the Specification are:

Functional Guarantee	Minimum Requirement
1. Total Capacity Output of Solar PV Plant	<i>1,000 MWp (based on STC Rating)</i>
2. Performance Ratio (PR) Annual	<i>75%</i>
3. Net Energy Output (at High Side of MV Transformer)	<i>95% as compared to calculated figure based on guaranteed performance ratio in case of operational acceptance test or 95% as compared to guaranteed annual net energy output in case of subsequent annual tests</i>

Bids not meeting these functional guarantees shall be disqualified and considered non-responsive.

(d) Work, services, facilities, etc., to be provided by the Employer

There shall be no work, services, facilities, etc. that will be provided by the Employer which will be added to the bid price for evaluation.

(e) Specific additional criteria

No adjustment in price shall be considered.

1.3 Evaluation of Lowest Evaluated Cost and Multiple Contract Award

The Employer will award multiple contracts to a bidder that fulfills the requirements of each lot, demonstrates financial and technical capacity to undertake the lots in parallel and in addition fulfills cumulative qualification requirements for multiple award. The Employer will not take into account cross discounts during evaluation but cross discounts will be taken into account on award to the successful bidder.

2. Qualification

Factor	2.1 Eligibility					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
			All partners combined	Each partner	At least one partner	
2.1.1 Nationality	Nationality in accordance with ITB 4.2.	Must meet requirement	Existing or intended JVA must meet requirement	Must meet requirement	N / A	Form ELI – 1.1 and 1.2, with attachments
2.1.2 Conflict of Interest	No- conflicts of interests as described in ITB 4.3.	Must meet requirement	Existing or intended JVA must meet requirement	Must meet requirement	N / A	Letter of Bid
2.1.3 Bank Ineligibility	Not having been declared ineligible by the Bank as described in ITB 4.4.	Must meet requirement	Existing JVA must meet requirement	Must meet requirement	N / A	Letter of Bid
2.1.4 Government Owned Entity	Compliance with conditions of ITB 4.5	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Form ELI – 1.1 and 1.2, with attachments
2.1.5 Ineligibility based on a United Nations resolution or Borrower’s country law	Not having been excluded as a result of the Borrower’s country laws or official regulations, or by an act of compliance with UN Security Council resolution, in accordance with ITB 4.8	Must meet requirement	Existing JVA must meet requirement	Must meet requirement	N / A	Letter of Bid

Factor	2.2 Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Single Entity	Bidder			
			Joint Venture, Consortium or Association			
			All partners combined	Each partner	At least one partner	
2.2.1 History of non-performing contracts	Non-performance of a contract did not occur within the last five (5) years prior to the deadline for application submission, based on all information on fully settled disputes or litigation. A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the bidder have been exhausted.	Must meet requirement by itself or as partner to past or existing JVA	N / A	Must meet requirement by itself or as partner to past or existing JVA	N / A	Form CON - 2
2.2.2 Suspension	Not under suspension based on execution of a Bid Securing Declaration pursuant to ITB 4.9 and ITB 20.9.	Must meet requirement	Must meet requirement	Must meet requirement	Must meet requirement	Letter of Bid
2.2.3 Pending Litigation	Bidder’s financial position and prospective long term profitability still sound according to criteria established in 2.3.1 below and assuming that all pending litigation will be resolved against the Bidder.	Must meet requirement by itself or as partner to past or existing JVA	N / A	Must meet requirement by itself or as partner to past or existing JVA	N / A	Form CON – 2

Factor	2.2 Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
	All partners combined		Each partner	At least one partner		
2.2.4 Litigation History	No consistent history of court/arbitral award decisions against the Bidder ¹ since 1 st January 2019	Must meet requirement by itself or as partner to past or existing JVA	N/A	Must meet requirement by itself or as partner to past or existing JVA	N/A	Form CON – 2
2.2.5 Declaration: Environmental and Social (ES) past performance	Declare any contract that has been suspended or terminated and/or performance security called by an employer for reasons of breach of environmental, or social (including Sexual Exploitation, and Abuse) contractual obligations in the past five years. ²	Must make the declaration. Where there are Specialized Subcontractor/s , the Specialized Subcontractor/s must also make the declaration.	N/A	Each must make the declaration. Where there are Specialized Subcontractor/s, the Specialized Subcontractor/s must also make the declaration	N/A	Form CON-3 ES Performance Declaration
2.2.6 Bank’s SEA and/or SH Disqualification	At the time of Contract Award, not subject to disqualification by the Bank for non-compliance with SEA/ SH obligations	Must meet requirement (including each subcontractor proposed by the Bidder)	N/A	Must meet requirement (including each subcontractor proposed by the Bidder)	N/A	Letter of Bid, Form CON-4
2.2.7 Bank’s Forced Labor Disqualification	At the time of Contract Award, not subject to termination, suspension, and/or other contractual remedies by the Bank for non-compliance with Forced Labor obligations	Must meet requirement (including each subcontractor proposed by the Bidder)	N/A	Must meet requirement (including each subcontractor proposed by the Bidder)	N/A	Form Attachment 2 Annex II and Annex III

¹ The Bidder shall provide accurate information on the related Letter of Bid about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five years. A consistent history of awards against the Bidder or any member of a joint venture may result in failure of the Bid.

² The Employer may use this information to seek further information or clarifications in carrying out its due diligence.

Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
			All partners combined	Each partner		At least one partner
2.3.1 Historical Financial Performance	Submission of audited balance sheets or if not required by the law of the bidder’s country, other financial statements acceptable to the Employer, for 2020 and 2021 to demonstrate the current soundness of the bidders financial position and its prospective long term profitability. (a) Net Profit Margin Ratio (NPMR) ¹	Must meet requirement	N / A	Must meet requirement	N / A	Form FIN – 3.1 with attachments
2.3.2 Average Annual Turnover	Minimum average annual turnover in the solar PV sector of US\$1,000,000.00, calculated as total certified payments received for contracts in progress or completed, for any two (2) years within the last five (5) years (2017-2021). In case of bidder bidding for multiple lots, the minimum average annual turnover requirement of those multiple lots will be cumulatively applicable.	Must meet requirement	Must meet requirement		At least 25%	Form FIN –3.2
2.3.3 Financial Resources	The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet : (i) the following cash-flow requirement: US\$1,000,000.00 per lot (ii) the overall cash flow requirements for this contract and its current commitments.). In case of bidder bidding for multiple lots, the minimum average annual turnover requirement of those multiple lots will be cumulatively applicable.	Must meet requirement	Must meet requirement		At least 25%	Form FIN –3.3

¹NPMR = Net Profit /Sales or Revenue (should be positive for 2020 and 2021)

“Average Annual Turnover calculated as total certified payments received for work in progress or completed for any two (2) years with highest turnover, divided by 2 as specified in Section III, Evaluation Criteria, Sub-Factor 2.3.2.”

Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
			All partners combined	Each partner		At least one partner
2.4.1 General Experience	Experience under contracts in the role of contractor, subcontractor, or management contractor for at least five (5) years in the PV business prior to bid submission deadline, and with activity of at least nine (9) months in any two (2) years.	Must meet requirement	N / A	N / A	Leader of JV must meet requirement	Form EXP-2.4.1
2.4.2 Specific Experience	(a) Participation as contractor, management contractor, or subcontractor, in: <div>(i) have several contracts with a total of at least three megawatt (3.0 MW) within the last five (5) years;</div> <div>(ii) one (1) contract is at least one thousand kilowatt peak (1,000 kWp) capacity with a value of at least one million US Dollars (US\$1,000,000.00), that have been successfully and substantially completed in 2017 - 2021 and that is similar to the proposed Plant and Installation Services under bid.</div> Similarity shall be based on the following: <div>1. Ground-mounted solar PV plant</div> <div>2. With SCADA</div>	Must meet requirement	Must meet requirements for all characteristics	N / A	Must meet requirements for 1 characteristic	Form EXP 2.4.2(a)

Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
			All partners combined	Each partner	At least one partner	
2.4.2 Specific Experience	(b) For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum experience in the following key activities: (i) Design, Supply, Installation, Test and Commissioning of Solar PV Plant	Must meet requirements	Must meet requirements	N / A	Must meet requirements	Form EXP-2.4.2(b)

2.4.3 Specific Experience	<p>For the contracts in 2.4.2 (a) above and/or any other contracts [substantially completed and under implementation] as prime contractor, joint venture member, or subcontractor between 1st January 2017 and submission deadline, experience in managing ES risks and impacts in the following aspects:</p> <ol style="list-style-type: none"> 1. Environmental Management of a construction project 2. Construction Occupational Health and Safety Management <p>The Bidder must:</p> <ul style="list-style-type: none"> • Have implemented a DOLE-approved Construction Occupational Health and Safety Program • At least one key personnel with minimum one year experience as Safety Officer in a construction project <p>At least one key personnel with minimum one year experience as Pollution Control Officer in a construction project</p> <p>In case of foreign bidders with foreign construction projects only and thus, do not have actual experience on compliance with Philippine environmental and social safeguards regulations and standards, and in the implementation of a DOLE-approved Construction Occupational Health and Safety Program, implementation of ES risk management measures to comply with environmental and social safeguards regulations and standards in a foreign country where it implemented a construction project, and implementation of a similar health and safety program thereat is considered compliance to the requirements. In the event that bidder has implemented construction projects in foreign countries which did not require implementation of such similar health and safety program, at least one of the subcontractors of the bidder for this bidding must have implemented a DOLE-approved Construction Occupational Health and Safety Program in the Philippines to be considered complying with this requirement.</p>	Must meet requireme nts	Must meet requirement	N/A		Form EXP- 2.4.3(c)
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2.5 Contractor's Representative and other Key Personnel

The Bidder must demonstrate that it will have a suitably qualified Contractor's Representative and other suitably qualified (and in adequate numbers) key personnel, as described in the Specification. The key personnel of the Bidder including its subcontractors on the installation and project management of the PV plants shall not be duplicated across lots. Bidder may however duplicate and share the same Construction Manager CV in case of PANELCO Lot 2 and BENECO Lot 3, SAMELCO-I Lot 4 and SAMELCO-II Lot 5 or SOCOTECO-I Lot 6 and SUKELCO Lot 7 only. In case of INEC Lot 1, the Project Manager CV shall not be shared to any other Lots.

No.	Position	Total Work Similar Experience (years)	In Similar Works Experience (years)
1	Project Manager	10	5
2	Construction Manager	<u>5</u>	3
3	Solar PV Electrical Engineer	<u>5</u>	<u>3</u>
4	Civil Engineer	<u>5</u>	3
5	Environmental, Social, Health & Safety Officer*	<u>5</u>	3

** Functions may be performed by other key personnel who possess the required-training and experience*

The Bidder shall provide details of the Contractor's Representative and other key personnel and such other key personnel that the Bidder considers appropriate to perform the Contract, together with their academic qualifications and work experience. The Bidder shall complete the relevant Forms in Section IV, Bidding Forms.

In the case of a Bidder who offers to supply and install major items of supply (**solar PV modules, solar inverters, mounting structures and MV transformers**) under the contract that the Bidder did not manufacture or otherwise produce, the Bidder shall provide the manufacturer's authorization, using the form provided in Section IV, showing that the Bidder has been duly authorized by the manufacturer or producer of the related plant and equipment or component to supply and install that item in the Employer's country. The Bidder is responsible for ensuring that the manufacturer or producer complies with the requirements of ITB 4 and 5 and meets the minimum criteria listed above for that item.

Section IV. Bidding Forms

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Letter of Bid

Date: _____

ICB No.: _____

Invitation for Bid No.: _____

To: _____

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB) 8 _____;
- (b) We offer to _____, in conformity with the Bidding Document, the following Plant and Installation Services: _____
- (c) The price of our Bid, excluding any discounts offered in item (d) below is the sum of: _____, (_____), and _____, (_____)
- (d) The discounts offered and the methodology for their application are: _____

_____;
- (e) Our Bid shall be valid until *[insert day, month and year in accordance with ITB 19.1]*, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Document;
- (g) We, including any subcontractors or manufacturers for any part of the contract , have or will have nationalities from eligible countries, in accordance with ITB-4.2;
- (h) We, including any subcontractors or manufacturers for any part of the contract, do not have any conflict of interest in accordance with ITB-4.3;
- (i) We are not submitting more than one bid in this bidding process as a Bidder, either individually or as a partner in a joint venture, in accordance with ITB-4.3, except for alternative offers permitted under ITB Clause 13;
- (j) We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or

individual that is subject to, a temporary suspension or a debarment imposed by a member of the World Bank Group or a debarment imposed by the World Bank Group in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the World Bank and other development banks. Further, we are not ineligible under the Employer's country laws or official regulations or pursuant to a decision of the United Nations Security Council;

- (k) **Exploitation and Abuse (SEA) and/or Sexual Harassment (SH):** *[select the appropriate option from (i) to (iii) below and delete the others].*

We *[where JV, insert: "including any of our JV members"]*, and any of our subcontractors:

- (i) [have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.]
 - (ii) [are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.]
 - (iii) [had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations. An arbitral award on the disqualification case has been made in our favor.]
- (l) We are not a government owned entity/ We are a government owned entity but meet the requirements of ITB-4.5;³
- (m) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract:

Name of Recipient	Address	Reason	Amount
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

(If none has been paid or is to be paid, indicate "none.")

- (n) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (o) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

³ Bidder to use as appropriate

Name _____ In the capacity of _____

Signed _____

Duly authorized to sign the bid for and on behalf of _____

Dated on _____ day of _____, _____

Schedules of Rates and Prices

Schedule No. 1. Plant and Mandatory Spare Parts Supplied from Abroad

Item	Description	Code ¹	Qty. (1)	Unit Price ²		Total Price ² (1) x (3)
				(2)	CIP (3)	
TOTAL (to Schedule No. 5. Grand Summary)						
			Name of Bidder _____ Signature of Bidder _____			

¹ Bidders shall enter a code representing the country of origin of all imported plant and equipment.

² Specify currency. Create and use as many columns for Unit Price and Total Price as there are currencies.

Note: To be accomplished on per lot basis.

Country of Origin Declaration Form

Item	Description	Code	Country

Schedule No. 2. Plant and Mandatory Spare Parts Supplied from Within the Employer's Country

Item	Description	Qty.	EXW Unit Price ¹	Sales and other taxes payable per line item if Contract is awarded (in accordance with ITB 17.5 (b) (ii)*	EXW Total Price ¹
		(1)	(2)	(3)	(1) x (2)
TOTAL (to Schedule No. 5. Grand Summary)					
<div style="text-align: right; margin-bottom: 10px;">Name of Bidder _____</div> <div style="text-align: right;">Signature of Bidder _____</div>					

¹ Specify currency in accordance with specifications in Bid Data Sheet under ITB 18.1
Note: To be accomplished on per lot basis.

Schedule No. 3. Design Services

Item	Description	Qty. <i>(1)</i>	Unit Price ¹		Total Price ¹ <i>(1) x (2)</i>
			Local Currency Portion <i>(2)</i>	Foreign Currency Portion <i>(optional)</i>	
TOTAL (to Schedule No. 5. Grand Summary)					
			Name of Bidder _____ Signature of Bidder _____		

¹ Specify currency in accordance with specifications in Bid Data Sheet under ITB 18.1
Note: To be accomplished on per lot basis.

Schedule No. 4. Installation Services

[illegible]

¹ Specify currency in accordance with specifications in Bid Data Sheet under ITB 18.1

Note: The form shall be accomplished on per lot basis.

Schedule No. 5. Grand Summary

Item	Description	Total Price ¹	
		Foreign	Local
	Total Schedule No. 1. Plant, and Mandatory Spare Parts Supplied from Abroad		
	Total Schedule No. 2. Plant, and Mandatory Spare Parts Supplied from Within the Employer's Country		
	Total Schedule No. 3. Design Services		
	Total Schedule No. 4. Installation Services		
TOTAL (to Letter of Bid)			

Name of Bidder _____

Signature of Bidder _____

¹ Specify currency in accordance with specifications in Bid Data Sheet under ITB 18.1. Create and use as many columns for Foreign Currency requirement as there are foreign currencies
 Note: To be accomplished on per lot basis.

2. Bidder shall also submit recommended spare parts for the 5 Year Defect Liability period and for the 25

3. Recommended spare parts shall be for each lot

Technical Proposal

- Site Organization
- Method Statement
- Mobilization Schedule
- Construction Schedule
- ES Management Strategies and Implementation Plans
- Code of Conduct for Contractor's Personnel (ES)
- Plant
- Contractor's Equipment
- Personnel
- Proposed Subcontractors for Major Items of Plant and Installation Services
- Others

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

ES Management Strategies and Implementation Plans (ES-MSIP)

The Bidder shall submit comprehensive and concise Environmental and Social Management Strategies and Implementation Plans (ES-MSIP) **as required in the Bid Data Sheet**. These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

In developing these strategies and plan, the Bidder shall have regard to the ES provisions of the contract including those as may be more fully described in the Employer's Requirements in Section VII.

Code of Conduct for Contractor's Personnel (ES) Form

Note to the Bidder:

The minimum content of the Code of Conduct form as set out by the Employer shall not be substantially modified. However, the Bidder may add requirements as appropriate, including to take into account Contract-specific issues/risks.

The Bidder shall initial and submit the Code of Conduct form as part of its bid.

CODE OF CONDUCT FOR CONTRACTOR'S AND SUBCONTRACTOR'S PERSONNEL

We are the Contractor, [*<enter name of Contractor>*]. We have signed a contract with [*<enter name of Employer>*] for [*<enter description of the Facilities to be constructed>*]. The Plant for the Facilities will be installed at [*<enter the Site location>*]. Our contract requires us to implement measures to address environmental and social risks, related to the Installation Services i.e. services ancillary to the supply of the Plant for the Facilities, such as inland transportation, site preparation works/ associated civil works, installation, testing, precommissioning, commissioning, operations and maintenance etc. as the case may require.

This Code of Conduct is part of our measures to deal with environmental and social risks related to the Installation Services.

All personnel that we utilize in the execution of the Contract, including staff, labor and other employees of us and of each Subcontractor, and any other personnel assisting us in the execution of the Contract, are referred to as Contractor's personnel. This Code of Conduct identifies the behavior that we require from the Contractor's Personnel employed for the execution of Installation Services at the Site (or other places in the country where the Site is located).

Our workplace is an environment where unsafe, offensive, abusive or violent behavior will not be tolerated and where all persons should feel comfortable raising issues or concerns without fear of retaliation.

REQUIRED CONDUCT

Contractor's Personnel employed for the execution of Installation Services at the Site (or other places in the country where the Site is located) shall:

1. carry out his/her duties competently and diligently;
2. comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor's and Subcontractor's personnel and any other person;

-
3. maintain a safe working environment including by:
 - a. ensuring that workplaces, machinery, equipment and processes under each person's control are safe and without risk to health;
 - b. wearing required personal protective equipment;
 - c. using appropriate measures relating to chemical, physical and biological substances and agents; and
 - d. following applicable emergency operating procedures.
 4. report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and serious danger to his/her life or health;
 5. treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
 6. not engage in any form of sexual harassment including unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature with other Contractor's or Employer's Personnel;
 7. not engage in Sexual Exploitation, which means any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;
 8. not engage in Sexual Abuse, which means the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;
 9. not engage in any form of sexual activity with individuals under the age of 18, except in case of pre-existing marriage;
 10. complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, and Sexual Exploitation and Abuse, and Sexual Harassment (SH);
 11. report violations of this Code of Conduct; and
 12. not retaliate against any person who reports violations of this Code of Conduct, whether to us or the Employer, or who makes use of the grievance mechanism for Contractor's Personnel or the project's Grievance Redress Mechanism.

RAISING CONCERNS

If any person observes behavior that he/she believes may represent a violation of this Code of Conduct, or that otherwise concerns him/her, he/she should raise the issue promptly. This can be done in either of the following ways:

1. Contact [*enter name of the Contractor's Social Expert with relevant experience in handling sexual exploitation, sexual abuse and sexual harassment cases, or if such person is not required under the Contract, another individual designated by the Contractor to handle these matters*] in writing at this address [] or by telephone at [] or in person at []; or

2. Call [] to reach the Contractor's hotline (*if any*) and leave a message.

The person's identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.

There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.

CONSEQUENCES OF VIOLATING THE CODE OF CONDUCT

Any violation of this Code of Conduct by the Contractor's Personnel may result in serious consequences, up to and including termination and possible referral to legal authorities.

FOR CONTRACTOR'S PERSONNEL:

I have received a copy of this Code of Conduct written in a language that I comprehend. I understand that if I have any questions about this Code of Conduct, I can contact [*<enter name of Contractor's contact person(s) with relevant experience>*] requesting an explanation.

Name of Contractor's Personnel: [*<insert name>*]

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Contractor:

Signature: _____

Date: (day month year): _____

ATTACHMENT 1: Behaviors constituting SEA and behaviors constituting SH

ATTACHMENT 1 TO THE CODE OF CONDUCT FORM
BEHAVIORS CONSTITUTING SEXUAL EXPLOITATION AND ABUSE (SEA) AND
BEHAVIORS CONSTITUTING SEXUAL HARASSMENT (SH)

The following non-exhaustive list is intended to illustrate types of prohibited behaviors.

(1) Examples of sexual exploitation and abuse include, but are not limited to:

- A Contractor's Personnel tells a member of the community that he/she can get them jobs related to the work site (e.g. cooking and cleaning) in exchange for sex.
- A Contractor's Personnel that is connecting electricity input to households says that he can connect women headed households to the grid in exchange for sex.
- A Contractor's Personnel rapes, or otherwise sexually assaults a member of the community.
- A Contractor's Personnel denies a person access to the Site unless he/she performs a sexual favor.
- A Contractor's Personnel tells a person applying for employment under the Contract that he/she will only hire him/her if he/she has sex with him/her.

(2) Examples of sexual harassment in a work context

- A Contractor's Personnel comment on the appearance of another Installation Services Personnel (either positive or negative) and sexual desirability.
- When a Contractor's Personnel complains about comments made by another Contractor's Personnel on his/her appearance, the other Contractor's Personnel comment that he/she is "asking for it" because of how he/she dresses.
- Unwelcome touching of a Contractor's Personnel or Employer's Personnel by another Contractor's Personnel.
- A Contractor's Personnel tells another Contractor's Personnel that he/she will get him/her a salary raise, or promotion if he/she sends him/her naked photographs of himself/herself

Forced Labor Performance Declaration⁴

[The following table shall be filled in by the Bidder, each member of a Joint Venture, each Subcontractor/ supplier/ manufacturer providing solar panels and/or solar panel components proposed by the Bidder]

Bidder's Name: *[insert full name]*

Date: *[insert day, month, year]*

Joint Venture Member's or Subcontractor's/supplier's/manufacturer's Name: *[insert full name]*

RFB No. and title: *[insert RFB number and title]*

Page *[insert page number]* of *[insert total number]* pages

Forced Labor Performance Declaration in accordance with Section III, Evaluation and Qualification Criteria

We:

☐ (a) have not been suspended or terminated, and/or other contractual remedies applied including calling of performance security by an employer, for reasons of breach of forced labor obligations in the past five years. *[if (a) is declared, state N/A for (b) below]*

☐ (b) have been suspended or terminated, and/or other contractual remedies applied including calling of performance security by an employer, for reasons of breach of forced labor obligations in the past five years. Details are provided below:

Year	Contract identification	Name of Employer	Reasons for suspension or, termination, and/or other contractual remedies applied including calling performance security
------	-------------------------	------------------	--

-	-	-	-
---	---	---	---

☐ (c) *[If (b) above is applicable, attach evidence demonstrating that adequate capacity and commitment to comply with Forced Labor obligations.]*

We declare that all the information and statements made in this Form are true, and we accept that any misrepresentation contained in this Form may lead to our disqualification by the Employer and/or sanctions by the Bank.

Name of the Bidder/ JV member/ Subcontractor/ supplier/ manufacturer _____

Name of the person duly authorized to sign on behalf of the Bidder/ JV member/ Subcontractor/ supplier/manufacturer _____

Title of the person signing on behalf of the Bidder/ JV member/ Subcontractor/ supplier/ manufacturer _____

Signature of the person named above _____

Date signed _____ day of _____, _____

Countersignature of authorized representative of the Bidder (for forms submitted by a JV member, Subcontractor/ supplier/ manufacturer):

Signature: _____

Date signed _____ day of _____, _____

⁴ Annex II uses terms such as "RFB" and "bidder". The terms should be adjusted depending on the applicable procurement process terms such as "RFP" "proposer" and "applicant".

Forced Labor Declaration⁵

Date: _____

RFB No.: _____

Alternative No.: _____

Contract Title: _____

To:

We, the undersigned, declare that, if awarded the Contract, we, including our Subcontractors and suppliers/ manufacturers, are required to comply with the contractual Forced Labor obligations. In this regard, we:

- (a) accept that there will be no Forced Labor among the staff, employees, workers and any other persons employed or engaged by us;
- (b) accept that staff, employees, workers and any other persons employed or engaged, will be hired under employment conditions that meet the contractual obligations set out in the Contract;
- (c) will include in our contracts with Subcontractors/ suppliers/ manufacturers of *[solar panels]* *[solar panel components]* obligations to prevent Forced Labor among the staff, employees, workers and any other person employed or engaged by the Subcontractor/ supplier/ manufacturer;
- (d) will include in our contracts with Subcontractors/ suppliers/ manufacturers of *[solar panels]* *[solar panel components]*, that the Subcontractors/ suppliers/ manufacturers include an obligation to prevent Forced Labor in all contracts that they execute with their suppliers/ manufacturers of *[solar panel]**[solar panel components]*;
- (e) will monitor our Subcontractors/ suppliers/ manufacturers of *[solar panels]**[solar panel components]* on implementation of obligations to prevent Forced Labor among the staff, employees, workers and any other person employed or engaged by them;
- (f) will require our Subcontractors to monitor their suppliers/ manufacturers of *[solar panels]**[solar panel components]* on implementation of obligations to prevent Forced Labor among the staff, employees, workers and any other person employed or engaged by them;
- (g) will require our Subcontractors/ suppliers/ manufacturers to immediately notify us of any incidents of Forced Labor;
- (h) will immediately notify the Employer any incident of Forced labor on the site, or premises of Subcontractors/ suppliers/ manufacturers of *[solar panels]* *[solar panel components]*;
- (i) will include in periodic progress reports submitted in accordance with the contract sufficient details on our, including our Subcontractors/ suppliers/ manufacturers , compliance with Forced Labor obligations; and we
- (j) confirm that the Subcontractors/ suppliers/ manufacturers for *[solar panels]**[solar panel components]* for this contract are (or likely to be):

[Provide each firm's name, address, primary contact, e-mail address, and the link to the firm's website]

⁵ Annex III uses terms such as "bid" and "bidder". The terms should be adjusted depending on the applicable procurement process terms such as "proposal" "proposer"

OR

confirm that you have not yet finalized the Subcontractors/ suppliers/ manufacturers of solar panels/components, but when known the firm/s name(s), address(es), primary contact(s), e-mail address(es) and web site link(s) will be provided to the Employer, prior to signing the contract, with documentation demonstrating compliance with forced labor obligations to the Employer for approval].

THEN

If (c) above is applicable, attach evidence of how these contract obligations are/will be made.

If (d) above is applicable, attach evidence of how these contract obligations are/will be made.

If (e) above is applicable, please attach evidence of how this monitoring/due diligence is/will be undertaken (such as your inspection protocols, use of inspection agents, frequency of inspections, examples of previous factory/labor inspection reports etc.).

If (f) above is applicable, please attach evidence of how this monitoring/due diligence is/will be undertaken by Subcontractors (such as their inspection protocols, use of inspection agents, frequency of inspections, examples of previous factory/labor inspection reports etc.).

We declare all the information and statements made in this Form are true, and we accept that any misrepresentation contained in this Form may lead to our disqualification by the Employer and/or sanctions by the Bank.

Name of the Bidder* _____

Name of the person duly authorized to sign the Bid on behalf of the Bidder** _____

Title of the person signing the Bid _____

Signature of the person named above _____

Date signed _____ day of _____, _____

*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

**: Person signing the Bid shall have the power of attorney given by the Bidder attached to the Bid

[Note: In case of a Joint Venture, the Forced Labor Declaration must be in the name of all members to the Joint Venture that submits the Bid.]

Plant

Personnel

Form PER -1

Contractor's Representative and other Key Personnel Schedule

Bidders should provide the names of suitably qualified personnel to meet the specified requirements stated in Section VII. The data on their experience should be supplied using the Form below for each candidate.

Contractor' Representative and Key Personnel

1.	Title of position: Contractor's Representative	
	Name of candidate:	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment: for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
2.	Title of position: [Environmental Specialist]	
	Name of candidate:	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment: for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
3.	Title of position: [Health and Safety Specialist]	
	Name of candidate:	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment: for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>

	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
4.	Title of position: [Social Specialist]	
	Name of candidate:	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment: for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
5.	Title of position: Sexual Exploitation, Abuse and Harassment Expert <i>N/A</i>	
	Name of candidate	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment: for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
6.	Title of position: [insert title]	
	Name of candidate	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment: for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
7.	Title of position: [insert title]...	

Note: Certain positions above maybe performed by other key personnel. An Environment, Social, Health and Safety Officer may be designated provided the designee possesses the required qualifications and trainings.

Form PER-2

Resume of Proposed Personnel

Name of Bidder

Position		
Personnel information	Name	Date of birth
	Professional qualifications	
Present employment	Name of Employer	
	Address of Employer	
	Telephone	Contact (manager / personnel officer)
	Fax	E-mail
	Job title	Years with present Employer

Summarize professional experience over the last 20 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

Proposed Subcontractors for Major Items of Plant and Installation Services

A list of major items of Plant and Installation Services is provided below.

The following Subcontractors and/or manufacturers are proposed for carrying out the item of the facilities indicated. Bidders are free to propose more than one for each item

Major Items of Plant and Installation Services	Proposed Subcontractors/Manufacturers	Nationality

Functional Guarantees

Form FUNC (Commissioning and Operational Acceptance Test)

The Bidder shall copy in the left column of the table below, the identification of each functional guarantee required in the Specification and stated by the Employer in para. 1.2 (c) of Section III, Evaluation and Qualification Criteria, and in the right column, provide the corresponding value for each functional guarantee of the proposed plant and equipment for each site.

Required Functional Guarantee (Bidding)	Value of Functional Guarantee of the Proposed Plant and Equipment
1. Installed Total Capacity of Solar PV Modules (as per STC rating), [kWp]*	
2. Performance Ratio [%]*	
3. Year 1 Net Energy Output [kWh]**	

* Guaranteed installed capacity of solar PV Modules and Guaranteed Performance Ratio (PR) submitted with the bid shall be used for Commissioning and Operational Acceptance of the Solar PV Plant.

**Year 1 Guaranteed Net Energy Output shall be used in the computation of Bidder's LCOE during bid evaluation and comparison with Actual Annual Net Energy Output for Year 1.

Note: To be accomplished on per lot basis.

Others - Functional Guarantees

Form FUNC (Years 1 - 25)

The Bidder shall copy in the left column of the table below, the identification of each functional guarantee required in the Specification and stated by the Employer in para. 1.2(c) of Section III, Evaluation and Qualification Criteria, and in the right column, provide the corresponding value for each functional guarantee of the proposed plant for each site.

Annual Functional Guarantees	Value of Functional Guarantee of the Proposed Plant (Performance Ratio, %)	Value of Functional Guarantee of the Proposed Plant (Net Energy Output, kWh)
1 st Year		
2 nd Year		
3 rd Year		
4 th Year		
5 th Year		
6 th Year		
7 th Year		
8 th Year		
9 th Year		
10 th Year		
11 th Year		
12 th Year		
13 th Year		
14 th Year		
15 th Year		
16 th Year		
17 th Year		
18 th Year		
19 th Year		
20 th Year		
21 st Year		
22 th Year		
23 rd Year		
24 th Year		
25 th Year		

* For validation of guaranteed linear degradation of the Solar PV Plant. Year by year degradation shall not be higher than 1/25 of 20% starting from 2nd Year. Contractor shall correct or replace components contributing to the higher degradation and appropriateness of the corrective action will be verified in the succeeding year.

Note: To be accomplished on per lot basis.

Form ELI 1.1

Bidder Information Sheet

Date: _____

ICB No.: _____

Invitation for Bid No.: _____

Page _____ of _____ pages

1. Bidder's Legal Name
2. In case of JVA, legal name of each party:
3. Bidder's actual or intended Country of Registration:
4. Bidder's Year of Registration:
5. Bidder's Legal Address in Country of Registration:
6. Bidder's Authorized Representative Information Name: Address: Telephone/Fax numbers: Email Address:
7. Attached are copies of original documents of: <input type="checkbox"/> Articles of Incorporation or Registration of firm named in 1, above, in accordance with ITB Sub-Clauses 4.1 and 4.2. <input type="checkbox"/> In case of JVA, letter of intent to form JVA including a draft agreement, or JVA agreement, in accordance with ITB Sub-Clauses 4.1 and 11.1(i). <input type="checkbox"/> In case of government owned entity from the Employer's country, documents establishing legal and financial autonomy and compliance with the principles of commercial law, in accordance with ITB Sub-Clause 4.5.

Please note that a written authorization needs to be attached to this sheet as required by ITB 21.2

Form ELI 1.2

Party to JVA Information Sheet

Date: _____
ICB No.: _____
Invitation for Bid No.: _____
Page _____ of _____ pages

1. Bidder's Legal Name:
2. JVA's Party legal name:
3. JVA's Party Country of Registration:
4. JVA's Party Year of Registration:
5. JVA's Party Legal Address in Country of Registration:
6. JVA's Party Authorized Representative Information Name: Address: Telephone/Fax numbers: Email Address:
7. Attached are copies of original documents of: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Articles of Incorporation or Registration of firm named in 1, above, in accordance with ITB Sub-Clauses 4.1 and 4.2. <input type="checkbox"/> In case of government owned entity from the Purchaser's country, documents establishing legal and financial autonomy and compliance with the principles of commercial law, in accordance with ITB Sub-Clause 4.5.

Form CON – 2

Historical Contract Non-Performance, Pending Litigation and Litigation History

In case a prequalification process was conducted this form should be used only if the information submitted at the time of prequalification requires updating

Bidder's Legal Name: _____
JVA Partner Legal Name: _____

Date: _____

ICB No.: _____
Page _____ of _____ pages

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria

- ☐ Contract non-performance did not occur since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.2.1.
- ☐ Contract(s) not performed since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1

Year	Non-performed portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and US\$ equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for nonperformance: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>

Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria

- ☐ No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.2.3.
- ☐ Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.2.3 as indicated below.

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), USD Equivalent (exchange rate)
		Contract Identification: _____ Name of Employer: _____ Address of Employer: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
		Contract Identification: _____ Name of Employer: _____ Address of Employer: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria <input type="checkbox"/> No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.2. 4. <input type="checkbox"/> Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.2.4 as indicated below.			
Year of award	Outcome as percentage of Net Worth	Contract Identification	Total Contract Amount (currency), USD Equivalent (exchange rate)
<i>[insert year]</i>	<i>[insert percentage]</i>	Contract Identification: <i>[indicate complete contract name, number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Matter in dispute: <i>[indicate main issues in dispute]</i> Party who initiated the dispute: <i>[indicate "Employer" or "Contractor"]</i> Reason(s) for Litigation and award decision <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>

Form CON – 3

Environmental and Social Performance Declaration

[The following table shall be filled in for the Bidder, each member of a Joint Venture and each Specialized Subcontractor]

Bidder's Name: *[insert full name]*

Date: *[insert day, month, year]*

Joint Venture Member's or Specialized Subcontractor's Name: *[insert full name]*

ICB No. and title: *[insert ICB number and title]*

Page *[insert page number]* of *[insert total number]* pages

Environmental and Social Performance Declaration in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No suspension or termination of contract: An employer has not suspended or terminated a contract and/or called the performance security for a contract for reasons related to Environmental or Social (ES) performance since the date specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.2.5.			
<input type="checkbox"/> Declaration of suspension or termination of contract: The following contract(s) has/have been suspended or terminated and/or Performance Security called by an employer(s) for reasons related to Environmental or Social (ES) performance since the date specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.2.5. Details are described below:			
Year	Suspended or terminated portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and US\$ equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for suspension or termination: <i>[indicate main reason(s) e.g. gender-based violence; sexual exploitation or sexual abuse breaches]</i>	<i>[insert amount]</i>
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for suspension or termination: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>
...	...	<i>[list all applicable contracts]</i>	...

Performance Security called by an employer(s) for reasons related to ES performance		
Year	Contract Identification	Total Contract Amount (current value, currency, exchange rate and US\$ equivalent)
<i>[insert year]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for calling of performance security: <i>[indicate main reason(s) e.g. for gender-based violence; sexual exploitation, or sexual abuse breaches]</i>	<i>[insert amount]</i>

Form CON – 4

Sexual Exploitation and Abuse (SEA) and/or Sexual Harassment Performance Declaration

[The following table shall be filled in by the Bidder, each member of a Joint Venture and each subcontractor proposed by the Bidder]

Bidder's Name: *[insert full name]*

Date: *[insert day, month, year]*

Joint Venture Member's or Subcontractor's Name: *[insert full name]*

ICB No. and title: *[insert ICB number and title]*

Page *[insert page number]* of *[insert total number]* pages

SEA and/or SH Declaration

in accordance with Section III, Evaluation and Qualification Criteria

We:

- | |
|--|
| <p><input type="checkbox"/> (a) have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations</p> <p><input type="checkbox"/> (b) are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations</p> <p><input type="checkbox"/> (c) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations. An arbitral award on the disqualification case has been made in our favor.</p> |
|--|

<p><i>[If (c) above is applicable, attach evidence of an arbitral award reversing the findings on the issues underlying the disqualification.]</i></p>
--

Form CCC

Current Contract Commitments / Works in Progress

Bidders and each partner to a JVA should provide information on their current commitments on all contracts 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	Employer, contact address/tel/fax	Value of outstanding work (current US\$ equivalent)	Estimated completion date	Average monthly invoicing over last six months (US\$/month)
1.				
2.				
3.				
4.				
5.				
etc.				

Form FIN – 3.1

Financial Situation

Historical Financial Performance

Bidder's Legal Name: _____

Date: _____

JVA Partner Legal Name: _____

ICB No.: _____

Page _____ of _____ pages

To be completed by the Bidder and, if JVA, by each partner

Financial information in US\$ equivalent	Historic information for previous five (5) years (US\$ equivalent in 000s)						
	Year 1	Year 2	Year 3	Year ...	Year n	Avg.	Avg. Ratio
Information from Balance Sheet							
Total Assets (TA)							
Total Liabilities (TL)							
Net Worth (NW)							
Current Assets (CA)							
Current Liabilities (CL)							
Information from Income Statement							
Total Revenue (TR)							
Profits Before Taxes (PBT)							

- ☐ Attached are copies of financial statements (balance sheets, including all related notes, and income statements) for the years required above complying with the following conditions:
 - (a) Must reflect the financial situation of the Bidder or partner to a JVA, and not sister or parent companies
 - (b) Historic financial statements must be audited by a certified accountant
 - (c) Historic financial statements must be complete, including all notes to the financial statements
 - (d) Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted)

Form FIN – 3.2
Average Annual Turnover
for previous five (5) years

Bidder's Legal Name: _____ Date: _____
JVA Partner Legal Name: _____ ICB No.: _____
Page _____ of _____ pages

Annual turnover data (construction only)		
Year	Amount and Currency	US\$ equivalent
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
*Average Annual Construction Turnover	_____	_____

*Average Annual Turnover calculated as total certified payments received for work in progress or completed for any two (2) years with highest turnover, divided by 2 as specified in Section III, Evaluation Criteria, Sub-Factor 2.3.2.

Form FIN 3.3
Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section III, Evaluation and Qualification Criteria

Source of financing	Amount (US\$ equivalent)
1.	
2.	
3.	
4.	

Form EXP 2.4.1

Experience - General Experience

Bidder's Legal Name: _____ Date: _____
JVA Partner Legal Name: _____ ICB No.: _____
Page _____ of _____ pages

Starting Month / Year	Ending Month / Year	Years *	Contract Identification	Role of Bidder
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____

*List calendar year for years with contracts with at least nine (9) months activity per year starting with the earliest year

Form EXP – 2.4.2(a)
Specific Experience

Bidder's Legal Name: _____

Date: _____

JVA Partner Legal Name: _____

ICB No.: _____

Page _____ of _____ pages

Similar Contract Number: ____ of ____ required.	Information		
Contract Identification	_____		
Award date	_____		
Completion date	_____		
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor
Total contract amount	_____		US\$ _____
	_____		_____
If partner in a JVA or subcontractor, specify participation of total contract amount	_____ %	_____	US\$ _____
Employer's Name:	_____		
Address:	_____		

Telephone/fax number:	_____		
E-mail:	_____		

Form EXP – 2.4.2(a) (cont.)
Specific Experience (cont.)

Bidder's Legal Name: _____ Page _____ of _____ pages
JVA Partner Legal Name: _____

Similar Contract No. __[insert specific number] of [total number of contracts] required	Information
Description of the similarity in accordance with Sub-Factor 2.4.2a) of Section III:	
Amount	_____
Physical size	_____
Complexity	_____
Methods/Technology	_____
Physical Production Rate	_____

Form EXP – 2.4.2(b)

Specific Experience in Key Activities

Bidder's Legal Name: _____

Date: _____

JVA Partner Legal Name: _____

ICB No.: _____

Subcontractor's Legal Name: _____

Page _____ of _____ pages

	Information		
Contract Identification	_____		
Award date	_____		
Completion date	_____		
Role in Contract	<div><input type="checkbox"/> Contractor</div>	<div><input type="checkbox"/> Management Contractor</div>	<div><input type="checkbox"/> Subcontractor</div>
Total contract amount	_____		US\$ _____
If partner in a JVA or subcontractor, specify participation of total contract amount	_____ %	_____	US\$ _____
Employer's Name:	_____		
Address:	_____ _____ _____		
Telephone/fax number:	_____ _____		
E-mail:	_____ _____		

Form EXP – 2.4.2 (b)(cont.)

Specific Experience in Key Activities (cont.)

Bidder's Legal Name: _____ Page _____ of _____ pages

JVA Partner Legal Name: _____

Subcontractor's Legal Name: _____

	Information
Description of the key activities in accordance with Sub-Factor 2.4.2(b) of Section III:	

Form EXP –2.4.2(c)
Specific Experience in Managing ES aspects

Bidder's Legal Name: _____ Date: _____

JV Member Legal Name: _____ RFB No.: _____

Subcontractor's Legal Name: _____ Page _____ of _____ pages

1. Key Requirement no 1 in accordance with 2.4.2 (c): ____

Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Subcontractor <input type="checkbox"/>
Total Contract Amount			US\$	
Details of relevant experience				

2. Key Requirement no 2 in accordance with 2.4.2 (c): _____

3. Key Requirement no 3 in accordance with 2.4.2 (c): _____

Form of Bid-Securing Declaration

Date: _____

Bid No.: _____

Alternative No.: _____

To: _____

We, the undersigned, declare that:

We understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the Borrower for the period of time of one (1) year, starting on bid opening date, if we are in breach of our obligation(s) under the bid conditions, because we:

- (a) have withdrawn our Bid during the period of bid validity specified in the Letter of Bid; or
- (b) having been notified of the acceptance of our Bid by the Employer during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB.

We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Signed: _____

In the capacity of _____

Name: _____

Duly authorized to sign the bid for and on behalf of: _____

Dated on _____ day of _____, _____

Corporate Seal (where appropriate)

Manufacturer's Authorization

Date: _____
ICB No.: _____

To: _____

WHEREAS

We _____, who are official manufacturers of _____, having factories at _____, do hereby authorize _____ to submit a bid the purpose of which is to provide the following goods, manufactured by us _____, and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 27 of the General Conditions of Contract, with respect to the goods offered by the above firm.

Signed: _____

Name: _____

Title: _____

Duly authorized to sign this Authorization on behalf of:

Dated on _____ day of _____, _____

Section V. Eligible Countries

Eligibility for the Provision of Goods, Works and Non-Consulting Services in Bank-Financed Procurement

In reference to ITB 4.8 and 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this Bidding process:

Under ITB 4.8 (a) and 5.1: None

Under ITB 4.8 (b) and 5.1: None

Section VI. Bank Policy - Corrupt and Fraudulent Practices

(Section VI shall not be modified)

Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011.

“Fraud and Corruption:

1.16 It is the Bank’s policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts.⁶ In pursuance of this policy, the Bank:

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

- (i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;⁷
- (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;⁸
- (iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;⁹
- (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;¹⁰
- (v) “obstructive practice” is:

⁶ In this context, any action to influence the procurement process or contract execution for undue advantage is improper.

⁷ For the purpose of this sub-paragraph, “*another party*” refers to a public official acting in relation to the procurement process or contract execution. In this context, “*public official*” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

⁸ For the purpose of this sub-paragraph, “*party*” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

⁹ For the purpose of this sub-paragraph, “*parties*” refers to participants in the procurement process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish bid prices at artificial, non-competitive levels, or are privy to each other’s bid prices or other conditions.

¹⁰ For the purpose of this sub-paragraph, “*party*” refers to a participant in the procurement process or contract execution.

-
- (aa) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
 - (bb) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under paragraph 1.16(e) below.
 - (b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
 - (c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
 - (d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank's sanctions procedures,¹¹ including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated¹² sub-contractor, consultant, supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract;
 - (e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank."

¹¹ A firm or individual may be declared ineligible to be awarded a Bank financed contract upon: (i) completion of the Bank's sanctions proceedings as per its sanctions procedures, including, inter alia, cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks, and through the application the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption; and (ii) as a result of temporary suspension or early temporary suspension in connection with an ongoing sanctions proceeding. See footnote 14 and paragraph 8 of Appendix 1 of these Guidelines.

¹² A nominated sub-contractor, consultant, manufacturer or supplier, or service provider (different names are used depending on the particular bidding document) is one which has either been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

PART 2 – Employer’s Requirements

Section VII. Employer's Requirements

Contents

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SCOPE OF SUPPLY OF PLANT AND INSTALLATION SERVICES BY CONTRACTOR

1.0 GENERAL

1.1 PROJECT OVERVIEW

The National Power Corporation (NPC), a Government Owned and Controlled Corporation (GOCC) of the Republic of the Philippines mandated to provide electricity to all rural areas of the Philippines by 2025 (known as "Missionary Electrification"), to manage water resources for power generation, and to optimize the use of other power generating assets.

NPC with funding from the European Union (EU) managed by the World Bank intends to develop seven (7) separate Solar PV Farms, totalling 7.0 MWp at 7 different Electrical Cooperatives (EC) under the Rural Network Solar (RNS) component of the EU's Access to Sustainable Energy Programme (ASEP). The commercial operation date of Solar Farms for generation shall be no later than September 30, 2021, as practicable.

ECs are non-stock, non-profit cooperatives engaged in the supply and distribution of electricity. It is owned by its Member-Consumers (MCs) and regulated by the Energy Regulatory Commission (ERC), with National Electricity Administration (NEA) providing additional performance oversight and support. The EC operates as the sole distribution utility within its franchise area and is responsible for ensuring the electrification of all its constituents.

For this bidding, concerned electric cooperatives shall provide a minimum of 1.2 ha. area for development of their respective PV Solar Farm.

The Bids and Awards Committee (BAC) of the NPC, invites techno-commercial bids from turnkey engineering, procurement and construction (EPC) contractors for implementation of 37 x 1.0 MWp Solar Farms for Luzon, Visayas and Mindanao Electric Cooperatives under the Rural Network Solar (RNS) component of ASEP.

1.2 SITE OVERVIEW

The Bidders are encouraged to access the site conditions on their own to establish sufficient and accurate information for the design of the PV plant. The site visit aims to ascertain land profile, shading attributes, soil quality, logistics, access to site and interconnection point and other resources as required for bidding. Bidders opting to visit the sites shall advise the Employer immediately after the Pre-Bid meeting. Representatives making site visits shall bring authorization letter from authorized official from the prospective bidder.

For information by prospective bidders, some details and specific features of each site made available by the Electric Cooperative for the construction of the 7 x 1.0 MWp Solar PV Plant are attached as:

-
- Site Detail No. 1 - Ilocos Norte Electric Cooperative (Lot 1)
 - Site Detail No. 2 - Pangasinan Electric Cooperative I (Lot 2)
 - Site Detail No. 3 - Benguet Electric Cooperative (Lot 3)
 - Site Detail No. 4 - Samar Electric Cooperative I (Lot 4)
 - Site Detail No. 5 - Samar Electric Cooperative II (Lot 5)
 - Site Detail No. 6 - South Cotabato Norte Electric Cooperative II (Lot 6)
 - Site Detail No. 7 – Sultan Kudarat Electric Cooperative (Lot 7)

The Bidder shall make its own assessment of any and all of the information provided in this bidding document and collect on their own other information at the site. Neither Employer, nor any governmental institutions or the entity nor any representative or advisors to the government is responsible for the accuracy and completeness of such information within this bidding document.

1.3 OBLIGATIONS OF THE CONTRACTOR, EMPLOYER AND ELECTRIC COOPERATIVE

The obligations of the EPC Contractor, Employer and Electric Cooperative under the Bidding Documents are as follows:

1.3.1 Employer's Basic Obligations

The Employer shall fulfil the following obligations:

- Ensure that the EC makes available land of the required area for solar development and undertakes initial clearing and fencing thereof before construction of the solar PV Plant by the EPC Contractor commences.
- Ensure that the basic single line diagram for the power evacuation facility is made available by the distribution utility. However, it is encouraged that the bidder directly request such single line diagram during its visit to the site.
- Appoint a representative from NPC to communicate and cooperate regularly with the EPC Contractor and the EC.
- Designate quality assurance personnel to witness tests on the all necessary plant equipment prior to the supply/procurement as mentioned in this agreement.
- Assign Project Manager/Independent Technical Consultant for reviewing project designs, detailed engineering, drawings, equipment specifications and all project management documents provided by contractor as well as the administration of the contract.
- Assure that the construction of the required 3-phase distribution line or upgrade of existing 1-phase distribution line, whichever is applicable, that will interconnect the solar PV plant to the nearest tapping point of the distribution utility is delivered on time.
- Maintain cash flow of the project and make payments to the contractor after satisfactory completion of its obligations as specified in this document.

-
- Monitor EPC's and EC's performance in their compliance with the Environmental and Social Management Plan (ESMP), Occupational Health and Safety Programs (OHSP), and Environment Code of Practices (ECOP).
 - Participate in the testing and commissioning including Operational Test Acceptance of the solar PV plant prior to hand-over to the EC for warranty implementation.

1.3.2 Electric Cooperative's Basic Obligations

The Electric Cooperative (EC) shall fulfill the following obligations:

- Provide the single line diagram for the power evacuation facility of distribution utility.
- Acquire or make available the site of the required size for the development of the solar PV and undertake initial clearing and fencing thereof.
- Provide access road to the site from the main road.
- Hand-over the acquired land of solar PV project ready in all respects for development to the selected turnkey EPC contractor along with onsite marking of boundaries.
- Undertake construction of the required 3-phase distribution line or upgrade of existing 1-phase distribution line, whichever is applicable, that will interconnect the solar PV plant to the nearest tapping point of the distribution utility.
- Appoint an EC representative to communicate and cooperate regularly with the EPC Contractor and the Employer or their representatives.
- Bear all statutory fees and undertake responsibility to obtain and maintain permits, clearances and authorization requirements for clearing and fencing of the site as well as interconnecting the solar PV plant to its distribution system.
- Prepare the Environmental and Social Management Plan (ESMP) for activities not covered by the bid contract, such as those pertaining to pre and post construction activities. EC shall ensure EC's and EPC's compliance with the ESMP, Construction Occupational Health and Safety Program (COHSP), and Solar Safety, Health and Environment Code of Practice (ECOP), conduct corrective measures, and submit a quarterly compliance/performance report to the Employer.
- Submit a Declaration of Commerciality of the Project to the Department of Energy for the latter's issuance of Certificate of Confirmation of Commerciality (COCOC) which will pave the way for the construction of the Solar Power Project.
- Ensure the training and qualification of its personnel to operate and maintain the solar PV plant prior to the commissioning of the facility
- Participate in the test and commissioning including acceptance and handover of the Solar PV Plant from Contractor and/or NPC after satisfactory completion of its operational acceptance tests.

1.3.3 Turnkey EPC Contractor's Basic Obligations

For each site, the turnkey EPC Contractor shall have but not limited to the following obligations:

- Adherence to the requirements stipulated in all sections of this document including its appendices.
- Conduct resource assessment and predict energy yields clearly specifying losses and degradation over project lifecycle. The Electric Cooperative shall closely monitor these losses and degradation which are linked to project performance and warranties. Bidders are expected to complete the Project Characteristics presented in Appendix I and Appendix II outlining their guaranteed performance ratios and energy yields at the MV transformer (High Side).
- Ensure that the engineering, design, construction, testing, etc. of all plant components, including all auxiliary facilities and systems, are in accordance with the latest editions of internationally recognized standards and codes as well as the national standards of the Republic of the Philippines including local (barangay/municipality/city/provincial) codes at the project area. The latest editions of the standards, codes and recommendations and directives including the national annexes issued by the following organizations (but not limited to) shall apply to the design, construction, testing and commissioning of the Project.
 - **IEC** International Electrotechnical Commission
 - **EC and EN** European Standards
 - All Applicable **National and Local Codes/Standards** applicable to the project area
- The list of specific international standards applicable for each component of the Solar PV Plant is provided in Section 6.0 and Components Specification below. In case of conflict or discrepancy between the local and the international standards and codes, the most restricting condition should be considered by the bidder.
- Ensure that the solar PV plant is designed, manufactured, erected and configured in such a way that it will achieve high life expectancy, high availability and reliability with minimum power generation costs.
- Ensure that manufacturers shall manufacture new equipment, which shall be subject to the Employer's review and approval. No used, reconditioned or salvaged equipment or material will be allowed. All equipment used in connection with the Project shall be of proven design for the intended use of the equipment. As a general principle, the latest, commercially proven, most modern and up-to-date technologies will be selected with the objective of maximizing value to the Employer
- Ensure that all parts of the solar PV plant shall be suitable in every respect for continuous operation at maximum efficiency as well as part loads and minimum load, in consideration of the climatic conditions peculiar to the site and environmental restrictions. The EPC Contractor shall also design the PV plant including all structures and facilities in such a way that they withstand extreme weather conditions according to the latest version of any existing national codes and those specific to the project area. Each solar PV plant equipment or component shall be designed to withstand the design ambient conditions as stated in the document.

-
- Include in the scope of the turnkey contract everything required for the successful implementation, commissioning and operation of the Plant. No variation shall be entertained on the account of the Employer. The minimum life expectancy of the Plant is 25 years.
 - Perform the works considering strict adherence to technical documents and drawings approved by the Employer as well as requirements established by applicable technical regulations.
 - Perform all works in accordance with the solar/renewable energy policies of the Republic of the Philippines and other related national and local codes including project requirements of the Employer.
 - Follow strictly the start-up and functional requirements of the project as presented in this document. This shall essentially include all the material and construction equipment supply, implementation, testing and commissioning of the relevant systems as required for successful completion, commissioning of the plant.
 - Undertake a full Training Plan Program for the EC as part of handover requirements to ensure the safe and functional operation of the Solar PV Plant by the EC.
 - Prepare and implement a Contractor's ESMP (CESMP) based on ECOP. The CESMP shall contain strategies and plans to manage environmental and social risks and shall detail the practical implementation of mitigation measures identified in the ECOP. The CESMP shall be reviewed by the Employer prior to start of construction.
 - Comply with ~~all~~ applicable laws, regulations, guidelines and standards pertaining to environmental, health and safety, indigenous peoples, gender equality, and sexual exploitation, harassment and abuse.
 - Implement the Construction Occupational Health and Safety Program (COHSP) to be prepared by the EPC Contractor in accordance with DOLE prescribed format. The COHSP should be approved by DOLE prior to start of construction. The Contractor shall also prepare and submit to the Employer prior to start of construction a Health and Safety Manual which contains policies, procedures and measures to establish and maintain a safe working environment without risk to safety and health at all workplaces.
 - Submit to the EC a quarterly report on its implementation of the CESMP and COHSP, and compliance with the ECOP.

The specific responsibilities of the Employer, Electric Cooperative and EPC Contractor (but not limited to) for each site are further presented in Appendix V for clarity of the delineation of responsibilities.

1.4 PERMITS, LICENSES AND CONSENTS

It is the responsibility of the Electrical Cooperative (EC) and National Power Corporation (NPC) to identify, obtain, complete and maintain any permits and any other consents, licenses and approvals that are required for the clearing and fencing of the site of the solar PV plant, obtaining the Certificate of Confirmation of Commerciality (COCOC) from the DOE and for the eventual operation of the Plant. On the other hand, it is the EPC Contractor's sole responsibility to obtain, complete, and maintain any other permits and other consents, licenses and approvals that are required for the pre-construction activities of the EPC contractor as well as during the construction

phases of the Solar PV plant as per all applicable codes and standards. The EPC Contractor shall ensure compliance with the conditions of these permits and be liable for any violations or penalties arising from its activities. We therefore encourage the bidders to inquire from the concerned LGUs the specific requirements for the pre-construction requirements and the construction of the Plant during its site visit. However, the EC is required to assist the EPC Contractor in securing construction permits and appropriate LGU approvals. The timeline required to conduct all necessary associated studies or checks on the site must be included into each Bidder's work plan.

1.5 CONTRACTOR'S ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (CESMP) AND CONSTRUCTION OCCUPATIONAL HEALTH AND SAFETY PROGRAM (COHSP)

The CESMP and COHSP shall be prepared by the Contractor based on the ECOP standard requirements in Section 7.0. The CESMP should be reviewed by the Employer while the COHSP shall be approved by DOLE, prior to commencement of works at the site.

1.6 OTHER REQUIREMENTS

Site services as required for the construction and commissioning of the Solar PV Plant such as electricity supply, potable water, fuel supply, telecommunication, etc. shall be for EPC contractor's account.

1.6.1 Construction Power: There is power supply available adjacent to the site. Contractor is required to make its own arrangement for sourcing construction power in cooperation with the EC or via onsite portable generators. Employer or EC shall not be liable for any charges on power consumption and sourcing thereof shall be the responsibility of the EPC contractor.

1.6.2 Construction Water: Water required for construction may be sourced from onsite bore wells, municipality connection or water tankers. Employer or EC shall not be liable for any charges on water consumption and sourcing thereof shall be the responsibility of the EPC contractor.

2.0 DESIGN CONSIDERATIONS

2.1 PV PLANT

In view of site conditions, Employer has selected crystalline silicon technology for the project. The total installed capacity of the PV plant at each site is 1.0 MWp as per the STC rating of the PV modules.

Each 1.0 MWp Solar Farm shall be fixed ground-mounted, configured into multiple modular plots with inverter power range of 20-75 kW String Inverters. Unit size of MV transformer shall not be more than 1.25 MVA.

MV transformers stepping up voltage to 23 kV for BENECO and 13.2 kV for the other electric cooperatives including augmentation to the interconnection point at the project site is within the

scope of EPC. However, locating the interconnection point from the nearest distribution line tapping point to the project site is the responsibility of the EC.

2.2 ELECTRICAL CHARACTERISTICS

DC System: This shall essentially be applicable from Solar PV modules up to the Inverter. The operating voltage of inverters shall depend on the MPPT range.

LV System: AC Low Voltage System post inverter shall match inverter specifications which shall have a 3-phase 440 V power output at a nominal frequency of 60Hz.

MV System: AC Medium and High Voltage shall be interpreted as 23 kV for BENECO Lot and 13.2 kV for the other electric cooperatives. Internal AC grid networks within the site and the power evacuation to the EC grid interconnection shall be consistent with said voltage levels.

Climatic Conditions: There has been no onsite weather monitoring done, desktop assessment indicates following conditions shall be considered by Bidders for the project component selection and system designs:

- Ambient temperature: All equipment shall be designed for 30°C ambient.
- Open storage temperature: up to 48°C.
- Humidity: : up to 99 RH%
- Sustained maximum wind speed: 50 m/s
- Wind gust speed: 60 m/s (1hr. average)
- Solar irradiation: Annual GHI of 1650 kWh/m²

The meteorological input data set for the simulation with **PVsyst** is mandatory to be used so that all Bidders base their yield forecasts on the same irradiation and temperature values.

2.3 MATERIAL PROPERTIES

- Materials selected by the Bidder shall be proven adequate and sufficient for the complete term of the Project.
- The Bidder shall carefully consider all corrosion and erosion possibilities to the environment of the Site and nearby facilities.
- All non-metallic materials in contact with water shall be proven, tested and certified as suitable for its purpose.
- Metallic and non-metallic materials shall be UV resistant and stand high temperature operation regimes over the whole Plant lifetime; and
- Where materials are specified in any part of the Employer's Requirements, those materials are to be considered as minimum requirement.

2.3.1 Corrosion Protection

The Bidder shall be aware of and shall take into account the corrosion problems that may be encountered at the site due weather conditions in the locality, especially on equipment installed outdoors.

This shall include the correct choice of materials but not limited to any fasteners, bolts, dowels, anchors. Also, contact corrosion and electrochemical corrosion shall be avoided by selecting only suitable materials for coatings or galvanization.

The measures for corrosion protection shall be proven adequate to protect Plant components throughout their expected life.

2.3.2 Reinforced Concrete

For a suitable concrete design, it is recommended that reference should be made to National Code and/or the used standards for the verification of the structural design.

Prior to detail engineering, the successful Bidder is required to describe his concrete specifications and proposed method of concrete production and placement considering the local conditions. The quality control system on site to guarantee the quality, quantity and dimension shall be described. Concrete surfaces subject to subsequent coating or painting shall be built and cured suitably.

Horizontal surfaces exposed to exterior environment shall be designed with a slope to improve the drainage of rainwater.

2.3.3 Steel Structures

Steelwork shall be designed to acceptable international and national standards and shall be fit for the purpose in each case to avoid corrosion, which might reduce the technical lifetime of the steelwork.

Applicability of selected materials for structural steel works is subject to the design review process during detailed design stage.

For the main metal and steel structures in the area of the PV plant adequate hot-dip galvanized coating will be accepted. Galleries, handrails, cable trays, ladders and other miscellaneous steelwork are accepted to be hot-dipped galvanized.

The minimum required thickness of zinc coating for hot-dip galvanized steel elements depends on the thickness of the element. The minimum coating shall be specified during detailed design for a minimum lifetime of 25 years in use, in any case minimum 80 µm are required.

The embedded items (anchor bolts, fixing elements etc.) for outside and inside conditions subject to corrosive climate and chemical attack, etc. shall be of galvanized steel or as required. The embedded items for inside conditions (no corrosive climate) shall be galvanized and shall be adequately painted in addition.

2.3.4 Insulation

Thermal and acoustic insulation of buildings, structures and equipment shall be provided as appropriate to conserve energy and to minimize the noise impact, provide personnel protection, provide protection against freeze or overheating, prevent excessive air conditioning, prevent condensation, prevent fire or smoke spreading and attenuate noise.

2.3.5 Water Proofing

The Bidder shall suitably take care for water proofing as per applicable codes and standards. The same shall be true for damp proofing or vapor proofing where required.

Where necessary, the above mentioned shall be considered for underground structures or foundations.

Where oil-proof coatings or coatings to preserve from contamination of the ground water are required, the Bidder shall provide suitable coating systems. Included shall be the documentation of each of the products for inspection and repair works at a later point of time.

2.3.6 Redundancy Concept

The following requirements with regard to redundancy design are generally to be taken into account:

- Any system that can cause a complete outage by failure of one (1) component shall be designed with redundant equipment for high reliability, ease of maintenance, and quick system backup support.
- If a failure in an instrument or in a control component can directly or indirectly cause failure of the whole system, this component should be provided with redundancy; and
- The trip or outage of any single equipment or any single piece of auxiliary equipment shall not affect the operation of the remaining, i.e. priority shall be given to stability of the electrical grid system. The impact of the failure on the Plant shall be minimal and shall not lead to total loss of Plant power output.

2.4 PROJECT START-UP AND FUNCTIONAL REQUIREMENTS

The start-up and functional requirements shall essentially meet all the design, supply, installation, testing and commissioning requirements to complete the job.

Following are the non-exhaustive requirements that shall be offered by bidders.

2.4.1 Engineering Design

The Bidder shall develop the PV plant's basic and detail engineering design in compliance with the specifications provided in this bid document, all international/national/local codes and standards, the ECOP, CESMP, OHSPs and NPC requirements following best industry practices. The Bidder shall prepare the project's documentation that shall include among others, the design,

preparation and delivery of engineering documents, guaranteed data, essential diagrams, general arrangements, design criteria and main equipment specifications.

The design of the equipment and systems of the solar PV plant shall be based on achieving the guarantees as described in Clause 3; Functional Guarantees, Appendix 8 of Section IX: Contract Forms of this bidding document. The Bidder shall apply for and be responsible for successfully passing all required approvals and certificates of the authorities, the government and the related authorized institutions in relation to the engineering design & construction.

2.4.2 Site Preparation/Preparatory Works

Bidders shall undertake geotechnical investigations and submits reports required for design purposes or for any approvals/permits/certification required by national or local codes at the project area. Bidders are therefore encouraged to understand the site conditions and local codes' requirements with a visit to project site before submitting their bids to determine the level of surveying and site preparation/development required.

While the EC will undertake initial site clearing, site preparation/development by EPC Contractor shall include all other necessary works as required for installation of a utility scale Solar Farm as per international & national best practices. This shall essentially include but not be limited to:

2.4.2.1 Meteorological data: Irrespective of the climatic conditions stated in this bid document, the Bidders shall collect, review the meteorological data for its intended use. The Bidders shall also establish weather station as stated in the Section 3.3. Weather Stations under this bid document shall be used to collect the data for conducting annual performance test.

2.4.2.2 Flooding: Bidders shall be responsible for the conduct of study for flooding risk and produce an appropriate solution to mitigate the risk, if present.

2.4.2.3 Earthworks: Following the site visit prior to bidding and based on previous experience, Bidders are expected to estimate the volume of earthwork. While the EC shall be responsible for initial site clearing, the Site may require further works which the EPC contractor shall consider; such as:

- Leveling of land with excavation and back filling of soil.
- Movement of soil for leveling within the site or by bringing soil from outside.
- Grading the soil, this may be cleared subsequent to topographical survey.
- Construction of culverts on cross flow, if required.
- Compaction of minimum 98% shall be required for finish.
- Rock blasting.
- Conduction of drainage studies including retention basins and discharge options.

2.4.2.4 Roads and Pathways: As a part of site preparation, all roads (if required) shall be designed and constructed to allow smooth onsite transportation and delivery of all project components to the installation location and heavy equipment to their respective work locations.

All roads shall be built in accordance with local codes applicable to the project area. At all cable crossings, Hume pipes of appropriate sizes shall be embedded within the road.

Roads shall be constructed above existing ground level with required cutting of soil, grading to the given slopes, backfilling and due compaction. All internal roads, including pathways between rows of PV modules for cleaning shall be Water Bound Macadam (WBM) type as per relevant national and local standards with minimum depth of 250mm. Minimum width of main approach road and internal roads shall be 4.5m and 3m respectively. Drainage channels shall be constructed alongside roads.

2.4.2.5 Site Office and Materials Storage: Employer or EC shall not be liable for any onsite infrastructure. EPC contractors shall have their own onsite project management office and site warehouse for material storage with required security. During the site visit, the EPC may discuss with the EC options to utilize their warehousing facilities, if the EC is willing or able to assist the EPC contractor. For maintaining the hygiene, EPC contractor shall have adequate mobile toilets at multiple locations within the site. The minimum requirement for sanitation would be one (1) portable toilet and urinal for every forty (40) construction workers. The EPC Contractor shall ensure that wastewater and sludge from the portable toilets are disposed by a firm accredited by the Department of Health in accordance with waste management laws and regulations.

2.4.2.6 Clearing of the Site: Initial clearing of the Site, as required, shall not be part of the scope of works of the Bidder. The EC shall undertake this in coordination with the EPC Contractor, and shall include but not be limited to:

- Clearing works, cutting of trees and plants as required;
- Demolishing of existing foundations, platforms, buildings, trenches and related works as required including the correct disposal of the debris;
- Any removal or relocation of existing distribution lines that are required is the responsibility of the EC.

The existing vegetation may only be removed as far as required for the structures and buildings to avoid excessive erosion and loss of soil in flat areas and in slopes.

Further grading or site drainage works may need to be undertaken by the EPC contractor following the initial clearing of the site by the EC.

2.4.2.7 Fencing: The Electric Cooperative shall construct the permanent perimeter fencing for entire solar PV plant prior to commencement of construction by the EPC Contractor. The EPC Contractor shall only include a fencing layout in their technical proposal that the EC may utilize for putting-up the fence.

The Solar Farm including array yard and control room shall be fenced with chain-link and barbed wire on Y steel posts above chain-link fence with a minimum height of 2.5 meter above the ground and spacing 2.5 meter between adjacent posts. Diagonals shall be stretched between adjacent poles. Fencing shall be provided with main entrance gates at one location with single leaf sliding doors. A wicket gate adjacent to the main entrance shall be provided for ease of movement.

2.4.3 Weather Station

EPC contractor shall provide a weather station at the site to provide adequate meteorological data to evaluate system performance. The Station shall essentially include sensors but not be limited to monitoring of global irradiation on tilted plain, ambient bulb temperatures and multiple representative PV array temperatures, wind speed and direction, and the global horizontal and plane-of-array solar radiation measurements mentioned. Optional measurements could include rainfall and redundant solar radiation and temperature sensors. The measurements should be sampled at least every 5 seconds, and averaged over 5, 10 or 15 minute intervals for data storage. These weather station data shall be merged with and in a consistent time format to the PV system performance data. The weather sensors may be measured by an overall data acquisition system (DAS) that also records PV system parameters measured by inverters and output to the DAS.

Weather station along with data logger shall be located at strategic point and shall be capable of collecting the data points and sample frequency. The weather Station shall have capability of recording and storing environmental data without AC power for five (5) days.

2.4.4 Security System

The entire PV plant and control room shall be monitored by CCTV (Close Circuit TV) system. The entire PV plant area shall have two (2) external PTZ (pan, tilt and zoom) type camera with night vision at strategic locations to maximise video coverage. Internal cameras in other areas can be of dome type, minimum requirement of one (1) for internal locations. The CCTV System should have option to provide an online display of video images (but due to poor internet connectivity at site, is not required to be live operational on commissioning but should be tested) and record onto a separate digital video recorder (DVR) that is located in the control room. All controls that are required for panning, tilting, zooming and for replay of events in video formats shall be done from a desktop computer using separate Digital Video Manager Software.

DVR shall support video motion detection (VMD) type of recording so that recording of unwanted data can be avoided there by increasing the backup duration and disk storage capacity. The DVR shall be capable of holding the backup of all the cameras for at least three (3) months.

2.4.5 Inter-Row Spacing for PV Mounting Structures

The PV panels shall be fix mounted. Tilting angle shall be optimized by the EPC contractor.

In addition to optimizing the inter-row pitch for minimum shading, inter-row spacing of 1.5 m (minimum) width shall be maintained for cleaning of modules. Although this will depend on the strategy adopted for module cleaning and optimizing the inter-row space for minimum shading, the calculation for maximum inter-row shadow losses shall be as simulated using PVsyst. PV array shall not be shaded by front south array.

2.4.6 Lightning Protection System

The entire PV plant area including all buildings will be protected from lightning. The protection system will be based on early streamer emission lightning conductor air terminals. The air terminals shall provide an umbrella protection against direct lightning strike covering a radial distance of maximum 60 m. The air terminal will be capable of handling multiple strikes of lightning current and should be maintenance-free after installation. Essentially the Lightning Protection System equipment shall be installed in accordance with IEC 62305.

The earthing stations for the lightning discharges shall be provided with test links of phosphorus bronze and located at 150 mm above ground level in an easily accessible position for testing.

2.4.7 External Lighting System

All the main approach and internal roads (excluding array spacing pathways) shall be lit with external lighting system strategizing site security and maintenance requirements; utmost care should be taken for avoiding any shading effect due to the poles. The light fittings shall be highly efficient having longer life. LED-based system shall be used.

The contractor shall provide and install all equipment necessary for interconnection to the “auxiliary power supply” required by lighting equipment and other loads. The EC shall provide the auxiliary power at the interconnection point via 15 kVA step-down transformer.

Minimum of 10 lux shall be maintained around the periphery of modular unit control rooms and 4-6 lux at the main roads approaching modular unit control rooms.

2.4.8 Water Supply and Drainage System

The Solar Farms shall have independent water tanks at minimum of two (2) strategic locations with total minimum capacity of 10,000 litres per site.

Water source for these tanks shall be either local municipality water utility or/and bore wells. Deep wells, if to be constructed, shall be designed in accordance with applicable codes and standards. Where water utility or bore wells are not possible due to accessibility to water sources; either due to right-of-way issues or lack of water table at site, the contractor may utilize trucking service. If water source is only by tanks, the contractor shall provide an additional water tank (gravity-fed) dedicated to the control room as back up to the electrical pumping system for control room facilities. All the water supply system shall be complete with adequately sized electrical pumps and a standby for each type.

Water supply system shall include all the pipes, valves and plumbing works as required to complete the system.

For PANELCO-I & BENECO only: Solar Farm shall have a minimum of 2 toilets (one designated male, one designated female) attached to the control room. These shall have ~~its~~ a common septic tank water supply connection and required water storage tank with all piping and plumbing works.

Bidders are expected to study the site and if necessary, undertake geo-technical studies and plan the surface drains accordingly and follow all standards and codes relevant to the project area. Utmost care shall be taken to maintain slopes and to prevent water clogging at the site. Proper water drain channels with RCC Hume pipe culverts shall be designed, wherever necessary. Drainage should be included to evacuate the water draining from the surface of solar PV modules away from the project site. The water drains shall have an outlet at a suitable location on the plot periphery to connect with the water drainage network. To preclude any adverse impact of water evacuation to adjacent areas outside the site, the Contractor shall closely coordinate with the Electric Cooperative on such suitable location.

2.4.9 Fire Fighting Equipment

The Solar Farm shall be equipped with suitable fire protection and fighting systems for entire PV array area, all control rooms and switchyard as per the Bureau of Fire Protection (BFP) fire safety standards and local fire authority requirements of the project area. Firefighting of transformers and other electrical equipment as required shall be in accordance to the Fire Code of the Philippines and any relevant codes to the project area. In addition to any existing codes to be adhered to, the following minimum firefighting equipment shall be provided as a minimum:

2.4.9.1 Fire Extinguishers: Portable type fire extinguishers shall be provided as means of effectively and immediately dealing with fire caused from oils, solvents, gases, paints, varnishes, electrical wiring and all flammable liquids and gases. System shall comply with required insurance norms. Following type of portable fire extinguishers shall be provided in the PV array area & main control room.

- DCP type fire extinguisher 10 kg capacity.
- CO2 operated hand portable extinguisher 9 kg Capacity.
- Foam type hand portable extinguisher 9 kg capacity.
- Additionally, two 75 litres, CO2 operated, trolley mounted fire extinguishers having a minimum jet range of 8m shall be provided. These shall be placed in the control room.

All the fire extinguisher shall be subjected to anticorrosive treatment and shall be painted and marked as per requirement of relevant standards.

2.4.9.2 Fire Buckets: Fire buckets shall be provided in all modular unit control rooms with fine sand and fixed on an angle iron frame or as per requirement of local authorities. Fire buckets shall be painted red with additional handle at the bottom.

2.4.10 Energy Meters

There will be redundant bi-directional energy meters for production and consumption loads. The revenue meters will be located at the interconnection point whereas the operational meters will be located at the control room of the Solar PV Plant.

2.4.11 Instrumentation & Control (I&C) Requirements

2.4.11.1 I&C Scope of Work

The scope of supply for each site shall include, but not be limited to, the following systems and components:

- Primary sensors, transmitters, actuators;
- Local and remote PV Plant Control and Monitoring System (DCS- Digital Control System)/Supervisory Control and Data Acquisition (SCADA) for the PV Plant, including all necessary software licenses for the life of the PV plant.
- SCADA Human Machine Interface (HMI) with at least two (2) operator stations, one (1) on them combined operator/ engineering station (each with two (2) LED screens, at least 21 inch) to supervise all systems from the PV Control Room and one (1) at the EC's main office connected via internet;
- RAID Station (Redundant Arrays of Inexpensive Disks) for Long Term Data Server;
- Routers;
- Converters and Switches;
- RTU for Switchgear;
- PV Plant monitoring and control system and PV Plant performance calculation;
- Internal communication systems (telephone, LAN/ WAN system);
- Meteorological stations;
- CCTV;
- Telephone Facilities - the Plant shall be connected to the public telephone system via an Internet connection that shall be located in the Control Room forming part of the Plant if available, or via GSM where public telephone system is not available at site;
- Field testing equipment;
- Instrument workshop equipment;
- A high speed black and white A4 laser printer should be provided for report printing from any workstation;
- Training for all I&C systems and equipment shall be provided to the EC's management, operation and maintenance staff. The training shall cover hardware and software of all control systems like all SCADA components, PV Plant control and monitoring systems, meteorological stations, etc.

Bidder shall consider in its scope at least the following:

- Providing commissioning documentation.
- Providing all as built drawings.
- Complete hardware and software documentation (including licenses and certificates).

2.4.11.2 General

The following I&C requirements shall be taken into consideration by the Bidder:

- This specification does not relieve the Bidder of his responsibility for the basic design and execution of the instrumentation and control system. The rules of good engineering practice and the relevant approved standards and regulations shall be observed.
- No single I&C failure shall:
 - Cause any danger to personnel and the PV Plant
 - Invalidate protection by inhibiting a trip
 - Simultaneously trip a plant item
 - Affect more than one control area
- A consistent instrumentation and control philosophy shall apply throughout the PV Plant and shall be implemented in terms of a range of equipment exhibiting a minimum diversity of type and manufacture. The objective shall be to standardize all measurement and control equipment throughout the Plant in order to rationalize operation, maintenance and reduce spares holding.
- The instrumentation and control equipment shall have high electro-magnetic and radio frequency interference immunity and shall not be affected by portable radio transmitters operated in the vicinity of the equipment. Any limitations shall be stated.
- All I&C equipment shall have enclosure classification not less than IP54 according to when mounted in an enclosed building and IP65 for mounting outdoors.
- Sunshades shall be provided for all cubicles located outdoor and all cubicles shall be adequately ventilated for operability.

2.4.11.3 Field Equipment

The requirements for field equipment are based on usage of conventional signal interfacing by I/O equipment. Indicators for local mounting will have 100 mm minimum dial size, if possible. Dial scales will be such that the normal operating range is in the middle third of the dial range.

For Transmitters in general, the following requirements shall apply:

- The removal of connected devices must not open the transducer output circuit or cause malfunction of this circuit.
- In the case of failure and return of the supply voltage within a measuring circuit, no false signals endangering the system will be issued.
- All transmitters will be suitable for field installation and will have strong, moisture and dust proof cases with approved cable entries. All field installed transducers will have at least protection class IP 65.
- All the transmitters installed at outside will be protected from direct sunlight.

2.4.11.4 Distributed Control System (DCS) / Supervisory Control And Data Acquisition (SCADA)

General

- IEC 61724 shall be considered as guideline for measurement, data exchange and analysis
- IEC 61446 shall be considered as minimum requirement for system documentation, commissioning tests and inspection
- Due to the requirements of availability, reliability and function, the control and monitoring tasks of main PV Plant processes shall be performed by a state-of-the-art control system
- The DCS/SCADA shall achieve all functions of:
 - Data acquisition;
 - Control;
 - Serial and/or hardwired communication to string inverters (PLC / manufacturer controller), weather stations, electrical control systems etc.;
 - Human machine interface;
 - Alarm signaling;
 - Sequential event recording;
 - Historical data archive and;
 - Management reporting.
- System configuration shall be simple and flexible and display formats to suit changes in operational requirements. System software security, including data base configuration, controller loop tuning parameters shall be accessible by password.
- All systems shall require minimum maintenance, and shall have comprehensive self- checking and self-diagnostic capabilities including self-test failure alarms etc.
- The power plant shall incorporate a communication system to monitor the output of each combiner box. Once abnormal running data is detected at certain combiner box, the operator on duty can go to the box to further find the trouble strings manually. The monitoring system will be available as both desktop based and a web based internet portal solution.
- Data loggers shall be used to collect data from the weather station, the inverters, meters, and the transformers to transfer data once a day to a server which will carry out key functions.
- All the String combiner boxes, inverters, RMUs, MV Switchgear and utility metering shall be integrated with SCADA system.
- EPC contractor shall provide the configuration of the proposed SCADA system on workstations in the control room, or elsewhere.

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- The SCADA system shall be composed of an integrated operator human-machine interface (HMI), input/output (I/O), remote telemetry units (RTU), PLCs communication infrastructure and software.
 - The data acquisition shall be through a desktop computer of latest configuration. EPC contractor shall provide option for external communications link to access all data acquisition and real time performance monitoring. In this regard, the bidder shall inquire the existing communication interfaces and protocols being used by the concerned EC during the site visit. Contractors shall also provide all necessary hardware as required for entire setup.

The data shall be compatible and transferable to MS Office excel. Source of power for SCADA system and all related hardware shall be from auxiliary power supply. An additional UPS having a minimum 4 hours backup shall be provided specifically dedicated for this system. In addition to conventional parameters (V, I, kW, kVA, etc.) below is a non-exhaustive list of monitoring and recording parameters.

Plant

- String current
- String failure detection
- Power generation at interconnection
- Daily power generation in kWh
- Monthly power generation in kWh
- Annual power generation power in kWh
- Power generation from the date of commissioning

Plant Performance Ratios

- Day's PR
- Month's PR
- Annual average PR
- Facility Performance Ratio, since commissioning.

Meteorological

- Global Horizontal Irradiation
- Irradiation on tilted surface of PV array
- Ambient air temperature
- Module temperature
- Wind speed and direction

The SCADA system shall include all the required hardware, software, all types gig and cable mounting system for complete installation and commissioning of system.

Human Machine Interface

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- I&C systems shall be designed in such a way that the complete PV Plant can be remotely monitored and controlled from PV Plant Control Room.
 - If necessary, the connection of an additional operator station in another room and in another building should be possible.
 - An additional operator station should be provided with the same functionality as the PV Plant operation station to be located at EC main office.
 - The workstation shall be equipped with two minimum 21-inch screens, mouse and keyboard.
 - It shall be possible to display the process with corresponding graphic displays, control loop displays, electrical single line schematics, group displays, etc., all with dynamically updated parameters. The system shall be able to create and to show displays such as:
 - Overview display and process graphic displays
 - Connection and production unit status alarm display; trend display (real time and historical trends); as well as
 - Logging reports.
 - All necessary information concerning process behavior, control instrument and controller integrity for modulating control, sequential control and alarm function shall be immediately available at the operator station.
 - Abnormal operating conditions and events in the PV Plant must be annunciated/alarmed. Under operation control, it shall be possible to print all or selected alarms on demand.
 - The engineer's work station shall allow system configuration, graphics development, control algorithm, report generation, system self-documentation functions, system monitoring functions (which show the result of self-diagnostic tests), system database load/save, diagnostics and failure analyses, reports, etc. In addition, it shall be possible to change limit set- points, view all loop variables, configure control systems, add and delete alarms.

The bidder shall verify the actual requirements regarding the above from the EC during the site visit.

Cyber Security

The PV Plant control systems are critical for the plant safety and operation. If degraded or sabotaged they put people, environment and assets at risk. The requirements to security are therefore high.

To ensure availability, confidentiality and integrity of the control system, at least the following points shall be taken into account:

- Be designed with security measures, segregation and availability to reflect the PV Plant requirements
- Have measures to protect itself from unauthorized access from external systems
- Have measures that enable secure remote operation according to process requirements; and
- Have measures for disaster recovery

To ensure the availability, confidentiality and integrity of the Solar PV Plants' control systems and

their compatibility with existing systems of the concerned EC, the bidder shall gather all needed information in this regard during the site visit.

2.4.11.5 PV Plant Control and Monitoring System and Performance Calculation

The PV Plant control and monitoring system shall consider measurements, evaluation of data, creation of models and performance calculations for at least the following:

- PV strings
- Junction boxes
- Inverters
- Transformers
- Auxiliary loads
- MV switchgear
- Meteorological stations; and
- Energy meters.

The following signals shall be considered as minimum:

- Inverters located in the solar field
 - P, V, I in both in DC and AC; and
 - Temperature
- Transformers located in Transformer Stations
 - Temperature; and
 - Oil pressure.
- MV switchgear located Transformer Stations
 - V, I
- Fuse protection disconnecter, circuit breakers status
- Energy meters in LV and MV located in Control Room and at the Grid connection interface

2.4.11.6 Communication Equipment

- A PV Plant internal LAN/ WAN system (e.g. for office work, maintenance and spare part management, etc.) shall be provided in all relevant rooms of the PV Plant.

2.4.12 Auxiliary Power Supply System

The EC shall provide a connection from distribution utility for auxiliary power supply system at the cost of contractor. A minimum 15 kVA step down transformer including all cabling shall be also supplied and constructed by the EC – final interconnection from step down transformer LV side to the control room shall be undertaken by the contractor to all relevant national standards and local standards specific to the project site area.

2.4.13 Civil Infrastructures

2.4.13.1 Control Room

The control room shall be positioned in a way that it will not cause shadowing on the PV modules at any time. For civil works, National Building Codes (NBC) and any local regulations and codes to the project area shall be strictly adhered to. The control room and security guard house shall be located near the main gate entrance. Civil works required for construction of control rooms shall include, but not limited to the following:

- *RCC work* shall essentially involve appropriate mix and cement reinforcement in accordance with relevant standards. High strength reinforcement shall be used. Industrial best practices shall be followed for bending and fixing of bars for concrete reinforcement.
- *Masonry work*; shall be performed using appropriate class of bricks. Masonry works shall have suitably mixed cement mortar.
- *Doors and Windows*; Doors of all air-conditioned areas shall be of aluminum or stainless-steel framework with glazing, doors shall be steel framed. All doors shall be at least 2.1 m in height and 1.2 m in width.
- *Glazing*; shall be plain or tinted to avoid solar radiation.
- *Plastering/rendering*; shall be completed on all exterior and interior walls.
- *Flooring*; shall be reinforced concrete construction.
- *Roofing*; of control room shall include maximum insulation to prevent solar radiation and built for efficient rainwater disposal.
- *Painting*; shall be carried out using approved quality, chemically resistant paint. Primer shall be followed by minimum two coats of paint. Color will be approved by the Employer but shall be similar to Pantone - Reflex Blue. Additional project branding on the outer wall of the building will be the responsibility of the EPC and provided by the Employer.
- *PANELCO-I & BENECO only: Plumbing and Sanitary; Toilets* (one designated male, one designated female) shall include western type WC, wash basin, mirror, towel rail and soap holder. Bidders shall make provision for one septic tank in accordance with the local codes and regulations specific to the project area.
- *Office furniture*; shall be of top quality and chosen in such way that it blends into aesthetics of the room.
- *Water supply*; Piping shall include all the required valves, stop cocks etc.

Should the Bidder propose a prefabricated or modular-type building, it may be proposed to the Employer for approval/rejection prior to Contract signing but shall be compliant with all local building codes at the project site and demonstrated as equal or higher quality standard to that outlined above. For the purpose of its Bid Offer, the Bidder shall assume the construction methods outlined above are mandatory.

In case of outdoor type inverter selection, the inverters shall not be installed open to direct sunlight.

The Main Control Room shall be an integrated building comprising of following:

- Inverter (if indoor type)
- SCADA & Administration room

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- Store room
 - Guard room facing main gate entrance
 - PANELCO-I & BENECO only: 2 water closets (for 1 male and 1 female)
 - PANELCO-I & BENECO only: Adequately sized septic tank and required wash basins.

MV switchgear enclosures shall be provided with mechanical ventilation system if located in the control room or outdoors.

Administration & SCADA room shall be provided separate to guardhouse room with energy efficient comfort air conditioning system with a nominal operating temperature of 23C and shall comply with all relevant energy efficiency standards.

Internal electrification with minimum illumination of 400 lux shall be maintained in all rooms.

2.4.13.2 Temporary Site Installations

All temporary site installations shall be located either within the PV Plant site or in off-site areas to be arranged by the Bidder at their own responsibility or in co-ordination with the EC if the EC is willing to assist. The Employer and EC shall not be responsible for the provision of land for such off-site areas.

Site installations shall comply with regulations and requirements with respect to health, safety and environmental protection. DPWH guidelines and health protocols pertaining to control of Covid19 shall be strictly followed.

On completion of the construction phase, all temporary installations must be removed and demobilized leaving the occupied location clean and clear of debris or pollution. Wastes shall be disposed of according to regulations and local ordinances.

2.4.13.3 Landfilling

Wherever additional landfilling may be required, the EPC Contractor shall only use suitable material for the intended use of the filled areas. Source of soil materials should be limited only in DENR approved/LGU certified quarry sites. The material shall be compacted as per structural analysis demands. Furthermore, the demands of the ground water table, highest flood levels and tidal effects shall be fully considered.

The EPC contractor is also required to carry out a landfilling study based, but not limited, to the following scope prior to undertaking any landfilling works:

- Evaluation of the current site conditions and specification in the area of planned landfilling works
 - Site conditions
 - Risk of flooding
 - Rain events
 - Evaluation of access for transportation of landfill material

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- Appropriate location for stockpiles of landfill materials
 - Evaluation and specification of backfilling works and techniques required in respect to the planned PV Plant, including
 - Specification of required minimum quality and geotechnical specification of the landfilled area,
 - Specification of required backfilling materials and machines to use.
 - Evaluation of availability of required landfilling materials in respect to defined standards and quality including
 - Rough estimation of transportation effort (capacity, time)
 - Method statement for backfilling works, including
 - Specification for materials, special techniques and materials
 - Geotechnical specification of landfilled area
 - Estimation of load bearing capacities for foundations and piles
 - Notes for construction of roads and ways in the area,
 - Notes for drainage requirements, estimation of settlements expected
 - Notes for embankment protection

Based on these tasks the expected volume of required materials, the related working time and expected total cost per volume shall be determined.

The findings and results shall be summarized in a report that will be part of the detailed engineering design of the PV Plant:

- Method statement for required landfilling works and quality Geotechnical specification of landfilled area
- Geotechnical specification of landfilled area
- Preferred area for landfilling and site limits for these works to be considered in the design of the contractor.

2.4.13.4 General Leveling and Grading

Any debris, surplus or unsuitable material shall be removed from the site. Soft or unstable subsoil areas shall be excavated down to firm subsoil and shall be replaced with well compacted suitable imported fill material. Compaction of fill material shall be compacted to the relevant standards. In general, the leveling, compaction and grading of the entire site shall be with mild slopes and falls to provide free drainage away from the project site.

Finished ground floor level of technical and non-technical buildings shall be fixed at a sufficient height of at least 200 mm higher than the surrounding ground level if not otherwise required in

order to ensure free drainage of the surrounding grounds away from the buildings in times of heavy rain.

The expected events of flooding must be considered in the PV structure design and electrical cabling specification and detailed design.

2.4.13.5 Foundations for MV Overhead Line

The MV distribution line to the nearest tapping point will be the responsibility of the EC and the EPC Contractor shall work with the EC to ensure that the foundations works comply with both the EPC Contractor's requirements and the EC's requirements.

2.4.13.6 Infrastructure and Outdoor Works

The following infrastructure and outdoor works are to be provided by the Bidder:

- Rerouting/relocation of existing facilities such as piping, cabling and ducts where necessary, excluding relocation of any EC owned distribution lines where required which will be the responsibility of the EC.
- Construction of road approach to the site. The final course of the access road to the site and PV Plant Layout needs coordination with the EC and verification by the local authorities.
- Construction of parking areas and civil works as a part of the required infrastructure facilities and lighting system.
- Modification, improvement and upgrading of the existing infrastructure as required to adequately service the requirements of the PV Plant including preparation and improvement of existing roads and ways to guarantee optimal access for construction, erection and transport of equipment to the PV Plant, where and if required.
- Civil works for all required buildings, basins, foundations and baseplates, retention areas, ducts, culverts, cable trenches, pipe trenches, cable bridges and ducts, conduits, inspection pits or inspection chambers, cable pulling pits, fencing, perimeter lighting, surveillance, I&C system and any other required structure including their corresponding foundations and infrastructure connection.
- Civil works for equipment in outdoor inverter/transformer stations, including their corresponding foundations and concrete platforms or basins.
- Construction of ducts, culverts, underground cable ducts, trenches, manholes, e.g. for MV and LV system cables, perimeter lighting, surveillance, I&C system, etc.
- Civil works for earthing and lightning protection system.
- Storm water drainage as necessary.
- Civil works for discharging rainwater, surface water and treated wastewater including needed piping and pumping facilities.
- PV module cleaning system, according to the recommendations of the module manufacturer.
- Safety and firefighting works as necessary.

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- Other civil works required inside the various corridors of the PV Plant.

2.4.13.7 Site Drainage

The Bidder shall be responsible to install a drainage system at the Plant area, which fulfills the requirements not only of the Plant operation but also of the surrounding neighbors and public infrastructure facilities.

The drainage system shall be designed to gain safe access to the site also in events of heavy monsoon rain.

The drainage system shall be designed to evacuate the water from the face of modules away from site and avoid erosion where the water falls from the face of the modules.

Existing drainage channels should be strengthened in such a way that they will withstand all expected impacts from site operation and natural events.

The drainage facilities of the Site shall be designed to guarantee good operation of the Plant also in case of heavy monsoon rains and other natural events.

The drainage system shall be strictly separated from areas where contamination with environmentally harmful liquids / materials can occur, like transformer locations or similar places.

2.4.13.8 Potable Water and Washing Water Systems

All water processing, if any, has to follow the requirements as listed below but not limited to:

- Potable water needed in sanitary facilities shall be stored in suitable potable water tanks directly at or on the buildings. Location and size of the tanks shall be defined in detailed design phase. Any needed piping, pumps or similar equipment for sufficient and permanent use shall be provided. The total system shall follow all hygienic requirements of national codes, regulations and standards.
- Water piping shall not be routed through electrical rooms or through false floors.
- PV module washing water shall not incorporate any chemicals that are not in compliance with the water pollution requirements or the requirements stipulated by the PV module manufacturer. The washing water for the PV modules may not in any way harm or threaten the environment or the staff.

2.4.13.9 PANELCO-I & BENECO only: Potable Water and Washing Water Systems

All water processing, if any, has to follow the requirements as listed below but not limited to:

- Potable water needed in toilets shall be stored in suitable potable water tanks directly at or on the buildings. Location and size of the tanks shall be defined in detailed design phase. Any needed piping, pumps or similar equipment for sufficient and permanent use shall be provided. The total system shall follow all hygienic requirements of national codes, regulations and standards.
- Water piping shall not be routed through electrical rooms or through false floors.

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- PV module washing water shall not incorporate any chemicals that are not in compliance with the water pollution requirements or the requirements stipulated by the PV module manufacturer. The washing water for the PV modules may not in any way harm or threaten the environment or the staff.

2.4.13.10 Gate House

The design of the building and assumed loads shall meet the relevant national standards. The gate house shall be located close to the main gate entrance and integrated to the main PV plant control room as a semi-detached building or separate room.

The gate house shall include:

- A security office with reception desk and chair for a single guard
- The building shall be fully furnished and equipped with materials of high-quality standard.

2.4.13.11 Security Fences, Walls and Security Gate

The PV Plant shall be enclosed by a security fence and a security wall of minimum requirements as stated below. As previously stated, this security fencing shall not form part of the Bid Offer and shall be undertaken at cost of the EC. However, the EPC Contractor shall offer a fencing layout to meet the following specifications for the EC to follow in their construction.

- The security fence shall be installed of a minimum of 2.5m height and topped with barbed wire. The fence shall have close knitted wire mesh of hot-dip galvanized type.

The Employer will accept coordination among EC, Employer and Contractor (with sign off by the Employer) in regard to changes to the design of the fencing based on locally available materials. However, the quality and minimum dimensional specification shall not be compromised. The fence shall meet the following functions:

- To fulfill all requirements of a security fence
- Suitable for installing a lighting and monitoring system to provide sufficient illumination for the boundary area and camera surveillance of the site; and
- Shall be designed according to national construction and environmental regulations
- Shall be constructed with a distance to the outer roads including a drainage ditch between the fence and the perimeter road.
- Shall be integrated in the site drainage system, effective ways of discharge and overflow shall be foreseen.
- Shall not encroach the property boundary of surrounding buildings/land.

The lockable gate shall be designed as a hinged gate and made in similar design to the fence structure. The gate should be opened manually.

For protection against access, components such as transformer enclosures, inverter enclosures, cabinets, connectors, etc., shall be properly selected in order to guarantee their protection against ingress of solid and/or liquid harmful elements. Environmental site conditions should be taken into consideration during their selection.

It should be possible to open or enter the described equipment above only with a tool or a key to avoid access of unauthorized persons.

2.4.13.12 Technical and Non-Technical Buildings and Structures

All buildings and structures for the PV Plant and related equipment including the respective basins or enclosures shall form an integrated theme of high standard. They shall be designed to acceptable international, national and local standards and shall be fit for the purpose in each case. The works shall include but not be limited to excavations, foundations, reinforced concrete, masonry and structural steel, non- structural steel, waterproofing, oil-proofing, roofing, coating, rendering, painting, doors, windows, ironmongery as necessary. Power and lighting, earthing, lightning protection etc. shall all be provided to acceptable high standards and workmanship.

2.4.13.13 Heating Ventilation and Air Conditioning (HVAC) Systems

The heating ventilation and air conditioning systems shall be provided in all spaces and rooms requiring special internal conditions; either for staff needs or to enable the most efficient operation of PV Plant's facilities.

The interior temperatures that must be maintained and said areas requiring ventilation and/or air conditioning, are shown below:

Area	Range of Indoor Temperature (°C)	Relative Humidity (%)
Service, control, storage electronic and relay rooms and similar rooms	25±2°C(Summer) 21±2°C (Winter)	50 ± 10

The range of temperature and relative humidity is depending on the manufacturer's recommendation of the most critical component. The HVAC system shall be designed with possible amendments of temperature and humidity ranges depending on the components being used.

The HVAC facilities shall be of high-quality type and shall be low in power consumption, adhere to national codes on energy efficiency and shall be easy to maintain.

Condensed water shall be evacuated to the exterior of buildings or structures.

2.4.13.14 Detection, Protection, Insulation and or Fighting of Fire

The Bidder shall provide all necessary measures of detection, protection, insulation and firefighting corresponding to all applicable codes and standards.

2.5 GRID INTERFACES

“Interfaces” are the connections and physical tie-in points between the PV Plant and

-
- 13.2 kV/23kV grid connection
 - I&C and communication facilities

The Bidder shall provide with their Tender a complete and detailed description of the interfaces. The Bidder is obliged to coordinate the interfaces to other facilities/with other parties in cooperation with the respective counterpart.

2.5.1 Grid Connection

The grid connection point is incoming 23 kV for BENECO Lot and 13.2 kV feeder for other electric cooperative lots to the project site as provided by the EC. The EPC Contractor shall provide a power evacuation scheme to the EC to ensure that the distribution line does not cause any shading to the PV plant solar array, however all costs associated with its construction to the location of the PV plant MV transformer shall be for the EC's account.

2.5.2 Instrumentation and Control

The Bidder shall be responsible for the coordination with Employer for the proper consideration and realization of all instrumentation and control aspects being relevant for the exchange of required data.

2.5.3 Communication Facilities

The Bidder shall not be responsible for the connection of the communication facilities of the PV plant to the available local communication systems, but shall ensure that all SCADA systems have option for remote communications.

2.6 MV INTERCONNECTION

The 23 kV AC power interconnection from BENECO and 13.2 kV from other ECs for the solar PV plant shall be fed to a single interconnection point which shall be evacuated to the nearest existing distribution line or substation of the respective EC/distribution utility.

The Contractor is not responsible for the overhead MV distribution line for tapping to the nearest substation or distribution line of the EC. This shall be the sole responsibility of the EC in cost and construction. Also, any distribution line upgrades necessary to interconnect to the solar PV plant will be the responsibility of the EC. The Contractor must ensure close coordination with the EC throughout the project to ensure the interconnection line is located in the correct geographical location for the Contractor to avoid shading of the solar PV plant and terminates at the correct location for the interconnection between the MV transformer and MV distribution line. The Employer will assist the Contractor in planning with the EC the construction of the interconnection point to the solar PV plant site to ensure timely completion prior to the test commissioning schedule of the solar PV plant.

Being the final Owner of the solar PV plant, the EC is well experienced to construct the interconnection MV line quickly and efficiently to the relevant national codes at the project area. However, the Contractor must prior to the construction phase coordinate with the EC where and when to undertake the work and that the EC complies to all the Contractor's Health & Safety and

Environmental Management Plans while on site. The Employer will assist to facilitate the organization of the EC with the Contractor. The Contractor shall take into consideration right of way issues for the overhead MV line in their interconnection design, which are known to the EC. The final design may be finalized with the EC during engineering design phase after contract sign-off by the Employer.

Where a delay to the project schedule due to late delivery of the interconnection point and/or distribution line upgrades for the project by the EC is proven to be the only cause effecting the delay in the commissioning of the PV power plant - it will be considered by the Employer in claiming liquidated damages. However, it is imperative for the Contractor to undertake rigorous and detailed planning prior to commencement of the project to ensure the EC delivers their obligation in time with the Contractor's schedule. The Contractor shall keep clear records of this planning and communication as support later in protesting liquidated damages claims of the Employer. The Employer will assist the Contractor when requested to facilitate planning and communication with the EC.

2.7 SUMMARY OF APPENDICES AND TECHNICAL SUBMISSIONS

All Bidders are required to submit duly completed forms provided in Section IV as part of their Technical Proposal including the following Appendices, specific requirements thereof are provided in the particular Appendix:

- Appendix I: Project Characteristics – Bidder to describe the characteristics of the Solar PV Plant being offered based on the list of project characteristics enumerated in the appendix form.
- Appendix II: Data Sheets of Proposed Project Components – Bidder to provide mandatory technical data of offered major components (PV modules including String & Array details, Inverters, Ring Main Units, MV Transformer, MV Switchgear) including manufacturer/supplier submission requirements under Component Specifications of Schedule VII, with its bid submission. Other component technical data will be submitted during contract implementation stage.
- Appendix III: Recommended List of Spare Parts (Defect Liability and 25-Year Operation) – Bidder to provide Spares List for Defect Liability Period consistent with its bid submission in Section IV, Schedules 1 and 2 complying with the spares table in Subclause 4.6.3, Clause 4.0 – Test, Commissioning & Acceptance of Section VII . However, the 6–25 Year Operation Spares List may be submitted during contract implementation stage.
- Appendix IV: Indicative Electrical Schematics – Bidder to submit initial electric schematics for its typical solar PV array, inverter, modular plot and power evacuation as listed in the appendix which will be finalized during detailed engineering and contract implementation stage.
- Appendix V: Indicative Layouts - Bidder to submit initial layouts of PV module arrangement and PV solar Farm associated equipment which will be finalized during detailed engineering and contract implementation stage.

Bidders are permitted to expand upon on these appendices. Bids **may** be rejected if any of these submissions are found missing.

In addition, Bidders shall consider Appendix VI –Summary of Scope and Division of Responsibilities for clarity of the responsibilities of EPC Contractor, Electric Cooperative and Employer.

3.0 CONSTRUCTION REQUIREMENTS

3.1 ENVIRONMENTAL AND SOCIAL (ES) REQUIREMENTS

All works under the contract shall be implemented with due regards to environmental protection, public and workers' health, safety and welfare. The ECOP provides simple rules, procedures and institutional arrangements for the identification, monitoring and mitigation of possible adverse environmental impacts with respect to small civil work activities undertaken in the project. The EPC Contractor is required to prepare the Contractor's Environmental and Social Management Plan (CESMP) based on the ECOP provided herein in Section 7.0. The CESMP, which details the practical implementation of mitigation measures during construction and PV plant test and commissioning, shall be submitted to the Employer prior to start of project construction.

The EPC Contractor shall comply with the CESMP, Code of Conduct for Contractor's personnel, and Environmental Code of Practice (ECOP).

Project activities shall be properly managed to avoid excessive noise, airborne dust, soil erosion, and wastes. Construction materials, such as soil and gravel, should be sourced only from DENR approved/LGU certified quarry sites. Damages to properties such as lands, structures, crops, and trees shall be avoided or minimized. Should any private assets or public properties be affected, the Contractor shall restore or replace such assets/properties or compensate the owners in accordance with the Environmental and Social Safeguards Framework.

Proper housekeeping and sanitation shall be implemented at the work site and worker's shelter. All wastes must be collected, stored and disposed of, including used PPEs (face masks, face shield, etc.) in accordance with regulations.

The Contractor shall designate an Environmental and Social Officer who will oversee the overall implementation of the CESMP and submit to the EC personnel in charge of PESMP implementation a quarterly report on the Contractor's implementation of the CESMP and compliance with the ECOP. The Employer's or EC's representative may conduct inspection at the work site as well as the workers' camp anytime to check Contractor's compliance with the CESMP and ECOP.

All workers at the project site shall abide by the Code of Conduct for Contractor's Personnel to avoid any health, safety and social issues and concerns. The Contractor shall have its own grievance redress mechanism to promptly address and resolve complaints, issues, concerns and grievances from workers, the community and other stakeholders. Complaints and grievances filed with the Contractor's Grievance Officer shall be documented and copy provided to the EC as requested.

The Contractor shall conduct orientation on the CEMSP, ECOP, Code of Conduct, and grievance redress mechanism for all its workers prior to start of construction.

3.2 OCCUPATIONAL HEALTH & SAFETY REQUIREMENTS

The EPC Contractor is required to provide a sound-working environment and take all reasonable steps to protect the health of workers and provide and maintain a safe and healthy working environment. The Contractor shall comply with the following:

- Occupational health and safety standards and other applicable laws, regulations, guidelines and codes, including safety guidelines for infrastructure projects as follows:
 - DOLE Department Order No. 198, Series of 2018 – Implementing rules and regulations of Republic Act No. 11058 Entitled “An Act Strengthening Compliance with Occupational Safety and Health Standards and Providing Penalties for Violations Thereof”
 - DOLE Department Order No. 13, Series of 1998 – Guidelines Governing Occupational Safety and Health in the Construction Industry
 - DPWH DO 39 S. 2020 – Revised Construction Safety Guidelines for the Implementation of Infrastructure Projects During Covid 19 Public Health Crisis, repealing DO No. 35, S 2020

The EPC Contractor shall also ensure that the following HSE objectives are met:

- Zero accidents and injuries with respect to all involved workers
- Zero harm to workers and the public

The EPC Contractor shall implement a Construction–Occupational Health and Safety Program (COHSP) which it shall prepare following the DOLE prescribed format. The COHSP should be approved by DOLE prior to start of construction. The Contractor shall also prepare and submit to the Employer prior to start of construction a Health and Safety Manual which contains policies, procedures and measures to establish and maintain a safe working environment without risk to safety and health at all workplaces.

The EPC shall have a Safety Officer, with DOLE-required qualifications and training, who shall oversee the overall management and implementation of the COHSP and compliance with occupational health and safety standards, laws, regulations and guidelines.

The Employer’s or EC’s representative may conduct inspection at the work site as well as the workers’ camp anytime to check Contractor’s compliance with the COHSP. The Contractor shall submit to the EC a quarterly report on its implementation of the COHSP and Health and Safety Manual, and provide copies of all health and safety reports required to be submitted to DOLE.

3.3 QUALITY ASSURANCE AND CONTROL

The Bidder, its partners and subcontractors shall provide evidence of accreditation to a national or international standard equivalent to ISO 9001.

During the project execution, the EPC Contractor will be required to develop, implement and maintain a project specific quality plan covering all aspects of the Project. The EPC Contractor shall provide a quality assurance manual applicable to the design, procurement, construction, commissioning and testing of the solar PV plant.

3.4 PACKING AND TRANSPORT IDENTIFICATION

3.4.1 All parts of the Plant and Equipment shall be well packed and protected against loss or damage during the transport by sea and over land and whilst in storage under adverse climatic conditions. All packing shall be performed in such a way that overturning of the packages will minimize damage the equipment. Dimensions of packages, crates, etc., shall be suitable for road transport. Instruction for handling shall be clearly marked on all parts, packages and crates.

3.4.2 All parts, packages and crates shall be adequately marked in order to enable identification. Each item contained in a package shall be clearly identified on the packing list by its description and part number and assembly drawing reference, and each item shall be marked or labeled to correspond with the packing list.

3.4.3 The cost of all equipment needed for temporary fixing and supporting of various parts of the PV Plant and the various packages to crane hooks, etc., during handling, transport and storage and the cost of load distribution beams, etc., where they form part of the packing or crates, shall be included in the Bid Price.

3.4.4 The EPC contractor shall be entirely responsible for all packing and any loss or damage shall be replenished / fixed by the EPC contractor and, except where otherwise provided, at the EPC contractor's own expense.

3.4.5 Any cost(s) associated with transshipment of materials and equipment shall be deemed to be included in the Contract Price.

3.4.6 Identification, reinforcement or upgrading of roads/bridges for access to the site and transportation of equipment and materials shall be the responsibility of the Contractor, if required. Any costs associated with identification, reinforcement and upgrading of roads and bridges shall be deemed to be included in the offered Price.

3.5 LABORATORY TESTS REPORT AND PRE-SHIPMENT INSPECTION

The requirements for inspection, commissioning and acceptance testing of the PV Plant are described below.

3.5.1 Laboratory Test Report

Before shipment of the modules and inverters, the type test shall be carried out (on up to 0.25% of total numbers of the modules and inverters) on the manufacturer's IEC certified and calibrated testing equipment or in any Internationally Recognized Independent Testing Laboratory (e.g. TUV Rheinland, TUV SUD, ZSW, JRC, etc.). The Contractor shall provide a comprehensive Laboratory Test Report on all equipment and materials to be supplied to support the submitted component specifications subject to the Employer's approval, which shall then be bindingly applied before the goods are to be shipped.

3.5.2 Inspection

3.5.2.1 Pre-shipment Inspection

Before each shipment, a pre-shipment inspection shall be carried out, the Contractor shall provide a comprehensive report detailing such pre-shipment inspection procedure, subject to the Employer's approval, which shall then be signed by the Parties and bindingly applied to a sample of all equipment to be shipped.

The description of the pre-shipment inspection procedure shall include, but not be limited to, definition of:

- Module batch and sample size and number of modules that do not comply with the test to reject the whole batch
- An extensive list of visual inspection criteria (including, but not limited to, cell impurities, bubbles, cell gaps, cracked cells, backsheet damages, frame scratches, etc., as applicable)
- Thermographic inspection procedure to identify any defects in the electrical circuit of the modules
- Maximum power determination procedure in order to verify compliance with the measurements stated in the manufacturer's flash list.

3. 5.2.2 Site Inspection

Further inspections on the modules and inverters will be applied upon delivery at the site.

4.0 TEST, COMMISSIONING AND ACCEPTANCE

4.1 RESOURCE ASSESSMENT AND ENERGY YIELD

EPC contractors shall be legally bound to the plant performance ratio committed during the submission of techno-commercial bids. Long-term energy yield prediction, defects liability and warranty periods shall essentially be taken into consideration in determining compliance to warranties and updating the Bidders' List.

4.1.1 Reference Solar Resource

The annual energy yield of a PV plant is dependent on solar resource of the site. Bidders are required to source the average of five (5) years solar data along with wind speeds and temperature from SolarGIS. The SolarGIS simulated result file indicating nearest stations for interpolation, period for which data was available and tabulated results of GHI (W/m²), temperature and wind speed data must be provided by the bidder in the techno-commercial offer. PVsyst simulation software shall be used to estimate energy performance.

4.1.2 Benchmarks for Performance Ratio Computation

Performance Ratio (PR) prediction essentially depends on simulations and loss assumptions. Bidders must use PVsyst simulation tool for Energy Yield/PR predictions to allow Employer a benchmark simulation comparison.

Simulation must take into account all losses including AC losses. Simulation report (in .pdf format) shall clearly mention details of simulation parameters, near shading definition, horizon shading definition, main results and losses.

The following loss benchmarks have to be adopted for computation purposes. Computation shall be carried out with PVsyst Version 7.0 with standard settings. Only component specific values and following losses may be specific for each bidder.

Table 1: Benchmark for loss assumptions

Loss	Description
Shading	Shading loss can be simulated by optimizing the inter-row pitch and modeling of plant using PVsyst. The maximum benchmark for shading loss shall be capped at 2%.
Incident Angle	This shall essentially depend on modules proposed by bidders and technique. The loss shall be simulated considering tilt angle of 20 degree south.
Low Irradiance	Low irradiance loss essentially depends on the characteristics of the module and the intensity of the incident radiation. This value shall depend on module selected.
Module Temperature	For every °C temperature rise in temperature above STC shall reduce the efficiency of PV module. Minimum benchmark for this negative coefficient shall be -0.45%/°C or better.
Soiling	Bidders are advised to evaluate the dust profile on site and define its strategy. A maximum of 3% allowable losses shall be considered in the energy yield computation. But EPC may choose to set a better value that then will have to be fulfilled to support annual guaranteed net energy outputs. Bidders shall justify the soiling loss assumption along with bids.
DC Cable	Electrical resistance in the cable between the modules and the input terminals of the inverter give rise to ohmic losses (I ² R). Maximum benchmark for this assumption shall be 1.5%
Inverter Performance	Bidders shall take Euro efficiency for energy yield computations. Minimum benchmark for this efficiency shall be 98%.
AC Losses	AC losses shall occur in four areas, LV AC cabling, LV/MV transformers, MV AC cabling, up to metering. Bidders are expected to provide detailed losses segregating said areas with appropriate justifications.
Downtime	Grid Downtime and availability shall be 0% for energy yield computation by the bidders.

Plant Availability	Bidders are expected to offer maximum plant availability; owner assumes 100% plant availability for project economics.
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4.1.3 Module Degradation

Bidders shall specify the initial and annual degradations thereon for 25 years with supporting energy yield calculations. The values shall also be supported by manufacturer's confirmation based on past experience, track record and warranty on proposed modules.

4.2 COMMISSIONING AND ACCEPTANCE TESTING

4.2.1 Definitions

All capitalized terms shall have the meanings given to them in the General Conditions of Contract (GCC) and the Particular Conditions of Contract (PCC, together the “Contract”). For purposes of this bidding document, the following capitalized terms shall also have the indicated meanings below:

“**Adverse Weather Conditions**” mean instances of excessive climate and weather conditions measured by a weather station at the Site, but in any case more than 15 mm of rain per day or storm conditions that impede the Commissioning and or Operational Acceptance Test.

“**Annual Degradation**” is the constant annual factor of efficiency loss for the given PV module technology.

“**Annual Performance Review Certificate**” means the certificate issued by the Employer to the Contractor to confirm the Annual Performance Review.

“**Annual Performance Review**” means the verification of the PV Plant performance in accordance with the provisions of bidding document.

“**Commissioning**” means all relevant tasks to be performed in accordance with the provisions of bidding document.

“**Completion Certificate**” means the certificate issued after commissioning and completion of Facilities.

“**Connection Infrastructure**” means all required components needed for grid connection in the scope of the Contractor.

“**Counter Flash Tests**” means the measurement of the PV module peak power at either the manufacturer’s facilities or an Independent Laboratory for a representative number of modules for the PV Plant.

“**Defects Liability Period**” will be five (5) years from the date of Operational Acceptance of plant.

“Distribution Code” means Philippines Distribution Code, as guideline in order to allow for evacuation of electricity from the Plant into the distribution system of the Electric Cooperative.

“Flash Peak Power” means the peak power of all installed and connected PV modules of the PV Plant in kWp according to the manufacturer flash list.

“Independent Laboratory” means a first-class and IEC-accredited international testing laboratory such as Fraunhofer ISE in Freiburg, Germany, TÜV Rheinland in Cologne, Germany, or ASU (Arizona State University), to be determined by the Contractor, subject to approval by the Employer and the Employer’s Engineer, for performance of the Counter Flash Tests.

“Installed Capacity” is the Nominal Peak Power of the aggregate PV modules in kWp, verified through Counter Flash Tests.

“Interruption” means, in the case of the Provisional Acceptance Test of the PV Plant, the shutdown of any facility forming part of the Plant preventing the Plant from delivering electrical energy.

“Minimum Acceptance Criteria” means the minimum acceptance criteria in respect of Performance Guarantees and Installed Capacity for Provisional Acceptance.

“Nominal Peak Power” means the nameplate capacity of the PV modules in kWp.

“Peak Power Certificate” means the certificate to be issued by the Employer’s Engineer confirming the verification of the Installed Capacity.

“Operational Acceptance Certificate” means the certificate issued by the Employer to the Contractor to confirm Operational Acceptance.

“Operational Acceptance Test” means the test to be performed in accordance with the provisions of bidding document.

“Operational Acceptance Testing Period” means the amount of days necessary for the testing as described in bidding document.

4.2.2 General

Annual Energy Output in kWh along with Performance Ratio (PR) calculations shall be made at the high voltage side of the MV transformer, site conditions and the overall total system capacity as well as the overall system capacity on a daily basis averaged for monthly and annual values.

Bidders shall independently carry out performance estimation based on solar resource data, ambient climatic condition data and proposed project components. The performance estimation shall be presented in the form of annual energy output in kWh for the next 25 years.

Using forms provided in the bidding document, the bidders shall provide the guaranteed MWp, energy output and performance ratio (PR) for the following:

- Upon commissioning of plant [Form FUNC (Commissioning and Operational Acceptance Test)]
- Annually for 25 years [Form FUNC (Year 1 – 25)]

These provided values shall be referred to as guaranteed energy output and PR levels. EPC contractors shall be legally bound for the plant PR committed during the submission of techno-commercial bids. Any such binding with the Employer shall be up to the plant commissioning and operational acceptance and then the EPC contractor/suppliers shall be legally-bound to the electric cooperative as owner of the Plant from there on with regards to the annual net energy outputs and to the defects liability/warranties of the contract.

Actual Energy Output (kWh) along with PR shall be calculated based on the data received from the weather station, energy meter, and evaluation of intervening events (grid outages, reactive power requests, etc.) by the SCADA

The Employer shall have the right to have their representatives present during all inspections and tests. The presence of Employer's representatives during any inspection or test (or waiver by Employer of their right to witness any inspection or test) shall in no way relieve the Contractor of its responsibility for supplying the equipment in accordance with the scheduled dates.

This Chapter describes the relevant DC and AC test procedures and the sequence of tasks for Commissioning and Operational Acceptance Test of the PV Plant ("the Plant").

The Contractor shall be responsible for providing all supplies required for carrying out such tests. The results of all tests shall be certified by the manufacturer, Contractor, independent agency or the Employer's Engineer, as appropriate.

4.3 TEST AND COMMISSIONING OF PV PLANT

4.3.1 General

The start-up, testing and commissioning of subsystems and overall PV plant shall be conducted in accordance with IEC 62446 Grid-connected photovoltaic systems - minimum requirements for system documentation, commissioning tests and inspection or by an alternative method if with prior agreement by the Employer. Also, the documentation supplied by the contractor must include the minimum requirements in IEC 62446, in addition to all other owner documentation (such as data sheets and complete manuals for each and every component installed), as-built technical drawings with exact position and serial number of each module installed.

Following the construction of solar PV plant and issuance of physical completion certificate by the Employer, following shall be the tests to be carried out jointly by EPC contractor and Employer. It will be EPC contractor's responsibility to arrange all the consumables,

instrumentation, materials and human resources required for complete commissioning, start-up tests and performance ratio comparisons.

4.3.2 Test Procedures

The Contractor's technical personnel, with the assistance and supervision of equipment manufacturer(s), will be responsible for all test procedures required for the complete Commissioning of the PV Plant.

4.3.3 Commissioning Test

Commissioning Test should follow the standard of IEC 62446:2016 or by an alternative method if agreed prior by the Employer.

The Commissioning of the PV Plant includes the following procedures:

- Hot and Cold Commissioning testing outlined by Contractor's & manufacturers' procedures as well as IEC 62446:2016
- Tests and inspections required by codes, national standards, and equipment manufacturers
- Determination of the Installed Capacity of the PV Plant.

All measurements and testing procedures, such as string testing and I-V curve measurement results, will be provided completely in electronic form and in hard copy. Documentation from all procedures of Commissioning and Testing tasks, measurements, and results will be submitted to the Employer.

The overall testing program for the PV Plant shall consist of the following:

- Commissioning including the Connection Infrastructure
- Operational Acceptance Test

4.3.3.1 Cold Commissioning

The verification of the Commissioning tests will be based at least on the latest published testing procedure IEC 62446: Grid-connected photovoltaic systems – Minimum requirements for system documentation, Commissioning tests, and inspection, for all electrical Commissioning. The verifications shall include, but not be limited to, the following equipment to be tested:

- PV modules
- PV modules support structure/tracking system
- String cabling
- LV DC cabling between combiner boxes and inverters
- Combiner boxes
- Inverters
- LV AC cabling between inverters and transformers
- Transformers
- Transformation, protection, distribution centers, and MV lines

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- Piping (where applicable), cable trays, inspection chambers, wiring, etc. both for DC and AC
 - Power, data transmission, and all other required transmission lines, including junction boxes, fuses, and all other required electrical equipment
 - External interconnection cabinets
 - Internal connections and Connection Infrastructure with external facilities in accordance with the relevant national norms.
 - Meteorological stations and monitoring system
 - Low-voltage installation, civil works, and medium-voltage installation
 - Security system
 - All measurements as defined and described in IEC 62446
 - All necessary tests at the MV interface in coordination with the EC/distribution utility

4.3.3.2 Hot Commissioning

Once the PV Plant is energized (this may require a dump load during testing), the Contractor shall demonstrate that the overall system and equipment operates in accordance with the following:

- Equipment manufacturer specifications
- Specifications of the Contract
- All relevant national and international norms and standards/codes.

For hot commissioning testing, the following supplies and equipment will be commissioned and tested:

- DC operating current tests
- Inverters
- Combiner boxes
- Low-voltage boards
- Internal connections and interconnections with external facilities, whether mechanical or electrical
- Monitoring system and/or control instruments and devices
- Telecommunication system for remote access
- Meteorological stations and monitoring system
- Safety devices
- Medium-voltage switchgears and cubicles
- Transformers
- Security system
- Grounding and lightning protection system

-
- MV interface, including, but not limited to MV equipment.

Thermographic analyses will also be performed with IR camera for all PV modules and electrical connections in order to detect possible hot spots.

Likewise, it will be verified that any equipment and material that may compromise the proper and safe operation of the PV Plant has been removed.

4.3.4 Completion of Test and Commissioning

After successful Commissioning for the PV Plant, the Contractor will deliver all results and documentation to the Employer.

The Plant Completion Certificate will be issued by the Employer once the successful completion of commissioning has been verified.

4.4 OPERATIONAL ACCEPTANCE TEST

4.4.1 Purpose

The Operational Acceptance Test of the Plant shall be for the purpose of (i) demonstrating the achievement of guaranteed values, and (ii) demonstrating the reliable and safe operation of the equipment, systems, and facilities.

After successful completion of the commissioning items, the Contractor shall be allowed to prepare the facilities for the Operational Acceptance Test.

The Operational Acceptance Test shall be carried out for the entire Plant, including related equipment and systems and by taking into account the conditions as specified in the Bidding Documents.

The Contractor shall submit to the Employer a detailed test procedure for the Operational Acceptance Test in writing two (2) months prior to the proposed commencement of the Operational Acceptance Test. The procedure must be approved by the Employer. The test procedures shall include:

- Operational Acceptance Test detailed procedure
- Description of instrumentation to be used, including accuracy requirements
- Method of data recording
- Forms of test records and of test report.

4.4.2 Requirements for Operational Acceptance Testing

The following requirements must be fulfilled prior to the start of the Operational Acceptance Test:

- The Completion Certificate has been issued, which relates to the successful execution of Commissioning.

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- The Peak Power Certificate has been issued, which relates to the verification of the Installed Capacity of the PV Plant. The Peak Power shall be determined at STP conditions with sun irradiance of 1,000 W/m² perpendicularly hitting the solar modules.
 - Upon issuance of the Completion Certificate, the Operational Acceptance Test must be started within a maximum of seven (7) days if not otherwise agreed between Contractor and Employer.
 - The Operational Acceptance Test Procedure has been agreed by the Contractor and the Employer.
 - Instrumentation for the tests has been installed, commissioned, and calibrated, and data is available in the monitoring system.
 - Measuring instruments to record onsite data shall include a pyranometer with an accuracy of 2%, temperature sensor, data logging systems and operator approved grid meters.

The Contractor shall notify the Employer that the Plant is ready for the Operational Acceptance Test and that the instrumentation for the test are installed, commissioned, and checked. The supporting documentation, including instrumentation, calibration, and commissioning certificates, shall be provided to the Employer's representative to witness the test together with the notification. Should all documentation are acceptable, within seven (7) days thereof, the Operational Acceptance Test shall be started, provided that prevailing weather conditions (no adverse weather condition) will allow the test.

4.4.3 Start-Up Tests

The start-up tests shall be the first step for operational acceptance of plant. These tests shall be carried out in accordance with the provision of IEC 62446 or by an alternative method if with prior agreement by the Employer. In addition, the following tests shall also be carried out:

- Validation of irradiation monitoring equipment
- SCADA test
- Performance Ratio test
- Energy Output test (kWh)

The start-up test shall be carried immediately after seven (7) days from physical completion of the plant.

4.4.4 Energy Output (kWh) Test for “Operational Acceptance”

The Operational Acceptance Test shall be performed for the entire PV Plant including up to the interconnection point and shall be carried out by the Contractor, involving representatives from the Employer and the EC.

The energy output (kWh/year) test shall verify whether the Solar Farm is performing at or above the guaranteed value derived from the guaranteed Performance Ratio (PR).

The energy output test shall be carried out to compare the guaranteed energy output value in kWh and measured energy output value in kWh is in accordance with the guaranteed PR.

Contractor shall be responsible to conduct the first energy output test after issuance of “Completion Certificate” of Facilities (all components installed) and synchronizing the plant with the grid and by complying with all relevant requirements from the distribution utility. The energy output test shall be conducted for a minimum of seven (7) consecutive days of operation. The operation data shall be recorded at 5-minute intervals for validating the Energy Output values guaranteed by the EPC contractor. In case of disruption due to any component failure, the test shall be repeated.

The following steps must be followed in the conduct of the energy output test:

- Gather all on-site operation data obtained above using appropriate measuring instruments.
- Calculate energy output using the following equation:

$$\text{Calculated Energy Output (kWh)} = \text{Theoretical Energy Output (kWh)} \times \text{PR}_{\text{guaranteed}}$$

Where;

Calculated Energy Output – computed net energy output at the MV side of the transformer over the test period

Theoretical Energy Output – expected net energy output considering incident solar irradiation measured at the generator surface of the PV plant over the test period x relative efficiency of the PV plant modules

= measured irradiation value in kWh/m² x plant module surface area in m² x efficiency of the module under Standard Test Conditions (STC)

PR_{guaranteed} – guaranteed performance ratio

- The energy output values shall be based on actual energy produced and metered at the 13.2 kV or 23 kV side of the MV transformer, as the case maybe.
- The energy output (kWh) measured on-site shall be compared with the calculated energy output at the high side of the MV transformer for the specified time period.
- If the measured energy output value is equal or higher than 95% of the calculated energy output, the Solar PV Plant passed the Operational Acceptance Test.

4.4.5 Requirements for the Issuance of the Operational Acceptance Certificate

The Operational Acceptance Certificate will be issued by the Employer once the following items are fulfilled:

- The Cold and Hot Commissioning Tests for the PV Plant have been successfully executed.
- The Operational Acceptance Test for the PV Plant is successfully passed.
- The punch list has been prepared and delivered by the Contractor and the Employer has approved the punch list items and determined the value thereof, which must be remedied within fifteen (15) days from the issuance of the Operational Acceptance Certificate.
- The Final Documentation has been delivered by Contractor.
- The O&M Manual has been delivered by the Contractor.
- Training of EC O&M staff has been completed in accordance with Section 5.0

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- Liquidated Damages have been paid, if applicable.
 - Initial Inventory comprising of mandatory spares, special tools, equipment along with consumables as specified have been replenished and turned-over to the EC.

4.5 LIQUIDATED DAMAGES FOR NOT MEETING FUNCTIONAL GUARANTEES AND GUARANTEED ANNUAL NET ENERGY OUTPUT

4.5.1 For Not Meeting Functional Guarantees Based on Operational Acceptance Test

The Contractor shall pay liquidated damages if the Actual Measured Net Energy Output obtained from the Operational Acceptance Test is lower than 95% of the Calculated Net Energy Output above without further consideration of measurement uncertainties. The formula for calculating the liquidated damages is provided in Appendix 8, Functional Guarantees , Section IX of the Contract Document.

4.5.2 For Not Meeting Guaranteed Annual Net Energy Outputs and Exceeding Allowable Module Degradation Factor

After Operational Acceptance Certificate issuance, Contractor shall still be legally bound for warranting their net energy output values and their guaranteed solar module degradation during the useful life (25 Years) of the Solar PV Plant as follows:

- Onsite measured annual net energy output shall not be lower than 95% of the guaranteed net energy output.
- Variation in measured annual module degradation starting from the 2nd year shall not exceed 1/25th of 20%.
- If the measured annual net energy value falls below 95% of the guaranteed annual net energy value or the 1/25th of the acceptable module degradation of 20%, the EPC Contractor shall be liable for monetary compensation to the EC for loss in revenue due to lower generation, provided that the Contractor is not able to remedy the issue(s).

Contractor's liability if it is not able to meet guaranteed annual net energy outputs and/or exceed allowable module degradation factor is provided in Appendix 8, Functional Guarantees , Section IX of the Contract Document.

The liquidated damages are payable in the proportions of currencies in which the Contract Price is payable.

4.6 PROJECT WARRANTIES

In addition to the long term net energy output guarantees of the Solar PV Plant, Bidders are required to submit warranties with their techno-commercial bid up to the defects liability period and useful life of the Solar Modules and MV Transformer (25-Year) while Inverters and Mounting Structures (10-Year).

These project warranties shall essentially include but not be limited to:

4.6.1 Defects Warranty

The EPC Contractor shall provide five (5) years defect liability warranty for the entire PV Plant from the PV modules to the Interconnection Point and Metering. The Contractor shall warrant the project free from any and all defects including unseen and latent in all project components and workmanship.

In case of any manufacturing defect or underperformance of any project component, the EPC Contractor is required to provide full corrective maintenance at no extra cost to the EC. Corrective maintenance means the repair or replacement of defective materials and components. Corrective maintenance activities shall be initiated as soon as a failure is detected. It shall always be ensured that the staff of the EC is present and trained during each corrective maintenance activities.

The Contractor shall be responsible for maintaining and refilling the spare parts stock at no additional cost for the EC. Furthermore, the Contractor shall manage all warranty cases including the dismantling, packaging, shipping and/or safe disposal of defective materials.

EC shall reserve the right to monetary compensation for loss of energy generation due to plant unavailability.

4.6.2 Project Components Warranty

Project components warranty can essentially be construed as guarantees/warranties provided by the project component manufacturers beyond the defects liability period, performance warranty period and extended warranties. The contractor will determine and pay for extended warranties under the contract.

Warranties and condition thereof for key project components are separately specified in general technical specification of key project components presented in Section II, Components Specifications below. Any and all such warranty for any of the project components shall be transferred by the Employer to the EC after Plant Operational Acceptance.

4.6.3 Spares and Special Tools

Bidders shall submit list of spares recommended by respective project component suppliers.

The list shall include mandatory spares required for the five (5) years of defects liability, with justification on the recommended spares and consumable quantities.

List of mandatory spares provided by Bidders shall be considered as inventory up to the end of defects liability period. If the spares are consumed during this period, Contractor shall maintain the inventory spares at the project site as per the submitted list till the end of the defect liability warranty period. No cost shall be paid to the Contractor on this account.

In addition to these, Bidders are required to submit separate list of spares (not included in the Bid Offer) required after successful completion of defects liability period for the remaining years of operation up to Year 25 as specified in the list of spares provided in Appendix ~~III~~IV of the Bidder's

Technical Proposal. This shall essentially include inverters, oil filtration schedules for transformers, all their components as recommended by respective manufacturers and applicable spares and consumables for successful operation of PV plant for designed life.

A template form for list of spares and consumables is presented in Appendix **III** of the Bidder's Technical Proposal. Bidders shall submit this list along with its techno-commercial offers.

Besides the spares and consumables, the Contractor also needs to maintain an inventory of special tools and equipment needed for the plant after successful completion of Operational Acceptance Test. In particular, all the special tools and other equipment that are necessary for the overhaul, maintenance and adjustment of the whole Plant facilities and equipment shall be included in the Contractor's scope of supply. The Contractor shall provide one (1) set of new special tools. Corresponding toolboxes and tool cabinets shall also be provided by the Contractor.

All spare parts shall be directly interchangeable with the corresponding parts installed in the PV plant and shall meet the requirements of the specifications of the PV plant. Spare parts comprise all disciplines of civil, mechanical, electrical and I&C works and shall be in compliance with table given below:

Spare Part	Required Quantities
PV Plant	
PV modules	1% of installed modules
PV module mounting assemblies	10
PV module cable connectors	10
DC string fuses	10
String Combiner Box (critical internal hardware)	0.5%
String Combiner Box (complete)	1
Inverter	7.5% of installed units
Electrical BOS	Other key components: cables, consumables, auxiliary transformer, MV terminations, connectors, protection, breakers etc
MV Components 13.2 kV/23kV	To be defined by manufacturer/supplier
Sensors	
Pyranometers	1
Ambient temperature sensor	1

Module temperature sensor	1
Data logger (complete)	1
Others	
SCADA system	Of key components: 2
Security system	Of key components: 2
Network Interface	Of key components: 2

Note: Key components are those spare parts included in the recommended spare parts of the manufacturer.

5.0 TRAINING

5.1 General

Training of EC personnel from test commissioning and handing over the Plant to the EC, operation and maintenance, , provision of all the documentation necessary for the correct performance and maintenance for the life cycle of the Solar PV plant shall be part of Contractor's responsibility.

The Contractor is required to demonstrate the implementation of a Training Program for the personnel of the EC during construction phase. The EC will select several employees for the operation of the solar PV plant. The training to be carried out shall cover all aspects of plant O&M.

The Contractor shall submit, within three (3) months from the Contract Effective Date, a detailed training plan including scope and timing for review by the Employer in coordination with the EC. The Contractor shall submit, two (2) months prior to the start of each classroom lesson, a Course Description and Lesson Plan for review by the Employer in coordination with the EC. The training program shall include pre-commissioning and commissioning so that operation and maintenance staff may have on-the-job training during the pre-commissioning and commissioning phases under the direction of the Contractor aside from simulated training on operation and maintenance. The Contractor shall provide all the materials, training aids while the EC shall facilitate the venue for the training.

5.2 Program Goals and Objectives

The training program covers both training and qualification. The goal of the training and qualification program is to ensure that the PV Plant's personnel acquire and maintain the combination of knowledge and demonstrated skills to fulfill their responsibilities. The EPC Contractor shall also design a qualification program that may be followed by the EC. This will reasonably assure that the PV Plant is operated safely and efficiently while also ensuring the long-term economic success of the Plant.

The site objectives required to attain these goals are as follows:

- All designated personnel will participate in training to satisfy local law, permits, regulations, and any other training as assigned.

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- All designated personnel will participate in PV Plant familiarization training.
 - After the training, each employee must qualify by formal written program to the position each one will hold; and
 - Employees will be required to re-qualify for his or her position regularly to ensure maintenance of proficiency and knowledge of the PV Plant.

5.3 Staff Responsibilities and Training Organization

Initially, all EC personnel who will eventually operate the plant are responsible to participate in both formal and simulated trainings to achieve and maintain qualification for their assigned position. Thereafter, maintaining an assigned level of qualification is a condition for continuing assignment in the PV Plant.

The PV Plant Manager has the overall responsibility for ensuring that PV Plant personnel are adequately trained by the EPC Contractor and will be fully qualified to perform their assigned duties after plant handover.

The Training Supervisor of the Contractor is responsible for the day-to-day administration of the training and qualification plan. The Training Supervisor will work closely with the EC to ensure effective program development and implementation.

5.4 Program Description

The training and qualification plan shall be self-paced and self-taught. It shall be based on “on-the-job training”, supplemented by classroom instruction and/or computer-assisted/simulated trainings for required topics. Special trainings and seminars for specific knowledge and skill requirements, which are considered beyond the capabilities of the Contractor’s training staff, have to be evaluated and are to be outsourced by the Contractor on a case-by case basis.

The personnel position to receive training is detailed below:

Position	Persons
Project Engineer	2
Overseer/Supervisor	2
Operators	2

The training and qualification program shall include a review of the PV plant systems as well as their operation and maintenance requirements. It shall also cover health and safety, and other general matters. The training will be held in English language. Documents and certificates will be in English only. The training shall comprise but not be limited to the following:

- Technical basics and components of a PV plant
- Design and planning of PV plant

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- General function of a PV plant
 - Norms and standards
 - Health, Safety, and Environment (HSE)
 - Control room daily work
 - Operation of the PV plant
 - Monitoring of the PV plant
 - Access to the monitoring system
 - Monitoring of grid connection signals
 - Fault detection
 - Action plan for fault detection
 - Preventive maintenance and Module Cleaning
 - Supervision and managing of corrective maintenance
 - Spare parts logistics and usage
 - Plant documentation
 - Monthly reporting
 - Communication with suppliers
 - Managing of warranty claims

6.0 CODES AND STANDARDS

The Bidder shall ensure that the engineering, design, construction, testing, etc. of all Plant components, including all auxiliary facilities and systems, are according with the latest editions of internationally recognized standards and codes and compliant with relevant National codes and local codes at the project site area. Refer to

The latest editions of the standards, codes and recommendations and directives including the national annexes issued by the following organizations shall apply for the design, construction, testing and commissioning of the Project.

International standards

EC	European Standards
ISO	International Standard Organization
IEC	International Electro-Technical Commission

National standards

NEC Philippines National Electrical Code

NBC Philippines National Building Code
PGC Philippines Grid Code
PDC Philippines Distribution Code
PNS Philippines National Standards

Application of subsequent addenda and code cases published after the EPC Contract award is subject to agreement between Employer and the successful Bidder. In addition, the Bidder shall conform to all applicable requirements of the national and local regulations of the project area and meet all requirements of Employer at the EPC Contract award date.

The Bidder shall draw Employer's attention to any conflict between the requirements of this document and Employer's references. Should the requirements of this document conflict with the requirements of the codes and standards references herein or with the applicable law, standards, local regulations and Employer's design specifications, then the more stringent requirements shall apply. Should there be any difference of opinion with regard to the interpretation of requirements; the Employer shall instruct the Bidder as to the requirements and the Bidder shall, at its cost, comply with that instruction.

For all structures and structural components, buildings, foundations, etc. an appropriate design according the above-mentioned specifications has to be elaborated and presented.

The design report shall include among other items the following minimum descriptions:

- Introduction and structural description
- Detailed drawings of structures and foundations
- Material properties
- Used normative and codes
- Load assumptions, safety factors and combination coefficients
- Analysis and design criteria
- Technical references
- Structural calculations
- Design results
- Information about the design software
- Connection design.

Prior to construction, proper design drawings for all structures and structural components, buildings and foundations have to be presented. The drawings shall indicate material properties, sizes and dimensions of all elements, location of installation, constructing procedures, technical specifications, numbering system of elements, etc. Each drawing shall be equipped with a general plant overview indicating the location of the displayed element. Clear information shall be given by appropriate details. All drawings have to be in scale.

The Bidder is required to design, construct and operate the PV Plant in adherence to all National and Local codes relevant to the project area.

Amongst others, the following international standards in addition to National Standards shall apply for the installation, testing, and operation of the PV Plant (not limited to):

General:

- IEC 60364 (all parts), Low-voltage electrical installations
- IEC 61936-1, Power installations exceeding 1 kV a.c. - Part 1: Common rules
- IEC 60071, Insulation co-ordination - Part 1: Definitions, principles and rules
- IEC 60068, Environmental testing. Part 1: General and guidance

PV Installation:

- IEC 60364-7-712:2002, Electrical installations of buildings – Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems
- EN 50521:2008 Connectors for PV systems
- IEC 60228, 60364-1, 60332-1-2, 60754-1 and -2, 61034, TÜV approval 2Pfg1169: cable design and wiring for the electrical infrastructure and connection infrastructure (DC cables should be solar cables)
- IEC 62109-1 and IEC 62109-2: Safety of power converters for use in photovoltaic power systems – Part 1: General requirements & Part 2: Particular requirements for inverters

Commissioning and Documentation:

- IEC 60364-6, Low-voltage electrical installations – Part 6
- IEC 62446, Grid connected photovoltaic systems – Minimum requirements for system documentation, commissioning tests and inspection,

Power Transformers:

- IEC 60076, Power Transformers

MV Switchgears:

- IEC 62271, High voltage switchgear and control gear assemblies
- IEC 60376, Specification of technical grade sulfur hexafluoride (SF₆) for use in electrical equipment
- HD 620 Distribution cables with extruded insulation for rated voltages from 3,6/6 (7,2) kV up to 20,8/36 (42) kV

LV System:

- IEC 61439, Low-voltage switchgear and control gear assemblies
- IEC 60439, Low-voltage switchgear and control gear assemblies
- IEC 60947, Low-voltage switchgear and control gear

Earthing and Lightning Protection:

- IEC 60364 (4-41) Low-voltage electrical installations: Protection for safety – Protection against electric shock

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- IEC 60364 (5-54) Low-voltage electrical installations: Selection and erection of electrical equipment – Earthing arrangements and protective conductors
 - IEC 61936-1 Power installations exceeding 1 kV A.C. - Common rules
 - EN 50522 Earthing of power installations exceeding 1 kV A.C.
 - IEC 60364-7-717 Low-voltage electrical installations: Requirements for special installations or locations – Mobile or transportable units
 - IEC 62305 (all parts), Protection against lightning
 - IEC 60099 Surge arresters

EMC:

- IEC 61000, Electromagnetic compatibility (EMC)

Buildings and housings, inverter protection:

- IEC 60721-3-3 Section 3: Classification of environmental conditions (stationary use at weather protected locations)
- IEC 60721-3-4 Section 4: Classification of environmental conditions (stationary use in non-weathered protected locations)

Where construction and maintenance rules or guidelines of the manufacturers of the products or systems are available, the Bidder shall follow these instructions as well.

7.0 ENVIRONMENTAL CODE OF PRACTICE (ECOP)

Environmental Safeguards Guidelines for Small Civil Works ASEP – Rural Network Solar

A. Nature of Expected Civil Works

The ASEP – Rural Network Solar (RNS) project involves the installation of grid tied solar farms for Electric Cooperatives (ECs) at three sites in Luzon, two in the Visayas and two in Mindanao. Each solar farm will have a power generating capacity of 1 MWp. The land area to be utilized for each farm ranges from 1.2 to 1.5 hectares. The key components of the solar farm to be installed include the solar PV modules, power transformers and other electro-mechanical equipment, and control room/gate house.

The Environmental Code of Practice (ECOP) applies to construction activities that are small-scale and are not required to undergo a formal environmental assessment based on the Philippine EIA system.

B. Purpose of these Guidelines

Given the nature and small scale of the proposed civil works under this project, a full-blown environmental assessment report may not be considered necessary. However, as in most cases

where construction activities are to be undertaken, there are likely to be some concerns relating to inconveniences or nuisances to surrounding areas during construction which will require careful construction planning and management and the submission and implementation of an Environmental and Social Management Plan (ESMP) as stipulated in the project's Environment and Social Safeguards Framework (ESSF).

The ECOP/Environmental Safeguard Guidelines for Small Civil Works aim to establish simple rules, procedures and institutional arrangements for the identification, monitoring and mitigation of possible adverse environmental impacts with respect to small civil work activities undertaken in this project. The responsible parties are expected to follow these procedures and keep the records and documentation for later audits.

These Guidelines are consistent with the requirements of the World Bank Environmental Safeguards Operational Policy (O.P.4.01).

C. Three-Step Procedures

These three steps involve conducting a site environmental safeguard impacts analysis, performing a Construction Site checklist to identify environment friendly construction design criteria, and establishing a standardized Environmental Code of Practice

Step 1: Preparation of 'Construction Site Checklist' to identify Key Environmental Safeguard Issues

As a first step prior to construction, the Contractor's Environmental and Social Safeguards Specialist (ESSS) will complete a *Screening Checklist* to determine possible environmental impacts/nuisances for every civil work proposal. The Checklist aims to identify and prepare for any environmental and social safeguards issues that may be incurred before and during construction. The checklist will assess, using specific conditions and characteristics of the site, to identify and address potential impacts to the environment. In case any potential adverse environmental impacts are identified then they will require input into the good practice environmental template (step 3 below).

A sample of the **Construction Site Checklist** is provided below. This should be completed by the **ESSS and supervising engineer**, in charge of managing the construction works.

Checklist-1: Sample of Format for Construction Site Checklist

General Information				
Name of Project	Name of site for Subproject construction			
Name of engineer/ technical officer	Person(s) who conducted the studies			
Date of Site Study Completed	The date on which the onsite studies were completed.			
Information Source	Name and contact of person(s) interviewed/met			
Proposed Output	Subproject construction			
Environmental Issues	Yes	No	Unknown	Remark/ Recommended Action

Adequacy of space for construction				
Adequacy of access to the construction				
Adequacy of space to build				
Any impact on areas adjacent to the site				
Potential interruption or limitation of access to dwelling or business on the site				
Potential impact to high cultural value on the site or within the immediate vicinity				
Potential deterioration of air or water quality, and noise in the immediate vicinity.				
Interruption or limitation of access to sidewalks, power and telephone lines, water and sewerage, sanitation system, and other environmental services.				
Reduction of green areas				
Flooding on the site in the wet season (<i>write down how deep and how long it usually floods on the site</i>)				
Potential soil erosion				
Increased surface runoff				
Others (describe)				

Summary of Overall Assessment: *Prepare a short summary of an overall assessment basing on the site screening results above. What recommendation/suggestion is made on the specific civil works project?*

Step 2: Preparation of Checklist on Environmentally Friendly Construction Design Criteria to be Used

The second step in the environmental safeguards procedures for the civil works involves the completion by the contractor of a checklist of some specific design criteria to be adopted in the process of construction. These design criteria involve certain environmentally friendly/enhancing elements that would avoid or minimizes incurrence of adverse environmental impacts. These design criteria include soil protection, storm water management, and use of vegetative measures. It is not expected that all of these design criteria would be adopted in each case, but the effort should be to adapt as many as possible in the design of the proposed civil works.

This checklist should be completed in advance by the ESSS in cooperation with the subproject supervising team to confirm the use of the environment enhancing design criteria during construction of the proposed sub-projects. A sample of the Checklist on Environmentally Friendly Design Criteria is provided below.

Checklist 2: Sample Format for Checklist on Environmentally Friendly Design Criteria

General Information				
Name of Sub-Project	<i>Name of sub-project (SP) for construction</i>			
Name of engineer/ technical officer	<i>Person(s) who prepared the designs and ensured the use of environment enhancing design criteria</i>			
Date of Site Study Completed	<i>The date on which the site studies were completed.</i>			
Information Source	<i>Name and contact of person(s) contacted</i>			
Proposed Output	<i>SP construction</i>			
Design Criteria	Yes	No	Unknown	Remark
Arranging of PV panels in a way that will allow the passage of runoff between each module thereby minimizing the creation of concentrated runoff				
Provision of drainage system to catch rainwater dripping from the solar PV panels to avoid soil erosion				
Minimization of concrete surface to allow rainwater percolation into soil				
Stabilization of slopes using vegetative measures (where required)				
Others (describe)				

Summary of Overall Assessment: *Prepare a short summary of an overall assessment basing on the design criteria screening results above. What recommendation/suggestion is made to the project?*

Step 3: Use of good practice Environmental template for small works

After completing the construction site and environment-friendly design criteria screening using the above checklist formats, the last step in the environmental safeguards procedures would be the development of a simple template that should be treated as environmental specifications for construction.

As the small-scale construction activities envisaged might cause impacts and nuisance to nearby surroundings, they need to be avoided or mitigated through application of good engineering practices and strict environmental safeguards measures including use of environment-friendly construction materials and equipment, waste management techniques especially for construction dust and debris, noise control, site management, safety controls, provision of clean water and sanitation facilities etc.

Issues and measures that should be addressed covering potential adverse environmental problems and corresponding mitigation measures is provided below. It is expected that all Contractors working on civil works will adhere to this as part of the bidding specifications and the Contractor's Work Plan. These good practices should include the environmental safeguards issues that may

occur during construction and solutions or what the contractor must do to solve these problems and should draw on the two checklists developed under Steps 1 and 2.

Checklist 3: A good practice Environmental template for Small Civil Works

Phase	Issue	Measure
Screening	<u>Adequate space and access</u> - possible interruption within its vicinity; other issues captured in Checklist.	The selection should avoid sensitive environment and land issues which may be caused by the construction and/or renovation; other measures recommended in the Construction Site Checklist should be adopted.
Design	<u>Drawing and planning</u> the construction by adapting to adjoining physical conditions and minimizing possible environmental issues; incorporate environmentally friendly design features	Adverse Environmental Impact Minimization Measures should be introduced in the construction design;
Construction	<u>Dust:</u> Dust, debris, and particulate materials from the construction will blow to surrounding structures and/ causing nuisances to surrounding families and businesses, specially to vulnerable people (children, elders).	The contractor will spray water to reduce the dust when the weather is dry and periodically clean stagnant debris.
Construction	<u>Noise:</u> Noise from the construction machinery and equipment may cause disturbance to others specially in areas with hospitals, homes for the elderly, and schools.	Contractor will use environment-friendly construction materials and equipment and limit construction hours to minimize possible disturbance to local livelihood. Contractor will fence off Construction site to reduce any possible annoyance to neighbors.
	<u>Construction materials and construction debris:</u> the inadequate disposal of waste materials and hazardous materials (fibro-cement, fuel, oil, cement etc). <u>Garbage collected and dredged spoils:</u> see section on Special	Contractor will store clean construction materials, reduce excavated debris, and waste generation whenever feasible. Contractor should separate hazardous wastes from other wastes and handle them according to established environmental guidelines. Contractor should separate recyclable

	considerations on waste management below for complete treatment.	wastes from non-recyclable ones. All wastes should be properly handled. Any illegal waste dumping or burning is prohibited.
	<u>Disturbance:</u> Nearby offices and residents will be disturbed by prolonged construction.	The contractor will perform construction activities within appropriate time frame which does not disturb work of officers or living of local residents.
	<u>Contractors' office, storage facilities including sanitation:</u> Sanitation for the workers at the construction site is inadequate leading to unclean working environment.	Sites for contractor's office and storage facilities –, storage, equipment storage, site office, etc. Provision for drainage during heavy rains. The contractor will provide temporary sanitation facilities for the workers. Contractor should dispose of domestic sludge/wastewater according to regulations.
	<u>Contamination:</u> Contamination of water supply or source within the vicinity of the site is caused by the construction activities.	The contractor will implement necessary measures to prevent possible contamination to water supply or source in the surrounding area.
	<u>Pedestrian security and traffic congestion</u> – Construction site may cause safety concern for pedestrians, especially for school children, during construction. Similarly, limited traffic constriction during construction may be caused (due to traffic detours) restricted by vehicle and pedestrian passageways and exit ramps.	The contractor will fence off the site for general safety measures; traffic re-routing (if required) should be appropriately managed and planned for.
	<u>Interruption of services</u> - water, electricity, telephone, during construction.	The contractor will implement necessary measures to prevent any interruption to access to public services.
	<u>Informing the public</u> about construction and work schedules, interruption of services, or traffic.	The contractor will put signboard summarizing the construction activities and schedule for completion of tasks.
Post-Construction	<u>Site Clearing:</u> Cleaning the site after construction- disposing	The contractor will clean the site carefully and remove all waste

	wastes properly so that they are not dangerous to the environment.	materials as spelled out in the construction bidding.
Others	<u>Workers' Safety: Set up of scaffoldings</u> <u>Covid-19 protocol</u> <u>Soil erosion</u> Removal of vegetation and earthworks can expose soil to erosion <u>Increased surface runoff</u> Land levelling can increase surface runoff which can result to flooding during rainy days <u>Other identified environmental safeguard issues.</u>	For scaffold with a platform height of under 2m, the contractor is required to provide external strengthening for scaffolding height to width ratio is a minimum of 2:1. If the platform is 2m in height or over the ratio must be 3:1. This means the width of the base of the tower must be at least a ½ or 1/3 the height of the platform. The contractor shall comply with the covid-19 protocol during construction at all times Contractor will undertake measures to control erosion of exposed soil Provide appropriate temporary drainage facility to evacuate storm water from the site

These measures **should be included in the bidding document and contractor's work plan** as part of the specifications for construction that will be followed to address any potential environmental safeguard concerns.

The Contractor would prepare an Environmental and Social Management Plan (ESMP) which details how the issues would be addressed and the measures implemented. The ESMP would then feed into the Design. The NPC Project Manager and the EC will be responsible in the inspection / supervision / monitoring of the subprojects in accordance with the ESMP. The PMO Safeguards Specialist will review and audit the ESMP monitoring reports every year.

Special Considerations (case-to-case basis) on General Waste Management. The borrower, contractor and operator of the solar farm should ensure that a waste management system is in place to address issues linked to waste minimization, generation, transport, disposal, and monitoring.

1. Waste Management Planning

Facilities that generate waste should characterize their wastes according to composition, source, types of wastes produced, generation rates, or according to local regulatory requirements. Effective planning and implementation of waste management strategies should include:

- Review of new waste sources during planning, siting, and design activities, including concrete chippings, excavation materials, pieces of rebars, cement, sand, wires, pipes, wood, etc. during equipment modifications and process alterations, to identify expected waste generation, pollution prevention opportunities, and necessary treatment, storage, and disposal infrastructure
- Collection of data and information about the process and waste streams in existing facilities, including characterization of waste streams by type, quantities, and potential use/disposition
- Establishment of priorities based on a risk analysis that takes into account the potential EHS risks during the waste cycle and the availability of infrastructure to manage the waste in an environmentally sound manner
- Definition of opportunities for source reduction, as well as reuse and recycling
- Definition of procedures and operational controls for onsite storage
- Definition of options / procedures / operational controls for treatment (if applicable) and final disposal

2. Waste Prevention

Processes should be designed and operated to prevent, or minimize, the quantities of wastes generated and hazards associated with the wastes generated in accordance with the following strategy:

- Substitute raw materials or inputs with less hazardous or toxic materials, or with those where processing generates lower waste volumes
- Institute good housekeeping and operating practices, including inventory control to reduce the amount of waste resulting from materials that are out-of-date, off-specification, contaminated, damaged, or excess to plant needs
- Institute procurement measures that recognize opportunities to return usable materials such as containers and which prevent the over ordering of materials
- Minimize hazardous waste generation by implementing stringent waste segregation to prevent the commingling of non-hazardous and hazardous waste to be managed

3. Recycling and Reuse

In addition to the implementation of waste prevention strategies, the total amount of waste may be significantly reduced through the implementation of recycling plans, which should consider the following elements:

- Evaluation of waste production processes and identification of potentially recyclable materials

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- Identification and recycling of products that can be reintroduced into the manufacturing process or industry activity at the site
 - Investigation of external markets for recycling by other industrial processing operations located in the neighborhood or region of the facility (e.g., waste exchange)
 - Establish recycling objectives and formal tracking of waste generation and recycling rates
 - Provide training and incentives to employees in order to meet objectives

4. Treatment and Disposal

If waste materials are still generated after the implementation of feasible waste prevention, reduction, reuse, recovery and recycling measures, waste materials should be treated and disposed of and all measures should be taken to avoid potential impacts to human health and the environment.

Selected management approaches should be consistent with the characteristics of the waste and local regulations, and may include one or more of the following:

Treatment or disposal at permitted facilities specially designed to receive the waste. Examples include: composting operations for organic non-hazardous wastes; Materials Recovery Facilities in the locality near the site; in properly designed, permitted and operated landfills designed for the respective type of waste; or other methods known to be effective in the safe, final disposal of waste materials such as bioremediation.

5. Hazardous Waste Management

Hazardous wastes should always be segregated from nonhazardous wastes. If generation of hazardous waste cannot be prevented through the implementation of the above general waste management practices, its management should focus on the prevention of harm to health, safety, and the environment, according to the following additional principles:

- Understanding potential impacts and risks associated with the management of any generated hazardous waste during its complete life cycle
- Ensuring that contractors handling, treating, and disposing of hazardous waste are reputable and legitimate enterprises, licensed by the relevant regulatory agencies and following good international industry practice for the waste being handled
- Ensuring compliance with applicable local and national laws such as Republic Act 9003 or the Ecological Solid Waste Management Act; and Republic Act 6969: Toxic Substances, Hazardous and Nuclear Waste Control Act of 1990.

6. Hazardous Waste Storage

Hazardous waste should be stored so as to prevent or control accidental releases to air, soil, and water resources in area location where:

- Waste is stored in a manner that prevents the contact between incompatible wastes. Examples include sufficient space between incompatibles or physical separation such as

-
- walls or separate containment curb/ areas.
 - Store in closed containers away from direct sunlight, wind and rain
 - Secondary containment systems should be constructed with materials appropriate for the wastes being contained and adequate to prevent loss to the environment
 - Provide adequate ventilation where volatile wastes are stored.

Hazardous waste storage activities should also be subject to special management actions, conducted by employees/workers who have received specific training in handling and storage of hazardous wastes:

- Provision of readily available information on chemical compatibility to employees/workers, including labeling each container to identify its contents
- Limit access to hazardous waste storage areas to employees/workers who have received proper training
- Clearly identify (label) and demarcating the area, including documentation of its location on a facility map or site plan
- Conduct periodic inspections of waste storage areas and documenting the findings
- Prepare and implement spill response and emergency plans to address their accidental release

7. Transportation

On-site and Off-site transportation of waste should be conducted so as to prevent or minimize spills, releases, and exposures to employees/workers and the public/community. All waste containers designated for off-site transport should be secured and labeled with the contents and associated hazards, be properly loaded on the transport vehicles before leaving the site, and be accompanied by a transport paper (i.e., manifest) that describes the load and its associated hazards, consistent with RA 6969 and its Implementing Rules and Regulations.

8. Treatment and Disposal of Hazardous Wastes

In addition to the recommendations for treatment and disposal applicable to general wastes, the following issues specific to hazardous wastes should be considered:

8.1. Commercial or Government Waste Contractors

In the absence of qualified commercial or government-owned waste vendors (taking into consideration proximity and transportation requirements), facilities generating waste should consider using:

- Have the technical capability to manage the waste in a manner that reduces immediate and future impact to the environment
- Have all required permits, certifications, and approvals, of applicable government authorities
- Have been secured through the use of formal procurement agreements

In the absence of qualified commercial or government-owned waste disposal operators (taking into consideration proximity and transportation requirements), sub-project

proponents or sub-borrowers should consider:

- Installing on-site waste recycling processes
- As a final option, constructing facilities that will provide for an environmental sound long-term storage of wastes on-site or at an alternative appropriate location up until external commercial options become available

8.2. Hazardous Waste

Hazardous waste materials are frequently generated in small quantities by many projects through a variety of activities such as equipment and building maintenance activities.

Examples of these types of wastes include: spent adhesives, admixtures, solvents and oily rags, empty paint cans, chemical containers; used lubricating oil; used batteries (such as nickel-cadmium or lead acid); and lighting equipment, such as lamps or lamp ballasts. These wastes should be managed following the guidance provided in the above sections.

8.3. Monitoring

Monitoring activities associated with the management of hazardous and non-hazardous waste should include:

- Regular visual inspection of all waste storage collection and storage areas for evidence of accidental releases and to verify that wastes are properly labeled and stored. When significant quantities of hazardous wastes are generated and stored on site, monitoring activities should include:
 - Inspection of vessels for leaks, drips or other indications of loss
 - Identification of cracks, corrosion, or damage to tanks, protective equipment, or floors
 - Checking the operability of emergency systems
 - Documentation of the results of testing for integrity, emissions, or monitoring stations (air, soil vapor, or groundwater)
 - Documentation of any changes to the storage facility, and any significant changes in the quantity of materials in storage
- Regular audits of waste segregation and collection practices
- Tracking of waste generation trends by type and amount of waste generated
- Characterization of waste at the beginning of generation of a new waste stream, and periodically document the characteristics and proper management of the waste, especially hazardous wastes
- Keeping manifests or other records that document the amount of waste generated and its destination
- Periodic audit of third party treatment and disposal services including re-use and recycle facilities when significant quantities of hazardous wastes are managed by third parties. Whenever possible, audits should include site visits to the treatment storage and disposal location
- Regular monitoring of groundwater quality in cases of hazardous waste on site

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- storage and/or pretreatment and disposal
- Monitoring records for hazardous waste collected, or stored, should include:
 - Name and identification number of the material(s) composing the hazardous waste
 - Physical state (i.e., solid, liquid, gaseous or a combination of one, or more, of these)
 - Quantity (e.g., kilograms or liters, number of containers)

COMPONENTS SPECIFICATION

1.0 SOLAR PV MODULES

Employer is essentially looking for developing a Solar PV Plant project with poly crystalline (pc-Si) or mono crystalline (c-Si) Solar PV technology only.

1.1 Quality Certification

PV modules to be supplied for the project shall have been certified by an independent accredited laboratory to the IEC quality and safety standards listed in Table 2 below.

PV modules shall typically be tested for reliability according to standards developed by the International Electro-technical Commission. Standards IEC61215 (for crystalline silicon modules) include, amongst others, tests for thermal cycling, humidity, mechanical stress and twist, hail resistance and performance under fixed test conditions.

Furthermore, a certificate by independent testing institute such as TÜV or ISE, that PV modules are free of PID (potential induced degradation) shall be submitted.

Table 2 below summarizes major PV quality standards that all the modules shall comply. These tests are an accepted quality mark and indicate that the modules can safely withstand extended use.

Table 2: Applicable PV Module Standards

IEC 61215	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval
IEC 61730	PV module safety qualification
IEC 61701	Salt mist corrosion testing of photovoltaic (PV) modules
IEC 62716	Photovoltaic (PV) modules – Ammonia corrosion testing
IEC 62804	Photovoltaic (PV) modules - detection of potential-induced degradation testing
Conformite Europeenne (CE)	The certified product conforms to the EU health, safety and environmental requirements.

Solar PV modules are required to be listed by independent and certified laboratories such as TÜV, ISE, ASU.

1.2 Guarantee Benchmarks

1.2.1 Product Guarantee

The PV modules will be guaranteed against any manufacturing defect. Defects liability shall include but not limited to glass, frame bowing, de-lamination, water ingress, junction box arching, hot spots, snail traces etc. for a period of no less than 25 years. Contractor shall ensure solar module guarantee from the manufacturer for this purpose.

The product guarantee will not be limited to the modules but will also include termination connectors, cables and all associated accessories supplied with the module by the module manufacturer. In the event of failure during guarantee period, manufacturer shall replace module free of cost or as agreed by the EC, refund the then current market price of modules.

1.2.2 Nominal Power Guarantee

Power output warranty of modules: based on a linear degradation for minimum 25 years of operation shall be required at no greater than 20% degradation after the start of power output warranty, with a linear degradation guarantee. Contractor shall ensure solar module guarantee from the manufacturer for this purpose. In case linear degradation exceeds the yearly value, the manufacturer shall effect needed corrective action and/or replacement of the solar module.

1.3 Technical Benchmarks

1.3.1 Nominal Power Rating

For the proposed development of the solar PV plant, the minimum acceptable module peak power rating is 260 Wp at STC; bidders are expected to accordingly offer ratings equal or higher than 260 Wp based on manufacturer's production availability and compliance with the client's benchmarked track record.

1.3.2 Nominal Power Tolerance

PV module selected shall have positive tolerance only.

1.3.3 Efficiency

Minimum acceptable efficiency of all the modules under standard test conditions is $> 16\%$. Supporting IEC certification shall be provided certifying the module efficiency.

1.3.4 Temperature Coefficients

Variation in temperature has a significant effect on electrical parameters of PV modules; following are the expected temperature coefficients for all the proposed modules by manufacturers:

- Temperature Coefficient of P_{mpp} - $0.45\%/^{\circ}\text{C}$
- Temperature Coefficient of V_{oc} - $0.35\%/^{\circ}\text{C}$

1.4 Experience Benchmarks

The minimum experience benchmark for the manufacturer of proposed modules shall be as follows:

-
- Manufacturers shall have a production track record for a minimum of 3 years having executed at least 1.5 GW cumulated production prior to the pandemic and over 0.5 GW of actual production during 2018 & 2019. The bidder shall submit the authentic substantiating document/s to support the same.
 - The manufacturer shall comply and possess ISO 9001 quality manufacturing certification.

1.5 Specific construction requirements

In addition to the best construction requirements of respective manufacturers, following are the specific requirements for all the crystalline modules:

- All the modules shall be equipped with IP65 or higher protection level junction box and appropriately sized output power cable of symmetric length with locking connectors.
- In order to minimize power loss due to partial shading on modules, all modules shall be equipped with changeable bypass diodes.
- Modules shall be capable of withstanding a wind pressure of 2400Pa or the local wind loading, whichever is greater.
- Modules may be subjected to high intensity hailstorms thus appropriate measures should be taken for selecting high tempered glass.
- Module frames shall be corrosion resistant and shall have adequate holes for mounting, water drain and connecting ground conductor. All modules shall be appropriately grounded.

1.6 Submission

In addition to the techno-commercial offer, the bidder shall submit following manufacturer/supplier documents:

- Test Certificates according to the specified IEC standards by the qualified test lab.
- Technical literature giving complete specifications and information of modules
- General Arrangement drawing of module, showing front and rear view, overall dimensions, installation plans, termination arrangements, packing dimensions and weights.
- Independent test characteristics carried out in accordance with the IEC certificate to verify the module efficiency
- Authentic substantiating document/s to support the experience benchmark requirements.
- Manufacturer's ISO9001 certification.

Upon securing the contract, EPC contractors shall also submit installation manual and flash test lists of the modules.

2.0 INVERTERS

In view of project size, operations, maintenance & future expansion requirements, Employer is essentially looking for developing the Solar PV plant project with string inverters only. Employer would like to invite offers based on track record benchmarks and performance parameters presented in below sections.

2.1 Quality Certification

The inverters shall be designed to be able to transmit the maximum output of the solar PV generator at all possible ambient temperatures and local conditions.

Inverters shall be compliant to most recent standards (and latest amendments if any) developed by the IEC and EN and be certified to operate at the altitude of the sites. Table 3 below presents a non-exhaustive list of standards to which inverters should conform to.

Table 3: Applicable Inverters Standards

EN 61000-6-1	Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments.
EN 61000-6-2	Electromagnetic compatibility (EMC). Generic standards. Immunity for industrial environments.
EN 61000-6-3	Electromagnetic compatibility (EMC). Generic standards. Emission standards for residential, commercial and light- industrial environments.
EN 61000-6-4	Electromagnetic compatibility (EMC). Generic standards. Emission standards for industrial environments.
IEC 61683	Photovoltaic systems - Power conditioners - Procedure for measuring efficiency.
IEC 61727	Characteristics of the Utility Interface
IEC 62116	Testing procedure of Islanding Prevention Methods for Utility-Interactive Photovoltaic Inverters
IEC 62109	Safety of power converters for use in photovoltaic power systems
IEEE 1547	Standard for Interconnecting Distributed Resources with Electric Power Systems

2.2 Grid Code Compliance & Power quality Requirements

Compliance to power quality and grid codes and other national electrical codes for utility scale solar projects is essential for all proposed systems.

2.2.1 Summary of Specific Power Quality Requirements

The following shall be the non-exhaustive specific requirements:

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- DC Injection into the grid: This shall be avoided by using a step-up transformer at the output of the inverter. DC injection shall be limited to 1% of the rated current of the inverter as per IEC 61727.
 - Maximum input voltage of 1000 VDC up to 1500VDC
 - AC output voltage ≥ 400 V
 - reactive and active power control with power factor of 0.9-0.8
 - Frequency-dependent active power limitation and grid management service
 - Frequency operation range 59.7 Hz – 60.3Hz
 - Nominal AC power between 20 & 75 kW. Inverter ratings lower than 20 kW or higher than 75 kW are not acceptable.
 - Protections shall follow the grid operation set points and conditions
 - Corrosion prevention due to marine, salty and tropical environment
 - Degree of Protection: minimum IP 65, outdoor type.
 - The total harmonic distortion limits on AC side should be less than 3%
 - Data Acquisition System facility
 - Operational voltage variation: $\pm 10\%$

2.3 Design Basis

EPC Contractors are expected to independently understand and analyze the site conditions prior to system configuration. The entire project shall have uniform capacities, makes and configurations of inverters.

2.4 Certificates

The inverters should be TUV-tested (or other internationally recognized testing body) for the required Certificates, CE-marked and in compliance with the applicable standards both international, national and to those of the project area.

2.5 Efficiency Benchmarks

Minimum acceptable peak efficiency shall be at least 98% at STC.

The inverter test protocol used by the Euro efficiency shall be efficiency standard.

2.6 Warranty Benchmarks

2.6.1 Product Warranty

The manufacturer's warranty for the inverters will be guaranteed for a minimum period of five (5) years. This warranty will not be limited only for inverters but will also include all associated accessories, instrumentation and control thereof. Contractor shall ensure inverter guarantee from the manufacturer for this purpose.

2.6.2 Extended Warranty

It is essential that the product should give a consistent performance for 25 years life cycle of the project. Bidders should give option for extended manufacturer's comprehensive warranties beyond the minimum guarantee period of 5 years covering +5 years warranty extension up to 25 years as additional cost for consideration and reference only by the EC. Such extended warranty shall not be part of the bid price of the bidder.

2.7 Experience Benchmarks

- Manufacturers shall have production track record for a minimum of 3 years.
- Manufacturers must have successfully completed the manufacturing & supply of at least 1GW utility scale Solar Inverter prior to the pandemic, out of which, at least 250 MW Solar Inverter must have been manufactured & supplied in 2018 & 2019. The bidder shall submit the authentic substantiating document/s to support the same.
- The manufacturer shall comply and possess ISO 9001 quality manufacturing certification.

2.8 Specific Construction Requirements

In addition to the best construction requirements of respective manufacturers, following are the specific requirements for all proposed inverters:

- Inverters should be approved by the module manufacturer for compatibility and such documentary evidence is required to be submitted by the EPC contractor upon award of contract.
- Transformerless inverters shall be preferred.
- Maximum power point tracker (MPPT)-Inverter configurations should be equipped with multiple independent MPP trackers resulting in enhanced system performance.
- Inverters shall be capable of operating at varying power factor preferably in between 0.9 lag to 0.8 and shall be able to inject or absorb reactive power.
- Inverters shall be equipped with power islanding prevention system and shall be capable of low and high voltage ride through feature. The inverters shall be controlled by SCADA.
- DC and AC isolation switchgear - all the inverters must be equipped with standard isolation switchgear at the input and output.
- Inverters with outdoor duty installation shall have a minimum degree of protection of IP65. For indoor installation degree of protection can be IP20.
- Inverter shall have protection against, but not limited to:
 - Over current
 - Ground Fault Detector
 - Over temperature
 - Over voltage
 - Reverse current

2.9 Submission

In addition to the techno-commercial offer, the bidder shall submit following manufacturer/supplier documents:

- Test Certificates according to the specified IEC standards by the qualified test lab.
- General Arrangement drawing of inverter showing front and rear view, overall dimensions, installation plans, termination arrangements, packing dimensions and weights.
- Technical literature giving complete specifications and information.
- Authentic substantiating document/s to support the experience benchmark requirements.
- Manufacturer's ISO9001 certification.
- Independent test characteristics.
- Inverter efficiency versus relative power.
- Inverter efficiency versus temperature.

Following contract award, the bidder shall additionally submit manufacturer's installation guide.

3.0 MODULE MOUNTING STRUCTURES

The module mounting structure shall be fixed axis ground mounted having an array orientation of due south and tilt angle as determined by Contractor as the optimal degrees from horizontal for optimal annual energy production suitable for the selected PV technology.

Bidders are required to offer prefabricated mounting structures with no onsite fabrication work other than general assembly.

3.1 Codes for Mounting Structure Design

The solar PV mounting structures and allied ancillaries shall comply with the requirements of the latest editions of international and national/local codes. The Contractor shall submit the statistical calculation as part of the engineering design. The main load cases for the design of structures (including PV module mounting structures), buildings and foundations are as follows:

- Dead load of structure
- Dead load of equipment and components
- Wind load
- Other design loads considered under relevant codes

Complete statistical calculation of substructure and foundations shall be presented to the Employer for approval as part of detailed engineering post-contract award.

3.2 General

- The module mounting structure shall be fixed ground mounted designed for applicable wind and seismic loading at the project site. EPC shall carry out additional geotechnical studies for

any of the civil works structures and conduct pull out tests for substructure if and as required in accordance to any national/local codes.

- Extreme weather conditions shall be considered in the design of the mounting structures to ensure no permanent damage to mechanical elements. Wind speeds prevailing in the area during typhoons shall be considered.
- A fixed module mounting system of designed inclination shall be used for the PV plant. Design cases using tracking or other systems are not accepted due to the perceived ongoing maintenance and failure risks.
- Mounting structures shall use module manufacturer recommended installation accessories like mounting clips, rails, racks etc. Fixation of PV modules shall be carried out according to PV module manufacturers mounting instructions. UV stability of such fixtures shall also be considered.
- No on site fabrication should be necessary; all the structure members shall be factory fabricated and only assembled on site.

3.3 Construction

- The mounting structures should be tested for stability with minimum deflection and sagging. Maximum permissible limit for sagging shall be 5 mm for designed wind speed.
- Minimum clearance (including PV Modules) of 750 mm from lower PV module rim shall be maintained from the ground at the lower height end of mounting structure.
- Cold form structures shall be preferred for purlins supporting the solar PV modules and hot rolled C channel structures for columns and purlin support members.
- All the structure members shall be hot dipped galvanized in accordance to ASTM A123 / A123M
- Minimum thickness of galvanization should be minimum 120 microns.
- All mounting hardware shall be either of stainless steel or galvanized steel with adequate protection against all climatic conditions.
- Mounting structures shall be designed to facilitate easy replacement of solar PV modules.
- Structure shall have provision to connect the earth cable joining one structure to the other. Connecting modules and structure to same ground cable.
- Structure design shall include a method of fastening the DC cables to the structure at every 50 cm without causing tearing or fluttering of cables and without the use of plastic cable ties (stainless steel cable ties permitted, but stainless steel cable clips or other mechanical fastening preferred).
- Adequate air gap shall be maintained between the modules and mounting structures.

3.4 Quality Demonstration

Upon short listing on manufacturers in agreement to project commercial terms, Contractor shall demonstrate the quality of supply and workmanship onsite prior to proceeding with complete installation. This will essentially include:

- Construction of civil foundations and columns: Essential quality observation shall be on the accuracy of top levels of civil columns.
- Supply and installation of module mounting structure: Essential observation on structure alignments and ease of prefabricated structure erection.
- Fixing of PV modules: Essential observation shall be accuracy of module alignment, examining modules under stress and sagging effect along the length and width of mounting structure.

Such demonstration shall be witnessed on 22 module mountings as per the supplier accepted design following Clauses 3.1, 3.2 and 3.3 above.

3.5 Experience Benchmarks

- Mounting structure manufacturers having in-house facilities for manufacturing, fabrication, welding, etc. are eligible for tendering.
- Manufacturers shall have a fabrication production track record for a minimum of 3 years, having executed a single order equivalent to mounting structures weight required for minimum 50 MWp of PV plants in 2018-2019.

3.6 Product Warranty

The mounting structures will be guaranteed for a minimum period of ten (10) years against defects supported by manufacturer's warranty and Contractor shall install in accordance with the manufacturer's specification so as not to invalidate the manufacturer's warranty. In the event of defects occurring within the warranty period, manufacturer shall correct or replace the affected structures

3.7 Submission

In addition to the techno-commercial offer, the bidder shall submit following manufacturer/fabricator documents:

- Technical write-up giving design, specifications and information of mounting structures, material used, fabrication process, treatments performed, standards followed, types of bolts used, etc.
- General arrangement drawing of mounting structures, foundation plans, anchoring plans, overall dimensions, installation plans, structural plans and elevation and framing details.
- Standard test certificates for various structure members from independent testing laboratories.
- Hot dipped galvanization thickness certificate from the factory.
- Installation method statements and quality assurance plans.

4.0 STRING COMBINER BOXES

The section herein describes general specifications for the junction boxes. Junction box shall be interpreted as string combiner box (SCB).

4.1 Quality Certification

All the junction boxes shall be compliant to most recent standards (and latest amendments if any) developed by the IEC and EN. Regulations applicable in the area where equipment is to be installed shall be followed.

Table 5 below presents a non-exhaustive list of standards to which junction boxes should conform.

Table 5: Applicable Junction Box Standards

IEC 61439	Low-voltage switchgear and control gear assemblies
IEC 61730	PV component standards
IEC 60664	Creepage distances and clearances
IEC 50548	Junction boxes
UL-1741	Combiner boxes
IEC 529	Degree of protection provided
UL-SU	Fuses
EN 60715	Chromated DIN Rail

4.2 General

- String combiner boxes shall be preferred to be supplied from the inverter manufacturer supplying inverters for this project.
- String combiner boxes shall be equipped with appropriately sized string fuses as recommended by PV module manufacturers. Basic string configuration / array design shall be approved by the module manufacturer prior to development / implementation.
- The string combiner boxes shall be equipped with monitoring hardware so as to monitor the output of each combiner box at control room. There shall be enough space to facilitate measurement of each individual string with amp / volt meter. The gateway protocol for communication shall be uniform throughout the system.
- Other than standard guarantee of 10 years, all the string combiner boxes should be offered with optional extended warranties.
- EPC contractors / manufacturers are required to supply required spares for 0.5% of the total supply quantity of all string combiner boxes. This will essentially include consumables and hardware.

4.3 Construction

- The enclosure shall be dust proof, non-conductive, impact resistant, UV resistant, flame retardant and shall be made from materials suitable for outdoor applications with minimum IP65 protection rating.
- Junction boxes shall carry a warning label indicating that all active part in the boxes may be live.
- Fuse shall be specifically designed for protecting photovoltaic strings and shall be capable of interrupting low over currents. Fuses shall be provided on both positive and negative sides of the SCBs.
- Fuses should be able to be isolated from both sides for safe removal for servicing or replacement by a “touch-safe” holder or device.
- The disconnectors shall be designed for DC 1000 V specifically used for protecting photovoltaic systems against over currents.
- All the SCBs shall be equipped with suitable current surge protection devices.
- The SCBs shall be suitable for mounting on the module mounting structures
- All SCBs shall have an embossed aluminum plate describing string numbers, capacities, voltages and designated identification number.
- Terminal temperature ratings for combiner boxes shall be 90°C.
- Operating temperature of the cable glands should be a minimum of 90°C. Minimum protection level of all glands shall be IP68.
- Isolation (disconnect) switch to isolate each combiner box from the remainder of the DC output circuits, and to safely test and maintain subarrays and strings to each combiner box. The isolator (disconnect) must switch both the positive and negative poles for ungrounded arrays.
- Any electrical equipment, including inverters, combiner boxes and switch gear, even though rated for outdoor applications and expose shall be protected underneath a canopy or roof covering to minimize direct rainfall and sunlight exposure.

4.4 Submissions

In addition to the techno-commercial offer, the bidder shall submit following manufacturer/supplier documents:

- General Arrangement drawing of the string combiner boxes, showing front view, plans, overall dimensions and weights.
- Power and control circuit indicative schematics.
- Test certificates for various switchgears.
- Technical literature giving complete information of the components, including busbar.

5.0 DC CABLES

The section herein describes general specifications for DC cable for solar PV applications.

5.1 Quality Certification

Cables shall be compliant to most recent standards (and latest amendments if any) developed by the IEC and EN for UV resistant DC cables for solar PV applications. The string cable shall have PV1-F (2 Pfg 1169/08.2007 or latest) certificate of TÜV or EN50618:2014.

Table 6 below presents a non-exhaustive list of standards to which DC cables should conform.

Table 6: Applicable DC Cable Standards

IEC 60228, class 5	Tinned fine copper strands	Wires
UL4703 or; 2 Pfg 1169 or; EN50618 or; IEC 62930	Photovoltaic (one of the standards listed acceptable)	
IEC 60332-1	Fire performance	
	Smoke emission	
IEC 60287	Conductor temperature	

5.2 Specific Design Requirements

In addition to the best manufacturing practices of manufacturers of cables, following are the specific requirements for all DC cables unless specified elsewhere:

- The cables shall be designed for a nominal DC voltage with an operating temperature range of -2°C to 90° C. In other words, the cables should be designed to withstand the input voltage at that range to operate continuously over time without failure to itself or any associated equipment.
- The maximum conductor temperature shall not exceed 90°C during continuous operation at full rated current.

5.3 General

- Conductors shall be electrolytic grade high conductivity annealed tinned copper. Conductors shall be multi stranded, smooth, uniform in quality and free from scale and other defects.
- Insulation, inner sheath and outer sheath shall be of high-grade cross-linked compound.
- PV wire shall be sunlight resistant and double insulated to provide additional physical protection and required for module interconnections and other expose wiring methods for ungrounded arrays.
- Entire DC cabling shall be designed such that the DC ohmic loss does not exceed 1.5%.
- Cables connecting strings to string combiner box shall be installed in conduit, with portion above the ground sleeved in hard UV resistant pipes.

- All DC cabling shall be provided with appropriate alphanumeric ferrules (or other permanent labelling method) for easy identification of strings and further circuits.
- The wiring methods and conductors for all wiring shall be as per Philippines National Electrical Code and any relevant standards/codes applicable to the project area.

5.4 Submission

In addition to the techno-commercial offer, the bidder shall submit following manufacturer/supplier documents for all cables:

- Type test certificates issued by a National or International Testing Authority.
- Technical literature giving complete product specifications. This shall essentially include bending radius and linear resistances at varying conductor temperatures of 20°C, 70°C, 80°C and 90°C.

6.0 DC AND AC SWITCHBOARDS

6.1 Quality Certification

All the switchboards shall be compliant to most recent standards (and latest amendments if any) developed by the IEC and EN. Regulations applicable in the area where equipment is to be installed shall also be followed.

Table 7 below presents a non-exhaustive list of standards to which switchboards should conform.

Table 7: Applicable Switchboard Standards

IEC 60947	Low Voltage AC Switchgear and Control Gears Specifications
IEC 60439	Low Voltage AC Switchgear and Control gear assemblies
IEC 60947	General requirements for AC switchgear & control gear for voltage not exceeding 1000V.
IEC 60529	Degree of protection for enclosures for low voltage switchgear and control gear.
IEC 60404	Electrolytic Copper / Aluminum
IEC 62056	AC Electric Meters
IEC 60364	Earthing
IEC 600947.2	Danger Notice Plates
IEC 60439	Circuit Breakers, voltages up to 1000 Volts
IEC EN 60269-1	Air Break Switches, Air Break Disconnectors, for voltages not exceeding 1000V AC or 1200V DC.

IEC 60 529	Marking & Arrangement for Switchgear, Bus Bars, main connections and auxiliary wiring.
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6.2 General

- All the AC low voltage switchboards shall be suitable for operation with 480 Volts, 60 Hz and 4 wire system.
- All the DC switchboards shall be suitable for operation with a minimum 1000 Volts.

6.3 Construction

- The switch boards shall be dead front, totally enclosed, cubicle type suitable for floor mounted free standing/wall mounted indoor installations. The design shall be totally dust-tight damp-proof and vermin proof offering degree of protection not less than IP-52 for indoor applications and IP-65 for outdoor applications.
- Separate segregated compartments shall be provided for breakers, isolators, bus bars, cable box, voltage transformers, wire ways, relays, and instrument and control devices. Switchboards shall be compartmentalized design and shall be provided with hinged doors in front (and back if required) with facility for padlocking doors.
- All live parts inside the switchboards shall be electrically insulated. Switchboards shall carry a warning label indicating that all active part in the boxes may be live.
- DC fuses shall be specifically designed for photovoltaic application and shall be capable of interrupting low over currents.
- The disconnectors shall be designed for DC 1000 V specifically used for protecting photovoltaic systems against over currents. The disconnecter shall allow the fuse replacement horizontally.
- All switchboards shall have an embossed aluminum plate describing string numbers, capacities, voltages and designated identification number.
- After fabrication of the switchboards, the entire structure shall undergo treatment for removing dust, grease, rust etc. The switchboards then should be powder coated.
- The bus bars shall be of high conductivity electrolytic copper and have uniform cross sections with suitable capacity for carrying rated current continuously and short circuit current for specific time duration without overheating.

6.4 Submissions

In addition to the techno-commercial offer, the bidder shall submit the following manufacturer/supplier documents:

- General Arrangement drawing of the switchboard, showing front view, plans, overall dimensions and weights.
- Power and control circuit indicative schematics.
- Bill of Material and component lists along with makes/brands for all the switchboards.

- Test certificates for various switchgears.
- Technical literature giving complete information of the components, including busbar.

7.0 LOW VOLTAGE AC CABLES

The section herein describes general specifications for low voltage grade up to 1100 volts AC cables.

7.1 Quality Certification

Cables shall be compliant to most recent standards (and latest amendments, if any) developed by the IEC.

Table 8 below presents a non-exhaustive list of standards to which the cables should conform in addition to local standards of the project area.

Table 8: Applicable Standards For Low Voltage AC Cables

IEC 60840	XLPE insulated PVC sheathed cables for working voltages up to and including 1100 volts.
IEC 60502	Recommended current ratings for cables
IEC 60228	Conductors for insulated cables.

7.2 Specific Design Requirements

- Cables sizes shall be selected considering the power loss, current carrying capacity, voltage drop, maximum short circuit duty and the period of short circuit to meet anticipated currents.
- Cables shall be 1100 V grade, single / multicore, extruded XLPE insulated with extruded PVC inner sheath.
- The conductor shall be high conductivity annealed copper and shall be smooth, uniform in quality and free from scale and any defects.
- The maximum conductor temperature shall not exceed 90 degree C during continuous operation at full rated current.
- Cables shall be armoured with mild steel wires or strips as required for underground and trench installations.

7.3 Cabling

- LV cables shall be laid underground, in trenches, on cable trays and through pipe sleeves, wherever required and necessary, according to relevant IEC and national standards and good industry practice. All such trenches, trays and sleeves shall be built and provided by Contractors.
- For underground installation, cables shall be laid at depth not less than 0.5m below ground level and to the requirement of standards/codes applicable to the project area. Prior to cable

laying, bottom of the trench shall be well compacted and bedded with sand. Subsequently, second layer of sand shall be spread over the cable and then covered by compacted soil.

- Wherever more than one cable is laid in the same trench, appropriate interspacing shall be maintained in order to reduce mutual heating and ensure the safety of cables.
- All cables shall be installed in conduit rather than direct buried to increase service life and ease of future replacement.
- All the excavation and back fill required for the installation of the cables shall be carried out by the contractor. The contractor shall restore all surfaces, roadways, side walls, curbs, walls, landscaping or other works cut for excavation to their original condition.
- All cable terminations shall be mechanically and electrically sound and shall comply with relevant standards and local area regulations to the project area.

7.4 Submission

In addition to the techno-commercial offer, the bidder shall submit the manufacturer / supplier type test certificates issued by a National or International Testing Authority.

8.0 EARTHING SYSTEM

The entire PV plant area including control rooms, steel fencing and MV transformer shall be appropriately earthed with adequate number of earth stations. Earthing system shall comply with the latest edition of IEEE80 and local standards at the project area.

The earthing system shall have complete earthing network comprising of wires, copper tapes, electrodes and earth bonding of all relevant necessary non-current carrying metal parts of equipment/apparatus shall be connected, as required.

8.1 Specific Design Requirements

- Each MV transformer shall have minimum of 4 earthing stations.
- All the earth pits shall be appropriately connected.
- Dedicated earthing stations shall be provided for lightning protection system.
- All the earthing stations shall be provided with test links above ground level in an easily accessible position for testing.

8.2 Testing

The earthing stations and the earthing network tested for following on completion of the installation:

- Earth resistance of electrodes
- Continuity of conductors, joints etc.

8.3 Submission

Following contract award, the Contractor will provide:

- Site plan indicating earth pits, earthing strip routing etc.
- Earthing schematic drawing for the entire network
- Drawing showing the dimensions, materials and position of all components, earth electrodes, earth conductors etc.

9.0 LIGHTNING AND OVERVOLTAGE PROTECTION

A lightning protection system (LPS) and overvoltage concept shall be designed according to the IEC 62305 and national and local codes applicable to the project area.

The components and systems belonging to the lightning protection systems are listed below:

- External lightning protection
- Internal lightning protection.

External lightning protection includes:

- Air terminals on the roofs of buildings
- Down conductors as connection to the earthing system
- External earthing system.

Internal lightning protection includes:

- Lightning protection equipotential bonding
- Earthing of cable trays, cabinets etc.
- Shielding of cables
- Surge protection devices.

Connecting points of the external and internal lightning protection and metal parts of the building structure for equipotential bonding strips.

The structure to be protected is the complete PV Plant including the service buildings, transformer stations and solar array.

In order to protect the junction boxes and the inverters from possible damage due to surge voltage in case of lightning stroke directly in or near the PV field, surge protective devices (SPD) shall be included. In addition, for communication and data lines, SPD devices shall also be installed. On the inverter side, the SPDs are to be installed on the DC, AC and control sides if not built-in with the inverters.

10.0 RING MAIN UNITS

Employer is essentially looking for developing the solar PV project with modular functionality to allow possible future expansion.

10.1 Quality Certification

The ring main unit and allied accessories shall comply with the requirements of the latest editions of IEC. Standards and Regulations applicable in the area where equipment is to be installed shall be followed and may supersede other standards.

Table 11 below indicates a non-exhaustive list of standards to which the RMU should conform.

Table 11: Applicable Standards for RMU

IEC 62271-200	A.C. metal enclosed switchgear and control gear for rated voltage above 1 kV and up to and including 52 kV
IEC 62271-103	High voltage switches for rated voltage above 1 kV and less than 52 kV
IEC 62271-100	High voltage alternating current circuit breakers
IEC 62271-105	Alternating current switch-fuse combination
IEC 62271-102	Earthing Switch
IEC 62271-1	Common specifications

10.2 Specific Design Requirements

In addition to the best construction requirements of respective manufacturers, Bidders shall comply with following specific requirements:

- The design shall be totally dust-tight damp-proof and vermin proof offering degree of protection not less than IP-52 for indoor applications and IP-65 for outdoor applications.
- The ring main unit shall be extendable on both sides and consist of appropriate load break switches and circuit breakers for nominal voltage of 23 kV for BENECO Lot or 13.2 kV for other ECs.
- The ring mains shall be equipped with metering and protection relays.
- RMU shall be compact in construction and metal enclosed with sheet steel of suitable thickness and powder coated to same color as other switchgear enclosures.
- All live parts shall be insulated.
- Cable connection chamber & connections shall be made arc resistant.
- The circuit breaker shall be maintenance free type.
- Appropriate natural interlocking arrangement shall be done within the breaker to avoid unauthorized operations.
- Provision shall be made for data acquisition & supervisory control operations.
- Position of the power & earthing contacts shall be clearly visible on the front of the switchboard..

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- RMU shall be equipped with multifunction meters.
 - The ring main unit shall be equipped with or supplied with dedicated auxiliary supply system. This shall essentially include battery chargers, deep discharge lead acid plate batteries conforming to relevant IEC standards and racks as required to complete the installation and commissioning of RMUs.

10.3 Safety

Adequate safety measures shall be taken to safeguard the unit as well as person operating the same. Following points need to be taken into account to ensure the safety.

- All the switchgears shall be identified by a label which clearly indicates the functional units and their electrical characteristics.
- RMU enclosures shall be internally arc tested.
- Any accidental overpressure inside the sealed chamber shall be limited by the opening of pressure limiting device. Gas shall be released to rear side of the switchboard away from the operator.
- Relay indications shall be self-sufficient to distinguish the nature of faults in case of tripping of the circuit breaker.

10.4 Submissions

In addition to the techno-commercial offer, the bidder shall submit the following manufacturer/supplier documents for the proposed RMU:

- General Arrangement drawing of the RMU, showing front view, plans, foundation plans, termination details and elevations, transport sections and weights.
- Manufacturer / Supplier / Contractor shall submit type test certificates issued by a National or International Testing Authority.
- Typical test certificates for identical switchgear including short circuit, temperature rise test, seismic test.
- Type and routine tests at the manufacturer's works.
- Technical literature giving complete information of the components / equipment.

Upon contract award, the bidder shall additionally submit the following:

- Erection, Operation and Maintenance Manual complete with all relevant information, drawings and literature for auxiliary equipment and accessories.
- A comprehensive spare parts schedule.

11.0 MV SWITCHGEARS

Switchgears shall be installed at the control room.

11.1 Specific Design Requirements

In addition to the best construction requirements of respective manufacturers, Bidders shall comply with the following specific requirements:

- All the circuit breaker shall be rated for a nominal voltage of 23 kV for BENECO and 13.2 kV for other electric cooperatives.
- Circuit breakers shall have mechanical ON/OFF push actuators that shall be provided on breaker compartment door.
- MV switchgear panel shall be equipped with metering and protection relays.
- Circuit breakers shall be equipped with manual spring charge facility for closing the breaker as an alternative to motorized operation.
- Breaker panels shall be compact in construction and metal enclosed with sheet steel of suitable thickness and powder coated.
- All the metallic parts shall be suitably thick and shall use high tensile steel which shall be suitably treated & painted.
- Switchgear and panels shall be equipped with all the protections as required to complete the commissioning and for safe operation.
- The protection relay for the switchgear equipment shall be installed in the control room building. All relays shall be digital type with event recording. The switchgear shall at least be equipped with the following protections, where applicable:
 - Directional overcurrent protection (earth/phase)
 - Line differential protection
 - Sensitive earth over-current protection
 - Earth over-current protection
 - Phase over-current protection
 - Sensitive earth overcurrent protection (core balance CT)

11.2 Quality Certification

The MV switchgear and allied accessories shall comply with the requirements of the latest editions of IEC standards and regulations applicable in the area where equipment is to be installed shall be followed unless superseded by other standards.

Table 12 below indicates a non-exhaustive list of standards to which the switchgears should conform.

Table 12: Applicable Standards for MV Switchgear

IEC 62271	Circuit Breakers.
IEC 60044	Current Transformers
IEC 60044	Potential Transformers

11.3 Submissions

In addition to the techno-commercial offer, the bidder shall submit the following manufacturer/supplier documents for the 13.2 kV/23 kV switchgear:

- General Arrangement drawing, showing front view, plans, termination details and elevations, transport sections and weights.
- Manufacturer / Supplier / Contractor shall submit type test certificates issued by a National or International Testing Authority.
- Typical test certificates for identical switchgear.
- Technical literature giving complete information of the components/ equipment.

Upon contract award, the bidder shall additionally submit the following:

- Erection, Operation and Maintenance Manual complete with all relevant information, drawings and literature for auxiliary equipment and accessories.
- Comprehensive spare parts schedule.

12.0 MV TRANSFORMERS

MV transformer is the step-up transformer LV/23 kV transformer for BENECO Lot and LV/13.2 kV transformer for other electric cooperatives) at the Solar Farm that will connect with the interconnection point of the distribution line of the EC.

12.1 Quality Certification

Transformers and accessories shall comply with the requirements of the latest editions of IEC. National Standards and Regulations applicable in the area where equipment is to be installed shall also be followed.

Table 9 below indicates the standard to which the transformer should conform.

Table 9: Applicable Transformer Standards

IEC-60076	Power Transformers
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12.2 Efficiency Benchmarks

Efficiency of MV transformers at 75% full load and above shall be not be lower than 93% Manufacturers are required to complete the data sheet as presented in Appendix II, Table 22.

12.3 Product Life

Although the transformers will be warranted for ten years, their power performance will be committed for 25 years.

12.4 Experience Benchmarks

Manufacturers shall have a production track record for a minimum of three (3) years, having executed a single order of minimum 1.00 MVA in 2017-2021. Manufacturers should have a track record of supplying transformers to Solar Farms for the last 3 years.

The manufacturer shall comply and possess ISO 9001 quality manufacturing certification.

12.5 Specific Design Requirements

In addition to the best construction requirements of respective manufacturers, following are the specific requirements:

12.5.1 General

- Transformers shall be suitable for operation with pulsed inverter.
- Transformers should be rated for a maximum temperature rise of 50°C by oil temperature and 55°C by winding temperature with a daily average ambient temperature of 50°C.
- Percentage impedance expected is 5% for transformers up to 1000 kVA.
- All MV transformers shall use dead-front style terminations.

12.5.2 Construction

Tank

- Tank should provide rigidity and dynamic ability to withstand pressure due to short circuit current. It should be capable of bearing all stresses during transportation and operation without any deformation.
- Low carbon steel grade plates that have been stiffened and reinforced may be used. Oil tight welds and joints shall be provided and measures should be taken to prevent internal corrosion of plates.
- Inspection opening and cover must be provided with handling equipment for easy access to connections.
- The cover design shall avoid stagnant water and facilitate easy flow of gas bubbles.

Magnetic Circuit

- Core shall be of non-aging, high grade material.
- The maximum permissible flux density for the laminations under the specified over voltage and frequency condition shall not exceed 1.3 tesla.
- Ducts to be provided ensuring adequate cooling and efficient heat transfer.

Winding

- Winding conductor should be electrolytic grade copper, free from scales and burrs.

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- To avoid shrinkage during operation, windings shall be subjected to shrinkage treatment.
 - The winding assembly should be full vacuum dried and then impregnated immediately in transformer oil.
 - Windings and connectors shall be braced to withstand shocks due to rough handling, and forces due to short circuit, switching or other conditions.
 - Insulating materials shall be compatible with transformer liquid under all service conditions.
 - Leads to the terminal board and bushings shall be rigidly supported.

Insulating Oil

- Oil will be pure hydrocarbon mineral oil, clean, free from moisture, and have uniform quality throughout.
- For the first oil filling of each transformer, 10% extra oil of total quantity of oil in non – returnable container shall be supplied.

Marshalling Box

- Marshalling box fabricated using cold rolled sheet of at least 1.6 mm thickness with a sloping roof.
- The marshalling box shall have necessary accessories such as locks, glands, glass doors, terminal boards and all other appropriate equipment as required.

Conservator and Breather

- Volume of the conservator shall meet the requirement for expansion of the total oil in transformer and cooling equipment from ambient to oil temperature of 90 degree C.
- The oil filling hole shall have a cap and suitable drainage valve to completely drain the oil.
- One end of conservator shall be bolted to facilitate cleaning.
- One oil indicator should also be provided on the conservator to indicate the minimum normal and maximum level.

Pressure Release Device

- Pressure release devices operating at a static pressure below the hydraulic pressure of the tank shall be provided at all appropriate locations. The device shall also be equipped with potential free contact for alarm/trip and connected to the marshalling box.
- To avoid discharge spraying from the pressure release devices on the tank, the discharge shall be taken through pipes away from the transformer.

Oil and Winding Temperature Indicator

- Dial type thermometers and dial type indicator shall be provided for oil and winding respectively. Minimum two potential free contacts for alarm and trip signals shall be provided.
- Remote temperature indicator for both oil and winding shall be required.

Accessories

The transformer shall be complete with the following accessories:

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- Off load tap changer with position indicator and locking device.
 - Oil conservator with sump and drain valve with cover plate.
 - Oil filling valve with cover plate.
 - Diagram, rating plate, terminal marking plate.
 - Two earthing terminals.
 - First filling of oil +10% extra at no cost.
 - Dial type winding temperature indicator with maximum reading pointer and alarm and trip contacts.
 - Oil level gauge with minimum level marking.
 - Buchholz relay with testing cocks, alarm and trip contacts.
 - Air release plug on tank cover.
 - Isolation valve on both sides of buchholz relay.
 - Weatherproof thermo junction box.
 - Oil temperature indicator with maximum reading pointer and alarm and trip contact.
 - Magnetic oil level indicator with low level alarm and trip contacts and minimum filling and maximum level markings.
 - Drain cum bottom filter valve with cover plate.

12.5.3 Testing of Transformers

Prior to dispatch of the transformer out of the factory, each transformer shall be routine tested in accordance with their own procedures or relevant IEC standards, where applicable. The Employer may request witnessing of the test by an authorized representative but test and reporting to Employer shall be undertaken in the absence of such representative.

Site Test:

The transformers shall be fully tested on site prior to putting into service to ensure that all parts are properly working, correctly installed and free from damage.

An authorized Electrical Engineer shall be engaged by the Contractor to perform the site testing and commissioning of the transformer in the presence of the Employer's representative.

The following tests shall be made on the plant item together with any other tests to demonstrate that the transformer complies with all relevant national and local codes which the Contractor deems necessary for compliance.

Functional Test

Transformer tap-changers, cooling equipment, emergency stop, door interlocks, temperature relays, their controls and all other auxiliary equipment shall be operated to prove that they are functioning satisfactorily before the transformers are put into service.

Apart from all the above tests, the insulation of all low voltage windings and wiring shall be tested after installation.

12.6 Submission

In addition to the techno-commercial offer, the bidder shall submit the following manufacturer/supplier documents for the MV Transformers:

- General Arrangement drawing, showing front view, plans, termination details and elevations, transport sections and weights.
- Manufacturer / Supplier / Contractor shall submit type test certificates issued by a National or International Testing Authority.
- Typical test certificates for identical transformer.
- Technical literature giving complete information of the components/ equipment.

Upon contract award, the bidder shall additionally submit the following:

- Erection, Operation and Maintenance Manual complete with all relevant information, drawings and literature for auxiliary equipment and accessories.
- Comprehensive spare parts schedule.

13.0 MEDIUM VOLTAGE AC CABLES

The section herein describes general specifications for medium voltage grade 23 kV (for BENEKO) and 13.2 kV (for other ECs) AC cables.

13.1 Quality Certification

Cables shall be compliant to most recent standards and latest amendments, if any developed by IEC and compliant with National and local standards at the project area.

Table 13 below presents a non-exhaustive list of standards to which the cables should conform.

Table 13: Applicable Cable Standards for Medium Voltage AC Cables

IEC 60502	Cross-linked Polyethylene insulated, PVC sheathed cables with working voltages from 3.3 KV up to and including 33 KV.
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13.2 Construction

- Cable sizes shall be selected considering the power loss, current carrying capacity, voltage drop, maximum short circuit duty and the period of short circuit to meet the anticipated currents.
- High quality XLPE insulating compound of natural color shall be used for insulation. Insulation shall be applied by triple extrusion process and shall be chemically cross linked in continuously vulcanization process.

-
- Cable shall be provided with conductor shielding as well as insulation shielding and shall consist of extruded semi conducting compound, additionally insulation shield shall be provided with semi conducting and metallic tape shield over the insulation shield. XLPE insulation and outer core shielding shall be extruded in single operation.
 - Inner sheath shall be applied over the laid up cores by wrapping of plastic tapes and armouring.
 - Outer Sheath shall be of suitable grade PVC compound applied by extrusion process. Color of the outer sheath shall be black.
 - The cable shall withstand all mechanical and thermal stresses under steady state and transient operating conditions.

13.3 General Instructions

MV cabling shall be done in accordance to Section 15.3. However laying depths shall be in accordance to relevant national codes at the project area.

All cables shall be installed in conduit rather than directly buried to increase service life and ease of future replacement.

13.4 Submissions

In addition to the techno-commercial offer, the bidder shall submit the following manufacturer/supplier documents for all cables:

- Type test certificates issued by a National or International Testing Authority.
- Technical literature giving complete information of the components/ equipment.

Upon contract award, the bidder shall additionally submit the following:

1. Termination, Installation and Maintenance Manual.

SITE DETAILS NO. 1

The Site of the 1.0 MWp Solar PV Plant for Ilocos Norte Electric Cooperative (INEC Lot 1) has the following details and information:

Site:

Project Type & Capacity	1.0 MWp- Solar PV Grid connected Power Project
Electric Cooperative	Ilocos Norte Electric Cooperative, Inc. (INEC) Brgy. Suyo, Dingras, Ilocos Norte
Project Location	18.006342,120.513578
Nearest Airport	Laoag City International Airport – 30 Kms from site
Total Land and its Details	Not more than 2ha of Land
Land Type	Non-Agricultural Land
Nearest grid connectivity	INEC Currimaos Medium Voltage (MV) substation, located directly adjacent to the proposed site.



Figure 1 Satellite view of proposed site at INEC

PV PLANT ALLOTMENT:	LATITUDE	LONGITUDE
CORNER:	1	18°00'21.070"
	2	120°30'45.044"
	3	18°00'21.080"
	4	120°30'45.044"
	5	18°00'21.395"
		120°30'-4.703
		18°00'22.394"
		120°30'46.647"
		18°00'22.936"
		120°30'47.647"

6	18°00'23.447"	120°30'47.343"
7	18°00'23.344"	120°30'47.155"
8	18°00'23.693"	120°30'46.947"
9	18°00'23.248"	120°30'46.135"
10	18°00'23.900"	120°30'45.744"
11	18°00'24.391"	120°30'46.010"
12	18°00'25.267"	120°30'46.288"
13	18°00'25-.886"	120°30'46.855"
14	18°00'22.924"	120°30'47.408"
15	18°00'26.872"	120°30'48.101"
16	18°00'26.619"	120°30'48.788"
17	18°00'25.376"	120°30'48.394"
18	18°00'25.035"	120°30'48.292"
19	18°00'24.895"	120°30'48.971"
20	18°00'24.656"	120°30'49.496"
21	18°00'24.147"	120°30'49.392"
22	18°00'23.569"	120°30'49.227"
23	18°00'23.156"	120°30'49.062"
24	18°00'22.970"	120°30'48.861"
25	18°00'22.494"	120°30'49.180"
26	18°00'22.235"	120°30'48.597"
27	18°00'21.828"	120°30'48.795"
28	18°00'21.665"	120°30'48.430"
29	18°00'22.653"	120°30'47.906"
30	18°00'22.169"	120°30'47.038"
31	18°00'21.282"	120°30'47.567"
32	18°00'21.189"	120°30'47.358"
33	18°00'20.298"	120°30'45.453"
34	18°00'20.601'	120°30'45.303"
35	18°00'20.810"	120°30'45.184"

Land: A geotechnical investigation for the site is not included and is the responsibility of the awarded Bidder to undertake if required in the implementation of the contract. The site including its topographical survey will be provided by the Electric Cooperative (EC) and made available to the Bidder for Detailed Engineering Design. The site has a total area of 1.2 hectare which is considered sufficient for the development of a 1.0 MWp Solar Farm and the construction of the Solar PV Plant. The site is mixture of flat and mild gradient type and does not have significant undulations. The EC is responsible for the initial site clearing and fencing of the site, however some portions of land may require further leveling and channelizing of surface water drains which shall be part of EPC contract scope.

Submission of geotechnical investigation during design stage is acceptable provided that any additional cost that may be discovered later shall be for the winning bidder's account. Refer to

Section VII – Employer’s Requirements, Clause 2.4.2 Site Inspection/Preparatory Works of the Tender Documents.

Access: The Site is well connected with access road that are suitable for movement of heavy vehicles all the way to the site. The road may need additional maintenance and repairs at certain sections to facilitate movements which shall be part of EPC contractor’s scope.

On the access point of the solar farm to the electric cooperative’s distribution line, it is encouraged that the bidder conducts site visit and discuss the matter with the concerned electric cooperative.

The other requirements at the site shall be Contractor’s responsibility.

SITE DETAILS NO. 2

The Site of the 1.0 MWp Solar PV Plant for Pangasinan Electric Cooperative I (PANELCO-I Lot 2) has the following details and information:

Project Type & Capacity	1.0 MWp- Solar PV Grid connected Power Project		
Electric Cooperative	Pangasinan I Electric Cooperative (PANELCO-I) San Jose, Bani, Pangasinan		
Project Location	Brgy. Mal-ong, Anda, Pangasinan		
Coordinates	Corner	LAT	LON
	1	16°17'41.71"N	119°55'30.36"E
	2	16°17'41.18"N	119°55'30.04"E
	3	16°17'41.59"N	119°55'29.39"E
	4	16°17'41.13"N	119°55'27.05"E
	5	16°17'43.10"N	119°55'27.16"E
	6	16°17'44.72"N	119°55'26.90"E
	7	16°17'44.88"N	119°55'27.08"E
	8	16°17'48.84"N	119°55'25.09"E
	9	16°17'48.25"N	119°55'28.42"E
	10	16°17'44.76"N	119°55'28.88"E
	11	16°17'42.82"N	119°55'30.04"E
	12	16°17'42.24"N	119°55'29.68"E
Nearest Airport/Seaport	Clark International Airport 139km from site Poro point seaport 51km from site		
Total Land and its Details	More than 2ha of Land		
Land Type	Non-Agricultural Land		
Nearest grid connectivity	Tara Substation, Medium Voltage (MV) substation, located at Barangay Tara, Bolinao, Pangasinan. 4.7km to the proposed site.		

Figure 2. Satellite view of nearest seaport from site

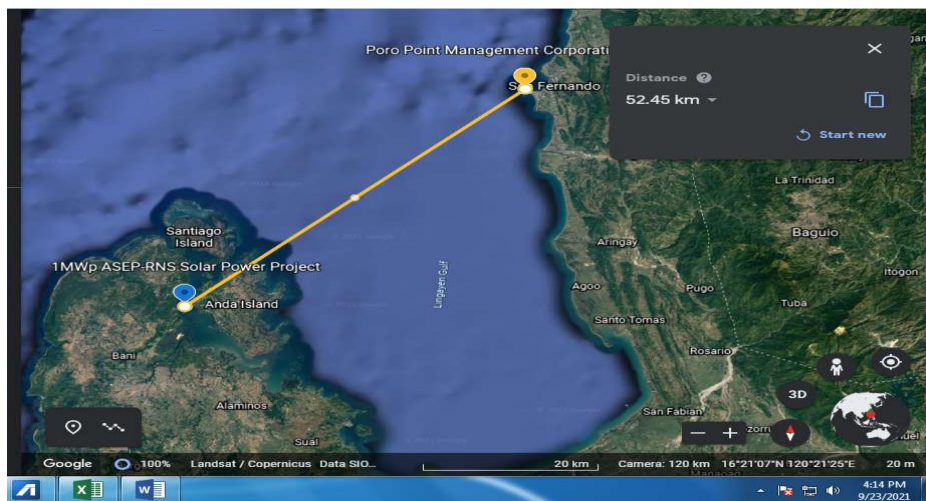


Figure 2. Satellite view of nearest airport from site

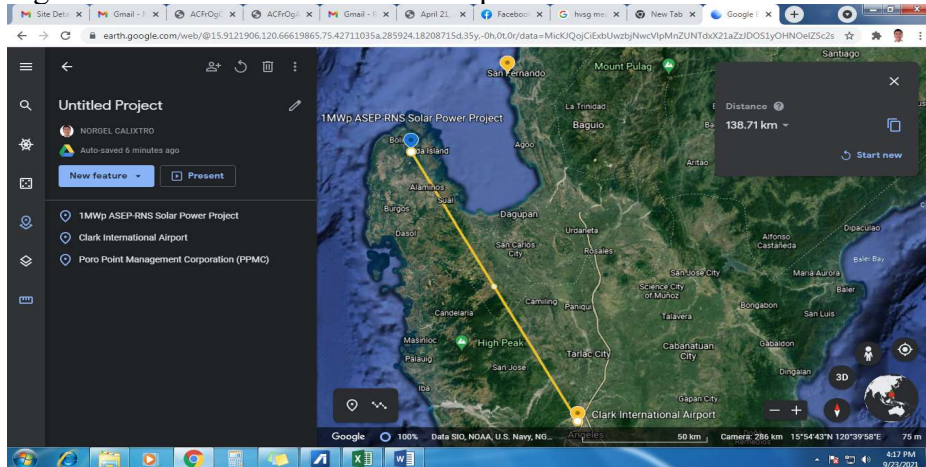
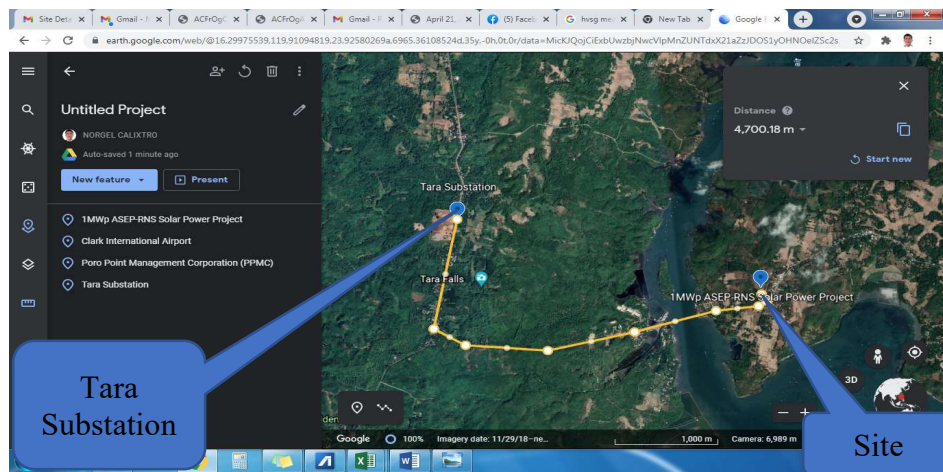


Figure 3. Satellite view of the proposed project of PANELCO I (Barangay Mal-ong, Anda, Pangasinan).



Figure 4. Satellite view of nearest substation



Land: A geotechnical investigation survey for the site is not included and is the responsibility of the awarded Bidder to undertake if required in the implementation of the contract. The site including its topographical survey will be provided by the Electric Cooperative (EC) and made available to the Bidder for Detailed Engineering Design. The site has a total minimum area of 1.5 hectare which is considered sufficient for the development of a 1.0 MWp Solar Farm and the construction of the Solar PV Plant. The site has relatively flat terrain and needs minimal grading and land-filling. The EC is responsible for the initial site clearing, however some portions of land may require further grading, leveling and channelizing of surface water drains which shall be part of EPC contract scope.

Access: The Site is well connected with access roads that are suitable for movement of equipment and vehicles and access is considered good all the way to the site location. The roads may need additional maintenance and repairs at certain sections to facilitate the movement which shall be part of EPC contractor's scope. Also, the nearest existing EC distribution system of the Solar PV Plant is 350 meters away from the site and has no right-of-way issues.

On the access point of the solar farm to the electric cooperative's distribution line, it is encouraged that the bidder conducts site visit and discuss the matter with the concerned electric cooperative.

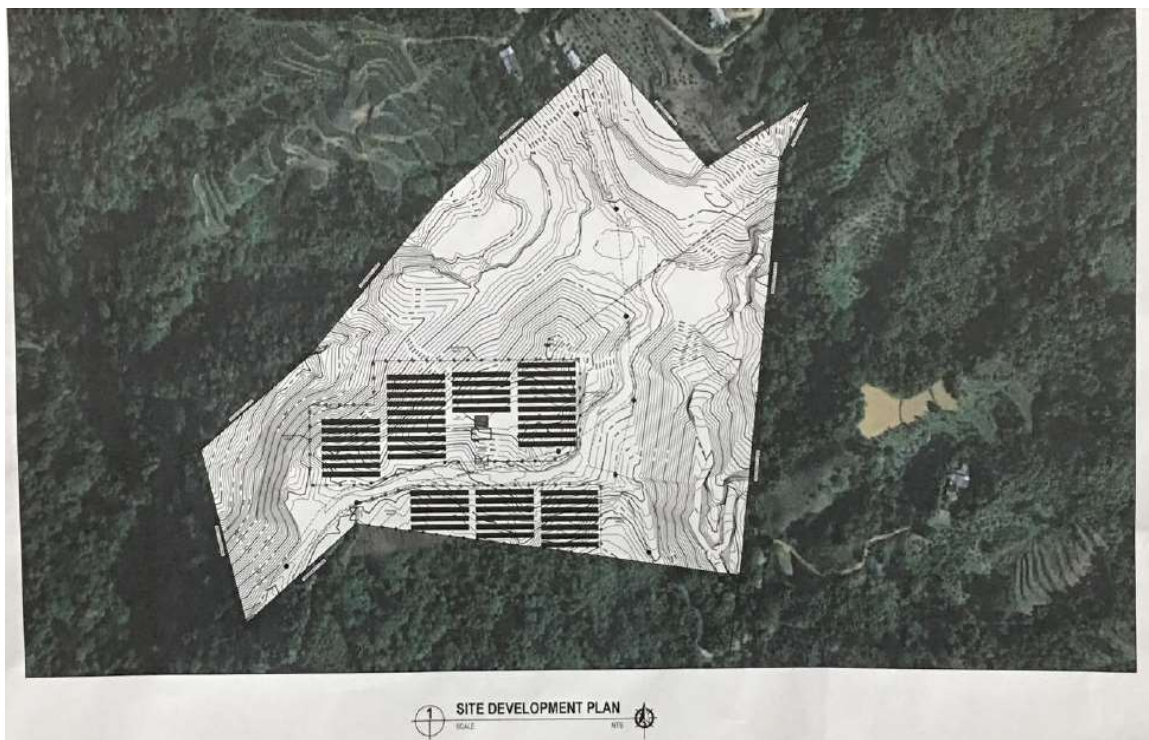
The other requirements at the site shall be Contractor's responsibility.

SITE DETAILS NO. 3

The Site of the 1.0 MWp Solar PV Plant for Benguet Electric Cooperative (BENECO Lot 3) has the following details and information:

Site:

Project Type & Capacity	1.0 MWp- Solar PV Grid connected Power Project
Electric Cooperative	Benguet Electric Cooperative (BENECO) 04 South Drive, Baguio City
Project Location	16 Deg. 17'30.8" N 120 Deg. 33' 00.9"
Nearest Airport	Clark International Airport – 160 kms away to site
Nearest Seaport	San Fernando, La Union – 60 kms away to site
Total Land and its Details	Not more than 2ha of Land
Land Type	Non-Agricultural Land
Nearest grid connectivity	20 MVA Medium Voltage (MV) substation, located 35 kilometers to the proposed site.



For the connectivity, the existing vee-phase distribution lines of BENECO passes through the proposed project site. Table below is the specific location of boundaries.

Corner	Latitude	Longitude
1	16° 17' 31.808"	120° 32' 50.307"
2	16° 17' 35.305"	120° 32' 49.375"
3	16° 17' 37.178"	120° 32' 51.721"
4	16° 17' 40.303"	120° 32' 54.556"
5	16° 17' 43.159"	120° 32' 58.089"
6	16° 17' 40.900"	120° 33' 0.263"
7	16° 17' 42.191"	120° 33' 2.461"
8	16° 17' 41.054"	120° 33' 1.823"
9	16° 17' 36.353"	120° 33' 1.342"
10	16° 17' 32.706"	120° 33' 0.969"
11	16° 17' 33.807"	120° 32' 52.694"

Containing an area of 74,950 SQ.M.

Please request for the site development plan if more detailed information on the boundary points if required.

Land: A geotechnical investigation for the site is not included and is the responsibility of the awarded Bidder to undertake if required in the implementation of the contract. The site including its topographical survey will be provided by the Electric Cooperative (EC) and made available to the Bidder for Detailed Engineering Design. The site has a total area of 7.495 hectares which is considered sufficient for the development of a 1.0 MWp Solar Farm and the construction of the Solar PV Plant. The site has mountainous terrain and therefore may require significant grading and levelling as well as clearing of trees. The EC is responsible for the initial site clearing, however some portions of land requiring grading, leveling and channelizing of surface water drains shall be part of EPC contract scope.

Submission of geotechnical investigation during design stage is acceptable provided that any additional cost that may be discovered later shall be for the winning bidder's account. Refer to Section VII – Employer's Requirements, Clause 2.4.2 Site Inspection/Preparatory Works of the Tender Documents.

Access: The Site is well connected with access road that are suitable for movement of equipment and light vehicles all the way to the site location. However, the road is tight winding with sharp bends which may require additional maintenance and repairs at certain sections to facilitate the movement of medium-heavy vehicles. Should such poses restriction to the contractor, any work required shall be part of EPC contractor's scope. Also, a 23 kV 35-km distribution line (v-configuration) directly passing through the site needs to be upgraded to 3-phase to match with the output of the Solar PV Plant. The interconnection line has no right-of-way issues.

On the access point of the solar farm to the electric cooperative's distribution line, it is encouraged that the bidder conducts site visit and discuss the matter with the concerned electric cooperative.

The other requirements at the site shall be Contractor's responsibility.

SITE DETAILS NO. 4

The Site of the 1.0 MWp Solar PV Plant for Samar Electric Cooperative I, Inc. (SAMELCO-1 Lot 4) has the following details and information:

Site:

Project Type & Capacity	1.0 MWp- Solar PV Grid connected Power Project
Electric Cooperative	Samar Electric Cooperative I (SAMELCO-I) Brgy. Carayman, Calbayog City, Western Samar
Project Location	<div style="display: flex; justify-content: space-between;"> <div>Latitude</div> <div>Longitude</div> </div> 1. 12° 3'8.212"N - 124°38'18.178"E 2. 12° 3'5.405"N - 124°38'21.283"E 3. 12° 3'2.846"N - 124°38'18.793"E 4. 12° 3'6.198"N - 124°38'15.175"E 5. 12° 3'7.083"N - 124°38'16.498"E
Nearest Airport & Port	Calbayog City Airport 11.44 kms from site and 6kms to the Port of Calbayog City.
Total Land and its Details	Not more than 2ha of Land (1.5 ha estimated)
Land Type	Agricultural Land converted to Industrial
Nearest grid connectivity	10MVA Capoocan Substation, 13.2kV Medium Voltage (MV) substation, located at Brgy. Capoocan, Calbayog City and 6.63KM to the proposed site.

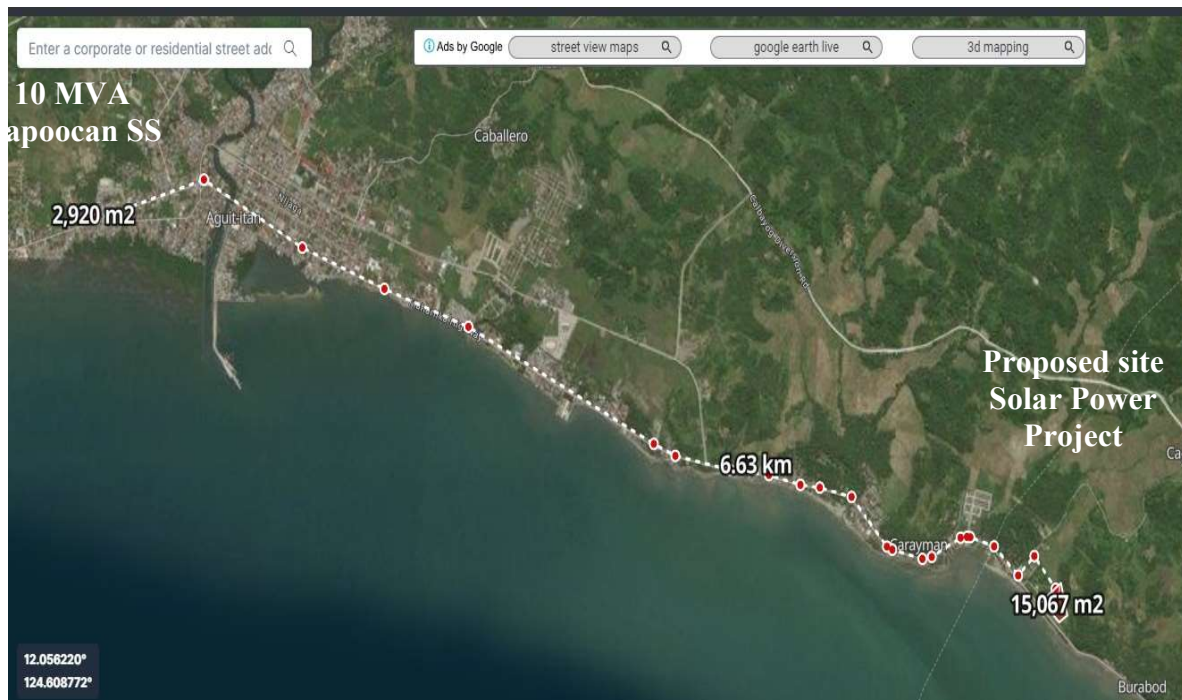


Figure 3 Satellite view of proposed site to 10MVA/13.2kV Substation



Figure 2 Satellite view of proposed site at SAMELCO I

BOUNDARY OF LOT 3930, CAD422					
CORNER	EASTING	NORTHING	LATITUDE	LONGITUDE	REMARKS
1	460735.48	1332506.95	12° 03' 0.494"	124° 38' 21.750"	LOT 3930-B (Part Remaining)
7	460666.42	1332518.98	12° 03' 0.882"	124° 38' 19.466"	LOT 3930-B (Part Remaining)
8	460498.24	1332677.67	12° 03' 6.040"	124° 38' 13.898"	LOT 3930-B (Part Remaining)
16	460619.38	1332738.38	12° 03' 8.021"	124° 38' 17.901"	Tapping Point Inside Lot 3930
17	460715.45	1332805.37	12° 03' 10.205"	124° 38' 21.074"	LOT 3930-B (Part Remaining)

Figure 3 Tabulation of longitudinal and latitude coordinates of all lot boundaries

Land: A geotechnical investigation for the site is not included and is the responsibility of the awarded Bidder to undertake if required in the implementation of the contract. The site including its topographical survey will be provided by the Electric Cooperative (EC) and made available to the Bidder for Detailed Engineering Design. The site has a total minimum area of 1.5 hectare which is considered sufficient for the development of a 1.0 MWp Solar Farm and the construction of the Solar PV Plant. The site has relatively flat terrain and requires minimal clearing of woodlands, grading and land-filling. The EC is responsible for the initial site clearing, however some portions

of land may require further grading, leveling and channelizing of surface water drains which shall be part of EPC contract scope.

Access: The Site is well connected with access roads that are suitable for movement of equipment and vehicles and access is possible all the way to the site location. The access roads will not require additional maintenance and repairs to facilitate the movement of medium-heavy vehicles. However, in case there are any, this shall be part of EPC contractor's scope of works. Also, the site is directly adjacent to the 3-phase distribution line of the EC and no issues are anticipated on the new interconnection line to the Solar PV Plant from tapping point.

The other requirements at the site shall be Contractor's responsibility.

SITE DETAILS NO. 5

The Site of the 1.0 MWp Solar PV Plant for Samar Electric Cooperative II, Inc. (SAMELCO-II Lot 5) has the following details and information:

Site:

Project Type & Capacity	1.0 MWp- Solar PV Grid connected Power Project
Electric Cooperative	Samar Electric Cooperative II (SAMELCO-II) Brgy. 6, Pob., Paranas, Samar 6703
Project Location	125° 1'17.68"E, 11°46'36.05"N
Nearest Airport	Sea Port to Solar Site 22 km base on Maharlika Highway. Airport to Solar Site 36 km base on Maharlika Highway.
Total Land and its Details	1.5hec, near at Paranas Substation, inside the compound of SAMELCO-II.
Land Type	Non-Agricultural Land
Nearest grid connectivity	Paranas Medium Voltage (MV) substation, located 150m to the proposed site.



TECHNICAL DESCRIPTION		
CORNER	LATITUDE	LONGITUDE
1	11°46'37.840"N	125°01'12.255"E
2	11°46'40.622"N	125°01'08.635"E
3	11°46'42.851"N	125°01'12.484"E
4	11°46'39.412"N	125°01'15.016"E
AREA = 1.5 HECTARES		

Land: A geotechnical investigation for the site is not included and is the responsibility of the awarded Bidder to undertake if required in the implementation of the contract. The site including its topographical survey will be provided by the Electric Cooperative (EC) and made available to the Bidder for Detailed Engineering Design. The site has a total minimum area of 1.5 hectare which is considered sufficient for the development of a 1.0 MWp Solar Farm and the construction of the Solar PV Plant. The site has relatively sloped terrain and requires some grading except areas facing the south which will not need to be flattened completely. Further, there is significant clearing of woodlands (mostly bamboo) that will be required. The EC is responsible for the initial site clearing, however some portions of land may require grading, land-filling and leveling which shall be part of EPC contract scope. The site has good water drainage characteristics.

Access: The Site is well connected with access road that are suitable for movement of equipment and vehicles and access is possible all the way to the site location. The access road will not require additional maintenance and repairs to facilitate the movement of medium-heavy vehicles. However, in case there is any, this shall be part of EPC contractor's scope. Also, the site is directly adjacent to an existing substation for the tapping point of the Solar PV Plant and thus, no right-of-way issues are expected.

The other requirements at the site shall be Contractor's responsibility

SITE DETAILS NO. 6

The Site of the 1.0 MWp Solar PV Plant for South Cotabato Electric Cooperative II, Inc. (SOCOTECO-II Lot 6) has the following details and information:

Site:

Project Type & Capacity	1.0 MWp- Solar PV Grid connected Power Project
Electric Cooperative	South Cotabato Electric Cooperative II (SOCOTECO-II) J. Catolico St., Cor. San Miguel St., Lagao, General Santos City
Project Location	6° 7'45.69"N ; 125° 8'33.84"E
Nearest Airport	General Santos City Airport approximately 13.6 Kms from site
Total Land and its Details	1.5 hectares
Land Type	Non-Agricultural Land / Utility Zone
Nearest grid connectivity	35MVA New Society Substation 13.2 kV Medium Voltage (MV), located beside the proposed site.



Figure 4 Satellite view of proposed site at SOCOTECO II

Land: A geotechnical investigation for the site is not included and is the responsibility of the awarded Bidder to undertake if required in the implementation of the contract. The site including its topographical survey will be provided by the Electric Cooperative (EC) and made available to the Bidder for Detailed Engineering Design. The site has a total minimum area of 1.5 hectares which is considered sufficient for the development of a 1.0 MWp Solar Farm and the construction

of the Solar PV Plant. The site has relatively flat terrain and requires minimal grading and levelling. Further, there is minimal clearing of woodlands (mostly bamboo) that will be required. The EC is responsible for the initial site clearing, however some portions of land may require further grading, leveling and channelizing of surface water drains which shall be part of EPC contract scope.

Access: The Site is well connected with access roads that are suitable for movement of equipment and vehicles and access is possible all the way to the site location. The access roads will not require additional maintenance and repairs to facilitate the movement of medium-heavy vehicles. However, in case there are any, this shall be part of EPC contractor's scope. Also, the site is directly adjacent to an existing substation for the tapping point of the Solar PV Plant and thus, no right-of-way issues are expected.

The other requirements at the site shall be Contractor's responsibility.

SITE DETAILS NO. 7

The Site of the 1.0 MWp Solar PV Plant for Sultan Kudarat Electric Cooperative II, Inc. (SUKELCO Lot 7) has the following details and information:

Site:

Project Type & Capacity	1.0 MWp- Solar PV Grid connected Power Project
Electric Cooperative	Sultan Kudarat Electric Cooperative (SUKELCO) National Highway, Brgy. Kalandagan, City of Tacurong, Sultan Kudarat
Project Location	6.66171, 124.69775
Nearest Airport	General Santos Airport (90.9km from the site) General Santos Seaport (85.3km from the site)
Total Land and its Details	Not more than 2ha of Land
Land Type	Non-Agricultural Land
Nearest grid connectivity	Kalandagan Substation, Medium Voltage (MV) substation, located 110 meter from the proposed site.



Figure 5 Satellite view of proposed site at SUKELCO

Land: A geotechnical investigation for the site is not included and is the responsibility of the awarded Bidder to undertake if required in the implementation of the contract. The site including its topographical survey will be provided by the Electric Cooperative (EC) and made available to the Bidder for Detailed Engineering Design. The site has a total minimum area of 1.7 hectare which is considered sufficient for the development of a 1.0 MWp Solar Farm and the construction of the

Solar PV Plant. The site has relatively flat terrain and requires minimal grading and levelling. However, there is some clearing of woodlands that will be required and considering that the ground is soft, deeper footing foundations may be required. The EC is responsible for the initial site clearing, however some portions of land may require some grading, leveling and channelizing of surface water drains which shall be part of EPC contract scope.

Access: The Site is well connected with access roads that are suitable for movement of equipment and vehicles and access is possible all the way to the site location. The access roads will not require additional maintenance and repairs to facilitate the movement of medium-heavy vehicles. However, in case there are any, this shall be part of EPC contractor's scope of works. Also, the site is directly adjacent to an existing distribution line for the tapping point of the Solar PV Plant and thus, no right-of-way issues are expected.

The other requirements at the site shall be Contractor's responsibility

APPENDIX I: PROJECT CHARACTERISTICS

Bidders are required to submit their independent general project characteristics based on their system designs and project components proposed for this project.

Following project characteristics shall be provided:

1. Overall Design Characteristics
2. Solar Plant Technical Characteristics
3. Capacity
4. Performance Ratio
5. Interconnection Characteristics
6. Energy Yield Simulation Assumptions
7. Project Energy Yields
8. Reference Resources for Insolation, Temperature and Wind (others where applicable)
9. Annual Yield Report for Years 1-25 (For PV Module Degradation)
10. Conceptual Overall Plant Layout
11. Array Configuration
12. Electrical schematics for typical solar PV array, inverter, modular plot and power evacuation.

APPENDIX II: DATA SHEETS

Bidders are required to completely fill-in the mandatory technical info (**in asterisk**) in the following data sheets for major components and submit supporting certification documents along with offer.

Solar PV Modules

Table 17 Specifications of PV module

PV Module Manufacturer:		
Type of Solar Cell	*	
Model		
Specification	Unit	Data
Pmax (<i>min 260W</i>)	Wp	*
Open Circuit Voltage (Voc)	V	*
Short Circuit Current (Isc)	A	*
Voltage at Pmax (Vmppt)	V	*
Current at Pmax (Imppt)	A	*
Rated Power Tolerances	%	*
Total Area Module Efficiency	%	*
Fill Factor	%	
NOCT (Nominal Operating Cell Temperature)	°C	
Temp Coefficient of Pmax	%/C	<i>max -0.45%/°C</i>
Temp Coefficient of Voc	%/C	
Temp Coefficient of Isc	%/C	<i>max -0.35%/°C</i>
Degradation within 10 Years	%	
Degradation within 25 Years	%	*
Mechanical Parameters		
Dimensions	Mm	
Thickness with Junction Box	Mm	
Installation Hole	Mm	
Weight	Kg	
Junction Box (Protection Rating/number of diodes)		
Junction Box Dimensions (L-W-T mm)		

Positive & Negative Cable (Length [mm] /Cross-section [mm ²])	
Plug Connector (Type/Protection Class)	
Front Cover (Material/Thickness [mm])	
Cell Type (Number in series/Tech./Size)	
Encapsulation Material	
Rear Cover (Material/Thickness [mm])	
Operating Conditions	
Operating Temperature	°C *
Max. Wind Load	Pa *
Packaging	
Number of modules per box	Piece
Box Size (Length/Width/Depth)	Mm
Box Gross Weight	Kg
Certifications	

Table 18: String Details

Number of Modules in a String	*
String Power Capacity (W)	*
Open Circuit Voltage of String (Voc)	*
Short Circuit Current of String (Isc)	*
Certifications	

Table 19: PV Array (Mounting Structure) Summary

Modules per Array	*
Modules in Horizontal	
Modules in Vertical	
Tilted Angle	°
Azimuth	°
South-North Distance between Array	m
Land Coverage Ratio	%
Array (Mounting Structure) Length	m
Array (Mounting Structure) Width	m
Array (Mounting Structure) Height	m
Land Occupation per Array	m ²
Land Occupation per Plot	m ²
Land Occupation per Plant	m ²

Table 20: Technical Parameters of String Combiner Box

Number of String Channels Input	*
Maximum permissible DC voltage	*
Maximum permissible DC current	*
Over Current Protection/DC Fuse Rating	
Circuit Breaker	
Over Voltage Protection/Varistor's Rating	
Material of SCB	
Protection Rating (IP)	*
Dimensions (H x W x D) in mm	
Weight (kg)	
Operating temperature range	
Relative humidity	
Communication	
Certifications	

Table 21: Technical Parameters of Inverters

General	
Manufacturer	*
Model	
Transformer / Transformer less	*
Input (DC)	
Rated DC power (kVA)	*
Max. DC power (kW)	*
Max. DC voltage (V)	*
MPP voltage range	*
DC nominal voltage (V)	*
Min. DC voltage/start voltage (V)	
Max. input current (A)	

Output (AC)	
AC nominal power	*
Nominal AC voltage	*
Nominal AC current	*
AC frequency; range	*
Max Power factor (cos delta)	*
Total Current Harmonics	*
Efficiency	
Max. efficiency	*
European Efficiency (<i>min 98%</i>)	
MPPT Efficiency	*
Power Consumption	
Internal night consumption	
External auxiliary supply voltage	
Others	
Operating temperature range	*
Degree of Protection (IP)	
Operating temp range	
Noise emission	
Input Channels of PV	
Dimensions (mm)	
Weight (kg)	
Certifications	

Table 22: Technical Parameters of MV Transformers

Manufacturer	*
kVA rating	*
Rated voltage:	

MV Winding (23 kV for BENECO or 13.2 kV (for other ECs)	*
LV Winding	*
Rated Frequency (60 Hz. + 3%)	*
Number of phases (3 phase)	*
Vector Group	
MV Winding	
LV Winding	
Vector Symbol	
Type of construction	
Type of cooling	Oil Natural Air Natural
Tap changing equipment	
Type	Off load type
No. of steps	
% of voltage at each step	
Tap Range %	
Temperature above ambient of 50°C	
Oil	*
Winding	*
Losses at rated voltage on principal tap and rated frequency	
No load loss	*
Copper loss at full load at 75°C	*
Withstand time for three phase short circuit at terminals (sec.)	
No load current at rated voltage and rated frequency.	
Insulation level	*
Full wave lighting impulse stand voltage	
MV Winding	
LV Winding	

Designed magnetic flux density	
% Impedance ($\pm 10\%$ tolerance)	
Regulation at full load at 75°C	
At unity power factor	
At 0.9 power factor lag	
At 0.8 power factor lag	
Efficiency	
Efficiency at unity power factor	
Full Load	
75% Load	
50% Load	
25% Load	
10% Load	
Efficiency at 0.9 power factor	
Full Load	
75% Load	
50% Load	
25% Load	
10% Load	
Efficiency at 0.8 power factor	
Full Load	*
75% Load	
50% Load	
25% Load	
10% Load	
Approximate dimensions	
Tank/enclosure L x b x h	
Overall L x b x h	

Approximate weight of transformers	
Core	
Winding MV	
Winding LV	
Insulation	
Enclosure and fittings	
Total weight	
Windings	
Type of windings	
Current Density at rated load	
MV Winding	
LV Winding	
Clearances	
Phase to Phase in air	
Phase to Earth in air	
Creepage distance	
Termination	
Primary Side	
Secondary Side	
Certifications	

Table 23: Technical Parameters of RMU

General	
Service	Service/Operation at 50° C
Installation	Indoor
Type	Metal enclosed
Network	Three Phases- Three wires
Rated Voltage	23 kV (for BENECO) or 13.2 kV (for other ECs)

Service Voltage	23 kV \pm 5% (for BENEKO) or 13.2 kV \pm 5% (for other ECs)
System Frequency	60 Hz \pm 1%
Rated Current	*

Load Break Switch	
Type	
Rated Current	
Rated Breaking capacity	
No. of Poles	
Short time withstand rating	
Impulse withstand voltage to earth & between poles	
Power frequency withstand Voltage	
Operating Mechanism	
SF6 Chamber	
Interlocks	
Circuit Breaker	
Type	
Rated Voltage	
Rated Current	
Breaking Current	
Making Current	
No. of Poles	
Operating Mechanism	
Provision for Manual Trip arrangement	
Busbars	
Material	
Rated Current	

Short time rating current for 3 sec.	
Insulation of Busbar	
Busbar connections	
Current Transformers	
Current Transformer ratio	
Class of accuracy	
Rated Burden	
Certifications	

Table 25: Technical Parameters For 13.2kV/23kV Switchgear Panel

Description	Incoming Breaker	Outgoing Breaker
MV Panel		
Number of breakers	*	*
Enclosure		
System short circuit MVA		
Breaking Current - Symmetrical		
Breaking Current - Asymmetrical		
Circuit Breaker		
Type		
Standard		
Rated Current	*	*
SC withstand current (kA)	*	*
Duration (Sec) for above		
Type of Closing		
Tripping		
ON-OFF flags	1 No.	1 No.
ON-OFF indicating	1 No.	1 No.
Cable size		

Pad lock with key	1 No.	1 No.
-------------------	-------	-------

Potential Transformers		
No. of P.T's	*	*
Burden		
Transformation ratio		
Accuracy class		
Current Transformers		
Number	*	*
Burden		
Transformation ratio		
Accuracy class		
Meters		
Trivector Meter		
Voltmeter		
Type	Digital	Digital
Class of Accuracy	1.0S	1.0S
Ammeter		
Type	Digital	Digital
Class of Accuracy	1.0S	1.0S
Power factor Meter		
Type	Digital	Digital
Class of Accuracy	1.0S	1.0S
Frequency Meter		
Type	Digital	Digital
Class of Accuracy	1.0S	1.0S
Relays		

Over Current & Earth Fault		
Type		
Setting range - O/C		
Setting range - E/F		
Auxiliary relays	Alarm & Trip	Alarm & Trip

APPENDIX III: LIST OF SPARES

EPC contractors shall provide all required spares and consumables. Bidders are thus required to submit an exhaustive list of spare and quantities required for first 5 years of the defects liability warranty to be provided by EPC contractor as part of its bid offer and for subsequent twenty years for information and reference of the EC.

Table 28: List of Spares

[illegible]

APPENDIX IV: INDICATIVE ELECTRICAL SCHEMATICS

Bidders are required to submit their independent schematics based on system designs and project components proposed for this project.

Following schematics that are required to be enclosed separately are as follows:

1. Indicative Electrical
2. Indicative Power Evacuation Scheme
3. Indicative Schematic of Control and Monitoring

APPENDIX V: INDICATIVE LAYOUTS

Bidders are required to submit the following indicative layouts for the power plant:

1. Solar PV Plant
2. Solar Farm Indicating Plot Boundaries

APPENDIX VI: SUMMARY OF SCOPE AND DIVISION OF RESPONSIBILITIES

Bidders are expected to consider these scope and division of responsibilities for clarity of the respective obligations of EPC Contractor, Employer and Electric Cooperative during contract implementation as enumerated under Section VII, Clause 1.3.

EC = Electrical Cooperative, EPC = Contractor, Employer = NPC

No	Description	Primary Responsibility and Accountability	Review and Approvals
1			
	RE Service Contract/Certificate of Confirmation of Commerciality	EC	DOE/ Employer
	Land allotment	EC	Employer
	Locational Clearance	EC	MPDO/ CPDO
	Development Permit	EC	MPDO/ CPDO
	Power evacuation feasibility consent from DU	EC	Employer
	Other permits and clearances as may be required prior to clearing and commencement of works at the site	EC	Employer
	(a) Solar PV array configuration up to inverters	EPC	Employer
	(b) Inverters and AC power schematics, earthing, lightning protection etc.	EPC	Employer
	Electrical engineer's approval for all design work in compliance with international and national/local requirements.	EPC	Employer
	Building and construction permits for control rooms and administrative buildings	EPC	
	Water supply for construction and start-up operations	EPC	
	Power supply for construction	EPC	
	Power supply for operations	EPC	

	All other approvals as required for project completion and power evacuation	EC/EPC	Employer
2			
	Topographic Survey	EC	Employer
	Geotechnical Investigations	EPC	Employer
	Solar resource assessment	EPC	Employer
	Technology selection	EPC	Employer
	Project component selection	EPC	Employer
	Conceptual design, schematics and layouts	EPC	Employer
	Energy yield predictions for project life cycle	EPC	Employer
	Performance Ratio prediction and guarantees	EPC	Employer
	Project component review and approval	EPC	Employer
	Project scheduling, planning and sequencing	EPC	Employer
	Procurement and delivery schedule	EPC	Employer
	Submission of drawing schedule	EPC	Employer
	Submission of construction drawings	EPC	Employer
	Quality assurance plan	EPC	Employer
	Method statements and various operating manuals	EPC	Employer
	Construction quality plan	EPC	Employer
	Technical specification sheets for all equipment	EPC	Employer
	Contractor's Environmental and Social Management Plan	EPC	Employer
	Construction Occupational Health and Safety Program	EPC	DOLE
	Health and Safety Manual	EPC	Employer
	Design plant and allied systems according to the approved project configuration	EPC	Employer
	Detailed engineering of the entire PV plant up to distribution utility interconnection and metering point	EPC	Employer
	Reviews of all submission and approvals	EPC	Employer

	Power supply for construction	EPC	
	Water supply for construction	EPC	

3	Procurement		
3.1	Manufacturing, procurement, loading, transportation, unloading, storing all equipment, project components, hardware, ancillaries and consumables as required to complete the construction, installation, testing and commissioning of the Solar Farms up to point of interconnection and distribution utility metering. List indicated below is non exhaustive and will not be limited.	EPC	
	Solar PV modules with fixing arrangement.	EPC	
	Module mounting structures with all hardware and ancillaries.	EPC	
	DC Cables	EPC	
	String Combiner boxes with monitoring arrangements and all consumables.	EPC	
	DC Switchboards	EPC	
	Inverters with ethernet interface	EPC	
	Auxiliary Power Supply System	EPC	
	AC Cables	EPC	
	LV AC Switchboards	EPC	
	LV / MV Transformers	EPC	
	MV Ring Mains Units	EPC	
	MV Cables	EPC	
	MV Switchgear	EPC	

	MV transformers	EPC	
	MV switchgear, protection and metering instrumentations	EPC	
	MV distribution lines as required up to point of interconnection and metering point	EC	EPC
	Earthing Material	EPC	
	Lightning arrestors	EPC	
	Utility metering	EPC	
	SCADA System	EPC	
	Fire fighting equipment	EPC	
	CCTV System with monitoring	EPC	
	Weather Station	EPC	
	Performance Monitoring System	EPC	
	All procurement as required to complete project implementation, testing and commissioning up to point of distribution utility interconnection and metering.	EPC	
3.2	Logistics		
	Packing and forwarding	EPC	
	Transportation to site	EPC	
	Comprehensive marine, transit, storage, erection all risk insurance cover	EPC	
4	Construction Activities		
4.1	Site Preparation		
	Right-of-Way from tapping point to interconnection point at PV plant	EC	EPC

	Site cleaning	EC	EPC
	All earthwork including excavation, back filling and compression	EPC	EC
	Site Construction Office, Including all furniture, supplies, etc.	EPC	
	Site Warehouse and Storage for all equipment and materials	EPC	
	First Aid Station, Safety and health facilities	EPC	
	Construction Facilities for Labor such as toilets, shelters, change rooms, etc.	EPC	
	Fencing of entire plot with minimum two 7m gates and required gate house	EC	EPC
	Supply and Installation of weather station	EPC	Employer
	Main approach road, pathways, WBM surface for main approach road.	EPC	EC
	Grading slop towards South (5%), surface storm water drainage system	EPC	EC
4.2	Civil Engineering Works		
	Clearing of the Site	EC	EPC
	Landfilling, General leveling and grading	EPC	EC
	Foundation, deep foundation, piling	EPC	EC
	Temporary Site Installations	EPC	EC
	Site drainage and waste water systems	EPC	EC / Employer
	Potable water and washing water systems	EPC	EC / Employer
	Security fences, walls and security gates along with other outdoor works	EC	EPC
	Access Roads for Equipment to be Used	EPC	EC
	Technical and non-technical buildings and structures	EPC	EC / Employer

	Heating, ventilation and air conditioning systems	EPC	EC / Employer
	Fire fighting, protection and detection systems	EPC	EC / Employer
	Foundations for module mounting structures	EPC	Employer
	Construction of cable trenches and hume pipes across the solar PV yard	EPC	Employer
	Foundations as required for all electrical systems including transformers, panels, distribution boards etc.	EPC	Employer
	Foundations as required for distribution line towers up to the point of interconnection.	EC	EPC/ Employer
	Construction of main control room including storage, administration office, etc.	EPC	Employer
	All other civil and structural works as required to complete the plant.	EPC	Employer
	Final Landscaping, Gardening, tree planting as appropriate	EC	
4.3			
	Inverters, DC and AC switchgear and panels as required.	EPC	Employer
	LV/MV switchgear as required.	EPC	Employer
	DC and AC cabling as required for LV and MV side of project	EPC	Employer
	MV electrical distribution line from project site to tapping point	EC	EPC
	Earthing and lightning protection system	EPC	Employer
	Internal electrification for all control rooms and substations	EPC	Employer
	External lighting system	EPC	Employer
	Emergency power supply system for all modular plot control rooms	EPC	Employer
	Auxiliary power supply system including all cabling as required.	EPC	Employer

	Controls and monitoring system including SCADA system	EPC	Employer
	Performance monitoring from solar PV string level to utility meter	EPC	Employer
	Electrical spares as required for defects liability period.	EPC	Employer
4.4			
	Fire fighting system for entire solar PV yard, main control rooms and administrative buildings.	EPC	Employer
	Air Conditioning system for all control rooms (if required) and administration building.	EPC	Employer
	Water supply system and waste management as required for entire plant	EPC	Employer
5			
	Project Management	EPC	Employer
	Site Supervision	EPC	Employer
	Project scheduling and tracking	EPC	Employer
	Drawing Schedules	EPC	Employer
	Equipment Delivery Schedules	EPC	Employer
	Construction Schedules	EPC	Employer
	Overall Project Status Reports	EPC	Employer
	Obtaining all permitting required at site	EPC	EC to facilitate
6	Witnessing factory test for all major equipment	Employer /EPC	Employer
	Factory Tests Reports	EPC	Employer
	Quality Assurance / Quality Control	EPC	Employer
7			
	Removal of all temporary constructions and equipment.	EPC	EC/ Employer

	Finishing the main approach roads and pathways within the plant.	EPC	EC/ Employer
	Performance test procedure and final report.	EPC	Employer
	As built drawings.	EPC	Employer
	Handing over copies of manuals and test report for all project components.	EPC	Employer
8			
	Mechanical completion test	EPC	Employer
	Operational acceptance test	EPC	Employer
	Consumables required for all these tests	EPC	EC/ Employer
	Standard and special test instruments, tools and equipment required for all the tests.	EPC	EC/ Employer
	Reporting and documentation of all tests	EPC	Employer
	Recording of all tests	EPC	Employer
9			
	Comprehensive Operation and Maintenance Manual	EPC	EC
	Training of EC & Employer 's personnel prior to Test & Commissioning	EPC	Employer /EC
	Spares and consumables for Operational Acceptance Testing and required replenishment	EPC	EC
	Handing over PV plant to EC	EPC	Employer /EC
	5 years warranties for Defect Liability Period	EPC	EC
	10 years warranties for Inverters & Module Mounting Structures	EPC	EC
	25 years warranties for Module Degradation	EPC	EC
	Required Spares, special tools, equipment and consumables	EPC	EC
	Training of EC & Employer 's personnel prior to Plant Operational Acceptance Test	EPC	Employer /EC
	Handing over PV plant to EC	EPC	Employer /EC

Environmental and Social (ES) requirements

[The Employer's team preparing the ES requirements should include suitably qualified Environmental and Social specialist/s. The ES requirements should be prepared in manner that does not conflict with the relevant General Conditions of Contract (and the corresponding Particular Conditions if any) and other parts of the specifications.]

Refer to Section III and the below Contractor's Representative and Key Personnel Requirements.

CONTRACTOR'S REPRESENTATIVE AND KEY PERSONNEL

Note: The minimum key specialists required to execute the contract, taking into account the nature, scope, complexity and risks of the contract.

Contractor's Representative and Key Personnel

Item No.	Position/specialization	Relevant academic qualifications	Minimum years of relevant work experience
1	Contractor's Representative	<i>Based on Contractor's Standards</i>	<i>Based on Contractor's Standards</i>
2.	<i>[Construction Manager]</i>	<i>Based on Contractor's Standards</i>	<i>Based on Contractor's Standards</i>
3.	Environmental, Social, Health & Safety Officer*	BS/College graduate in environmental science/management, geology, biology, chemistry, forestry or any closely related course	One year experience as Pollution Control Officer and one year experience as Safety Officer for a construction project
5.	<i>[Health & Safety]</i>	<i>Based on Contractor's Standards</i>	<i>Based on Contractor's Standards</i>
6.	<i>[Environmental & Social]</i>	<i>Based on Contractor's Standards</i>	<i>Based on Contractor's Standards</i>
7.	<i>Sexual Exploitation, Abuse and Harassment</i>	<i>Not Applicable</i>	
8.	<i>[modify as appropriate]</i>		

*** In lieu of separate Health & Safety Officer and Environmental & Social Officer**

Forms and Procedures

Form of Completion Certificate	?-???
Form of Operational Acceptance Certificate	?-???
Form of Defect Liability Period Completion Certificate	?-???
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Form of Completion Certificate

(Maybe Issued on Per Lot Basis)

(Letter Head of Employer)

Date: _____
Loan/Credit N^o: _____
IFB N^o: _____

To: _____

Dear Ladies and/or Gentlemen,

Pursuant to GCC Clause 24 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Employer dated *<insert Month, Date & Year>*, relating to the *<indicate number of lots>* x 1.0 MWp Solar PV Plant, we hereby notify you that the following Facilities were completed on the date specified below:

<indicate description of applicable lots won>

I. 1.0 MWp Solar PV Plant for Ilocos Norte Electric Cooperative, Inc. (INEC Lot 1)

Date of Completion: _____

II. 1.0 MWp Solar PV Plant for Pangasinan Electric Cooperative, Inc. I (PANELCO Lot 2)

Date of Completion: _____

III. 1.0 MWp Solar PV Plant for Benguet Electric Cooperative, Inc. (BENECO Lot 3)

Date of Completion: _____

IV. 1.0 MWp Solar PV Plant for Samar Electric Cooperative, Inc. I (SAMELCO-I Lot 4)

Date of Completion: _____

V. 1.0 MWp Solar PV Plant for Samar Electric Cooperative, Inc. II (SAMELCO-II Lot 5)

Date of Completion: _____

VI. 1.0 MWp Solar PV Plant for South Cotabato Electric Cooperative, Inc. II (SOCOTECO Lot

6) Date of Completion: _____

VII. 1.0 MWp Solar PV Plant for Sultan Kudarat Electric Cooperative, Inc. (SUKELCO Lot 7)

Date of Completion: _____

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not also relieve you of your obligation to complete the execution of the Operational Acceptance Test of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Project Manager
NPC-ASEP Project Management Office
National Power Corporation

Attachment: List of Outstanding Items

Form of Operational Acceptance Certificate

(Maybe Issued on Per Lot Basis)
(Letter Head of Employer)

Date: _____
Loan/Credit No: _____
IFB No: _____

To: _____

Dear Ladies and/or Gentlemen,

Pursuant to GCC Sub-Clause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Employer dated *<insert Month, Date & Year>*, relating to the *<indicate number of lots>* 3 x 1.0 MWp Solar PV Plant, we hereby notify you that the Functional Guarantees of the following Facilities were satisfactorily attained on the date specified below and that effectively, the Electric Cooperative hereby take responsibility for care and custody and the risk of loss thereof on the date mentioned below:

<indicate description of applicable lots won>

- I. 1.0 MWp Solar PV Plant for Ilocos Norte Electric Cooperative, Inc. (INEC Lot 1)
Date of Completion: _____
- II. 1.0 MWp Solar PV Plant for Pangasinan Electric Cooperative, Inc. I (PANELCO Lot 2)
Date of Completion: _____
- III. 1.0 MWp Solar PV Plant for Benguet Electric Cooperative, Inc. (BENECO Lot 3)
Date of Completion: _____
- IV. 1.0 MWp Solar PV Plant for Samar Electric Cooperative, Inc. I (SAMELCO-I Lot 4)
Date of Completion: _____
- V. 1.0 MWp Solar PV Plant for Samar Electric Cooperative, Inc. II (SAMELCO-II Lot 5)
Date of Completion: _____
- VI. 1.0 MWp Solar PV Plant for South Cotabato Electric Cooperative, Inc. II (SOCOTECO Lot 6)
Date of Completion: _____
- VII. 1.0 MWp Solar PV Plant for Sultan Kudarat Electric Cooperative, Inc. (SUKELCO Lot 7)
Date of Completion: _____

Further, this letter does not relieve you of your obligation to promptly execute necessary corrective action(s) to any component(s) of the Facilities in accordance with the Contract on notice from the Electric Cooperative nor of your obligations during the Defect Liability Period and Extended Liability Period, as applicable.

Very truly yours,

Project Manager
NPC-ASEP Project Management Office
National Power Corporation

Form of Defect Liability Period Completion Certificate

(Maybe Issued on Per Lot Basis)
(Letter Head of Electric Cooperative)

Date: _____
Loan/Credit No: _____
IFB No: _____

To: _____

Dear Ladies and/or Gentlemen,

Pursuant to PPC Clause 27 (Defect Liability Period) of the Particular General Conditions of the Contract entered into between yourselves and the Employer *<insert Month, Date & Year>*, relating to the *<indicate number of lots>* 3 x 1.0 MWp Solar PV Plant, we hereby notify you that the warranties of the Facilities under the Defect Liability Period and/or, as applicable, the Extended Defect Liability Period, were satisfactorily attained on the date specified below:

<indicate description of applicable lots won>

I. 1.0 MWp Solar PV Plant for Ilocos Norte Electric Cooperative, Inc. (INEC Lot 1)

Date of Acceptance: _____

II. 1.0 MWp Solar PV Plant for Pangasinan Electric Cooperative, Inc. I (PANELCO Lot 2)

Date of Acceptance: _____

III. 1.0 MWp Solar PV Plant for Benguet Electric Cooperative, Inc. (BENECO Lot 3)

Date of Acceptance: _____

IV. 1.0 MWp Solar PV Plant for Samar Electric Cooperative, Inc. I (SAMELCO-I Lot 4)

Date of Completion: _____

V. 1.0 MWp Solar PV Plant for Samar Electric Cooperative, Inc. II (SAMELCO-II Lot 5)

Date of Completion: _____

VI. 1.0 MWp Solar PV Plant for South Cotabato Electric Cooperative, Inc. II (SOCOTECO Lot

6) Date of Completion: _____

VII. 1.0 MWp Solar PV Plant for Sultan Kudarat Electric Cooperative, Inc. (SUKELCO Lot 7)

Date of Completion: _____

However, this letter does not relieve you of your obligation to promptly execute necessary corrective action(s) to any component(s) of the Facilities that are still covered by the warranty provisions of the Contract, on notice from the Electric Cooperative..

Very truly yours,

<insert Title of Authorized Official>
<insert name of Electric Cooperative>

Change Order Procedure and Forms

Date: _____
Loan/Credit N°: _____
IFB N°: _____

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1. General
2. Change Order Log
3. References for Changes

ANNEXES

- Annex 1 Request for Change Proposal
- Annex 2 Estimate for Change Proposal
- Annex 3 Acceptance of Estimate
- Annex 4 Change Proposal
- Annex 5 Change Order
- Annex 6 Pending Agreement Change Order
- Annex 7 Application for Change Proposal

Change Order Procedure

1. General

This section provides samples of procedures and forms for implementing changes in the Facilities during the performance of the Contract in accordance with GCC Clause 39 (Change in the Facilities) of the General Conditions of Contract.

2. Change Order Log

The Contractor shall keep an up-to-date Change Order Log to show the current status of Requests for Change and Changes authorized or pending, as Annex 8. Entries of the Changes in the Change Order Log shall be made to ensure that the log is up-to-date. The Contractor shall attach a copy of the current Change Order Log in the monthly progress report to be submitted to the Employer.

3. References for Changes

- (1) Request for Change as referred to in GCC Clause 39 shall be serially numbered CR-X-nnn.
- (2) Estimate for Change Proposal as referred to in GCC Clause 39 shall be serially numbered CN-X-nnn.
- (3) Acceptance of Estimate as referred to in GCC Clause 39 shall be serially numbered CA-X-nnn.
- (4) Change Proposal as referred to in GCC Clause 39 shall be serially numbered CP-X-nnn.
- (5) Change Order as referred to in GCC Clause 39 shall be serially numbered CO-X-nnn.

Note: (a) Requests for Change issued from the Employer's Home Office and the Site representatives of the Employer shall have the following respective references:

Home Office	CR-H-nnn
Site	CR-S-nnn

- (b) The above number "nnn" is the same for Request for Change, Estimate for Change Proposal, Acceptance of Estimate, Change Proposal and Change Order.

Annex 1. Request for Change Proposal

(Employer's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

With reference to the captioned Contract, you are requested to prepare and submit a Change Proposal for the Change noted below in accordance with the following instructions within _____ days of the date of this letter _____.

1. Title of Change: _____
2. Change Request No. _____
3. Originator of Change: Employer: _____
Contractor (by Application for Change Proposal No. _____¹³:

4. Brief Description of Change: _____

5. Facilities and/or Item No. of equipment related to the requested Change: _____

6. Reference drawings and/or technical documents for the request of Change:

<u>Drawing No./Document No.</u>	<u>Description</u>
---------------------------------	--------------------

7. Detailed conditions or special requirements on the requested Change: _____

8. General Terms and Conditions:

- (a) Please submit your estimate to us showing what effect the requested Change will have on the Contract Price.
 - (b) Your estimate shall include your claim for the additional time, if any, for completion of the requested Change.
- _____

-
- (c) If you have any opinion negative to the adoption of the requested Change in connection with the conformability to the other provisions of the Contract or the safety of the Plant or Facilities, please inform us of your opinion in your proposal of revised provisions.
 - (d) Any increase or decrease in the work of the Contractor relating to the services of its personnel shall be calculated.
 - (e) You shall not proceed with the execution of the work for the requested Change until we have accepted and confirmed the amount and nature in writing.

(Employer's Name)

(Signature)

(Name of signatory)

(Title of signatory)

Annex 2. Estimate for Change Proposal

(Contractor's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

With reference to your Request for Change Proposal, we are pleased to notify you of the approximate cost of preparing the below-referenced Change Proposal in accordance with GCC Sub-Clause 39.2.1 of the General Conditions of Contract. We acknowledge that your agreement to the cost of preparing the Change Proposal, in accordance with GCC Sub-Clause 39.2.2, is required before estimating the cost for change work.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Brief Description of Change: _____
4. Scheduled Impact of Change: _____
5. Cost for Preparation of Change Proposal: _____¹⁴

(a) Engineering		(Amount)
(i) Engineer	_____ hrs x _____ rate/hr =	_____
(ii) Draftsperson	_____ hrs x _____ rate/hr =	_____
Sub-total	_____ hrs	_____
Total Engineering Cost		_____
(b) Other Cost		_____
Total Cost (a) + (b)		_____

¹⁴ Costs shall be in the currencies of the Contract.

(Contractor's Name)

(Signature)

(Name of signatory)

(Title of signatory)

Annex 3. Acceptance of Estimate

(Employer's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We hereby accept your Estimate for Change Proposal and agree that you should proceed with the preparation of the Change Proposal.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Estimate for Change Proposal No./Rev.: _____
4. Acceptance of Estimate No./Rev.: _____
5. Brief Description of Change: _____
6. Other Terms and Conditions: In the event that we decide not to order the Change accepted, you shall be entitled to compensation for the cost of preparation of Change Proposal described in your Estimate for Change Proposal mentioned in para. 3 above in accordance with GCC Clause 39 of the General Conditions.

(Employer's Name)

(Signature)

(Name and Title of signatory)

Annex 4. Change Proposal

(Contractor's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

In response to your Request for Change Proposal No. _____, we hereby submit our proposal as follows:

1. Title of Change: _____
2. Change Proposal No./Rev.: _____
3. Originator of Change: Employer: / _____
Contractor: _____
4. Brief Description of Change: _____
5. Reasons for Change: _____
6. Facilities and/or Item No. of Equipment related to the requested Change: _____
7. Reference drawings and/or technical documents for the requested Change:

<u>Drawing/Document No.</u>	<u>Description</u>
-----------------------------	--------------------

8. Estimate of increase/decrease to the Contract Price resulting from Change Proposal:¹⁵

(Amount)

(a) Direct material _____

(b) Major construction equipment _____

¹⁵ Costs shall be in the currencies of the Contract.

-
- (c) Direct field labor (Total ____ hrs) _____
- (d) Subcontracts _____
- (e) Indirect material and labor _____
- (f) Site supervision _____
- (g) Head office technical staff salaries

Process engineer	_____ hrs @ _____ rate/hr	_____
Project engineer	_____ hrs @ _____ rate/hr	_____
Equipment engineer	_____ hrs @ _____ rate/hr	_____
Procurement	_____ hrs @ _____ rate/hr	_____
Draftsperson	_____ hrs @ _____ rate/hr	_____
Total	_____ hrs	_____

- (h) Extraordinary costs (computer, travel, etc.) _____
- (i) Fee for general administration, ____ % of Items _____
- (j) Taxes and customs duties _____

Total lump sum cost of Change Proposal _____
(Sum of items (a) to (j))

Cost to prepare Estimate for Change Proposal _____
(Amount payable if Change is not accepted)

9. Additional time for Completion required due to Change Proposal
10. Effect on the Functional Guarantees
11. Effect on the other terms and conditions of the Contract
12. Validity of this Proposal: within [Number] days after receipt of this Proposal by the Employer
13. Other terms and conditions of this Change Proposal:
- (a) You are requested to notify us of your acceptance, comments or rejection of this detailed Change Proposal within _____ days from your receipt of this Proposal.
- (b) The amount of any increase and/or decrease shall be taken into account in the adjustment of the Contract Price.

(c) Contractor's cost for preparation of this Change Proposal:²

(Contractor's Name)

(Signature)

(Name of signatory)

(Title of signatory)

² Specify where necessary.

Annex 5. Change Order

(Employer's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We approve the Change Order for the work specified in the Change Proposal (No. _____), and agree to adjust the Contract Price, Time for Completion and/or other conditions of the Contract in accordance with GCC Clause 39 of the General Conditions of Contract.

1. Title of Change: _____

2. Change Request No./Rev.: _____

3. Change Order No./Rev.: _____

4. Originator of Change: Employer: _____
Contractor: _____

5. Authorized Price:

Ref. No.: _____ Date: _____
Foreign currency portion _____ plus Local currency portion _____

6. Adjustment of Time for Completion

None Increase _____ days Decrease _____ days

7. Other effects, if any

Authorized by: _____
(Employer)

Date: _____

Accepted by: _____
(Contractor)

Date: _____

Annex 6. Pending Agreement Change Order

(Employer's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: / _____

Dear Ladies and/or Gentlemen:

We instruct you to carry out the work in the Change Order detailed below in accordance with GCC Clause 39 of the General Conditions of Contract.

1. Title of Change: _____
2. Employer's Request for Change Proposal No./Rev.: _____ dated: _____
3. Contractor's Change Proposal No./Rev.: _____ dated: _____
4. Brief Description of Change: _____
5. Facilities and/or Item No. of equipment related to the requested Change: _____
6. Reference Drawings and/or technical documents for the requested Change:

<u>Drawing/Document No.</u>	<u>Description</u>
7. Adjustment of Time for Completion:
8. Other change in the Contract terms:
9. Other terms and conditions:

(Employer's Name)

(Signature)

(Name of signatory)

(Title of signatory)

Annex 7. Application for Change Proposal

(Contractor's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We hereby propose that the below-mentioned work be treated as a Change in the Facilities.

1. Title of Change: _____
2. Application for Change Proposal No./Rev.: _____ dated:

3. Brief Description of Change: _____
4. Reasons for Change:
5. Order of Magnitude Estimation (in the currencies of the Contract):
6. Scheduled Impact of Change:
7. Effect on Functional Guarantees, if any:
8. Appendix:

(Contractor's Name)

(Signature)

(Name of signatory)

(Title of signatory)

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PART 3 – Conditions of Contract and Contract Forms

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General Conditions of Contract

Contract and Interpretation

1. Definitions

1.1. The following words and expressions shall have the meanings hereby assigned to them:

“Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments thereto).

“GCC” means the General Conditions of Contract hereof.

“PCC” means the Particular Conditions of Contract.

“day” means calendar day.

“year” means 365 days.

“month” means calendar month.

“Party” means the Employer or the Contractor, as the context requires, and **“Parties”** means both of them.

“Employer” means the person **named as such in the PCC** and includes the legal successors or permitted assigns of the Employer.

“Project Manager” means the person appointed by the Employer in the manner provided in GCC Sub-Clause 17.1 (Project Manager) hereof and **named as such in the PCC** to perform the duties delegated by the Employer.

“Contractor” means the person(s) whose Bid to perform the Contract has been accepted by the Employer and is named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

“Contractor’s Representative” means any person nominated by the Contractor and approved by the Employer in the manner provided in GCC Sub-Clause 17.2 (Contractor’s Representative and Construction Manager) hereof to perform the duties delegated by the Contractor.

“Construction Manager” means the person appointed by the Contractor’s Representative in the manner provided in GCC Sub-Clause 17.2.4.

“Subcontractor,” including manufacturers, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant, is sub-contracted directly or

indirectly by the Contractor, and includes its legal successors or permitted assigns.

“Dispute Board” (DB) means the person or persons named as such in the PCC appointed by agreement between the Employer and the Contractor to make a decision with respect to any dispute or difference between the Employer and the Contractor referred to him or her by the Parties pursuant to GCC Sub-Clause 46.1 (Dispute Board) hereof.

“The Bank” means the financing institution **named in the PCC**.

“Contract Price” means the sum specified in Article 2.1 (Contract Price) of the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

“Facilities” means the Plant to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract.

“Plant” means permanent plant, equipment, machinery, apparatus, materials, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor under GCC Sub-Clause 7.3 hereof), but does not include Contractor’s Equipment.

“Installation Services” means all those services ancillary to the supply of the Plant for the Facilities, to be provided by the Contractor under the Contract, such as transportation and provision of marine or other similar insurance, inspection, expediting, site preparation works (including the provision and use of Contractor’s Equipment and the supply of all construction materials required), installation, testing, precommissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training, etc... as the case may require.

“Contractor’s Equipment” means all facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant, or other things intended to form or forming part of the Facilities.

“Country of Origin” means the countries and territories eligible under the rules of the Bank as further **elaborated in the PCC**.

“Site” means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site.

“Effective Date” means the date of fulfillment of all conditions stated in Article 3 (Effective Date) of the Contract Agreement, from which the Time for Completion shall be counted.

“Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, as referred to in GCC Clause 8 and in accordance with the relevant provisions of the Contract.

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been completed operationally and structurally and put in a tight and clean condition, that all work in respect of Precommissioning of the Facilities or such specific part thereof has been completed, and that the Facilities or specific part thereof are ready for Commissioning as provided in GCC Clause 24 (Completion) hereof.

“Precommissioning” means the testing, checking and other requirements specified in the Employer’s Requirements that are to be carried out by the Contractor in preparation for Commissioning as provided in GCC Clause 24 (Completion) hereof.

“Commissioning” means operation of the Facilities or any part thereof by the Contractor following Completion, which operation is to be carried out by the Contractor as provided in GCC Sub-Clause 25.1 (Commissioning) hereof, for the purpose of carrying out Guarantee Test(s).

“Guarantee Test(s)” means the test(s) specified in the Employer’s Requirements to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, in accordance with the provisions of GCC Sub-Clause 25.2 (Guarantee Test) hereof.

“Operational Acceptance” means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor’s fulfillment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of GCC Clause 28 (Functional Guarantees) hereof and shall include deemed acceptance in accordance with GCC Clause 25 (Commissioning and Operational Acceptance) hereof.

“Defect Liability Period” means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in GCC Clause 27 (Defect Liability) hereof.

“ES” means Environmental and Social (including Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH)).

“Sexual Exploitation and Abuse” “(SEA)” means the following:

Sexual Exploitation is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another.

Sexual Abuse is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.

“Sexual Harassment” “(SH)” is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by the Contractor’s Personnel with other Contractor’s Personnel or Employer’s Personnel;

“Contractor’s Personnel” means all personnel whom the Contractor utilizes in the execution of the Contract, including the staff, labor and other employees of the Contractor and each Subcontractor; and any other personnel assisting the Contractor in the execution of the Contract; and

“Employer’s Personnel” means all staff, labor and other employees of the Project Manager and of the Employer engaged in fulfilling the Employer’s obligations under the Contract; and any other personnel identified as Employer’s Personnel, by a notice from the Employer to the Contractor.

2. Contract Documents

2.1. Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

3. Interpretation

3.1. In the Contract, except where the context requires otherwise:

- (a) words indicating one gender include all genders;
- (b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- (c) provisions including the word “agree,” “agreed,” or “agreement” require the agreement to be recorded in writing;
- (d) the word “tender” is synonymous with “Bid,” “tenderer,” with “Bidder,” and “tender documents” with “Bidding Document,” and

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- (e) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

3.2. Incoterms

Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of Parties thereunder shall be as prescribed by *Incoterms*.

Incoterms means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1^{er}, 75008 Paris, France.

3.3. Entire Agreement

Subject to GCC Sub-Clause 16.4 hereof, the Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of Parties with respect thereto made prior to the date of Contract.

3.4. Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each Party hereto.

3.5. Independent Contractor

The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the Parties hereto. Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Employer.

3.6. Non-Waiver

3.6.1 Subject to GCC Sub-Clause 3.6.2 below, no relaxation, forbearance, delay or indulgence by either Party in enforcing any of the terms and conditions of the Contract or the granting of time by either Party to the other shall prejudice, affect or restrict the rights of that Party under the Contract, nor shall any

waiver by either Party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.6.2 Any waiver of a Party's rights, powers or remedies under the Contract must be in writing, must be dated and signed by an authorized representative of the Party granting such waiver, and must specify the right and the extent to which it is being waived.

3.7. Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

3.8. Country of Origin

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

4. **Communications**

4.1. Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) in writing and delivered against receipt; and
- (b) delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Agreement.

When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Project Manager, a copy shall be sent to the Project Manager or the other Party, as the case may be.

5. **Law and Language**

- 5.1. The Contract shall be governed by and interpreted in accordance with laws of the country **specified in the PCC**.
- 5.2. The ruling language of the Contract shall be that **stated in the PCC**.
- 5.3. The language for communications shall be the ruling language unless otherwise **stated in the PCC**.

6. **Fraud and Corruption**

6.1. The Bank requires compliance with the Bank's Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set

forth in the WBG's Sanctions Framework, as set forth in Appendix B to the GCC.

- 6.2. The Employer requires the Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the Bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.

A. Subject Matter of Contract

7. Scope of Facilities

- 7.1. Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Precommissioning and delivery) of the Plant, and the installation, completion and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Employer's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labor, materials, equipment, spare parts (as specified in GCC Sub-Clause 7.3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Employer, as set forth in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer.
- 7.2. The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.
- 7.3. In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period **specified in the PCC** and the provisions, if any, **specified in the PCC**. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedule No. 6, which

shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefor and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.

8. Time for Commencement and Completion

- 8.1. The Contractor shall commence work on the Facilities within the period **specified in the PCC** and without prejudice to GCC Sub-Clauses 9.9 and 26.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in the Appendix to the Contract Agreement titled Time Schedule.
- 8.2. The Contractor shall attain Completion of the Facilities or of a part where a separate time for Completion of such part is specified in the Contract, within the time **stated in the PCC** or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.

9. Contractor's Responsibilities

- 9.1. The Contractor shall design, manufacture including associated purchases and/or subcontracting, install and complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.
- 9.2. The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities including any data as to boring tests provided by the Employer, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site if access thereto was available and of other data readily available to it relating to the Facilities as of the date twenty-eight (28) days prior to Bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities.
- 9.3. The Contractor shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which such authorities or undertakings require the Contractor to obtain in its name and which are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Employer under GCC Sub-Clause 10.3 hereof and that are necessary for the performance of the Contract.
- 9.4. The Contractor shall comply with all laws in force in the country where the Facilities are to be implemented. The laws will include all local, state, national or other laws that affect the performance of the

Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to GCC Sub-Clause 10.1 hereof.

- 9.5. Any Plant and Installation Services that will be incorporated in or be required for the Facilities and other supplies shall have their origin as specified under GCC Clause 1 (Country of Origin). Any subcontractors retained by the Contractor shall be from a country as specified in GCC Clause 1 (Country of Origin).
- 9.6. If the Contractor is a joint venture, or association (JV) of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfillment of the provisions of the Contract, and shall designate one of such persons to act as a leader with authority to bind the JV. The composition or the constitution of the JV shall not be altered without the prior consent of the Employer.
- 9.7. Pursuant to paragraph 1.16 (e) of Appendix B to the General Conditions of Contract, the Contractor shall permit and shall cause its agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and personnel, to permit, the Bank and/or persons appointed by the Bank to inspect the site and/or the accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have such accounts, records and other documents audited by auditors appointed by the Bank. The Contractor's and its Subcontractors' and subconsultants' attention is drawn to Sub-Clause 6.1 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).
- 9.8. Contractor's Environmental and Social Management Plan (C-ESMP)
- The Contractor shall not carry out mobilization to Site unless the Project Manager gives approval, an approval that shall not be unreasonably delayed, to the measures the Contractor proposes to address environmental and social risks and impacts including the code of conduct, in accordance with GCC Sub-Clause 22.4.

The Contractor shall submit, to the Project Manager for Review, any additional Management Strategies and Implementation Plans as are necessary to manage the ES risks and impacts of the Facilities. These Management Strategies and Implementation Plans collectively

comprise the Contractor's Environmental and Social Management Plan (C-ESMP).

The Contractor shall review the C-ESMP, periodically (but not less than every six (6) months), and update it as required to ensure that it contains measures appropriate to the Facilities. The updated C-ESMP shall be submitted to the Project Manager for its approval.

9.9. Training of Contractor's Personnel

The Contractor shall provide appropriate training to relevant Contractor's Personnel on ES aspects of the Contract, including appropriate sensitization on prohibition of SEA and health and safety training referred to in GCC Sub-Clause 22.2.7.

As stated in the Employer's Requirements or as instructed by the Project Manager, the Contractor shall also allow appropriate opportunities for the relevant Contractor's Personnel to be trained on ES aspects of the Contract by the Employer's personnel and/or other personnel assigned by the Employer.

The Contractor shall provide training on SEA and SH, including its prevention, to any of its personnel who has a role to supervise other Contractor's Personnel.

10. Employer's Responsibilities

- 10.1. All information and/or data to be supplied by the Employer as described in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, shall be deemed to be accurate, except when the Employer expressly states otherwise.
- 10.2. The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in that Appendix.
- 10.3. The Employer shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which (a) such authorities or undertakings require the Employer to obtain in the Employer's name, (b) are necessary for the execution of the Contract, including those required for the performance by both the Contractor and the Employer of their respective obligations under the Contract, and (c) are specified in the Appendix (Scope of Works and Supply by the Employer).

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- 10.4. If requested by the Contractor, the Employer shall use its best endeavors to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.
 - 10.5. Unless otherwise specified in the Contract or agreed upon by the Employer and the Contractor, the Employer shall provide sufficient, properly qualified operating and maintenance personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities; and shall perform all work and services of whatsoever nature, including those required by the Contractor to properly carry out Precommissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, at or before the time specified in the program furnished by the Contractor under GCC Sub-Clause 18.2 hereof and in the manner thereupon specified or as otherwise agreed upon by the Employer and the Contractor.
 - 10.6. The Employer shall be responsible for the continued operation of the Facilities after Completion, in accordance with GCC Sub-Clause 24.8, and shall be responsible for facilitating the Guarantee Test(s) for the Facilities, in accordance with GCC Sub-Clause 25.2.
 - 10.7. All costs and expenses involved in the performance of the obligations under this GCC Clause 10 shall be the responsibility of the Employer, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GCC Sub-Clause 25.2.
 - 10.8. In the event that the Employer shall be in breach of any of his obligations under this Clause, the additional cost incurred by the Contractor in consequence thereof shall be determined by the Project Manager and added to the Contract Price.

B. Payment

11. Contract Price

- 11.1. The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.
- 11.2. Unless an adjustment clause is **provided for in the PCC**, the Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
- 11.3. Subject to GCC Sub-Clauses 9.2, 10.1 and 35 hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

12. Terms of Payment

- 12.1. The Contract Price shall be paid as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement and in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which also outlines the procedures to be followed in making application for and processing payments.
- 12.2. No payment made by the Employer herein shall be deemed to constitute acceptance by the Employer of the Facilities or any part(s) thereof.
- 12.3. In the event that the Employer fails to make any payment by its respective due date or within the period set forth in the Contract, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate(s) shown in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, for the period of delay until payment has been made in full, whether before or after judgment or arbitrage award.
- 12.4. The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's Bid.

13. Securities

13.1. Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.

13.2. Advance Payment Security

13.2.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the Appendix to the Contract Agreement titled Terms and Procedures of Payment, and in the same currency or currencies.

13.2.2 The security shall be in the form provided in the Bidding documents or in another form acceptable to the Employer. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Employer. The security shall be returned to the Contractor immediately after its expiration.

13.3. Performance Security

13.3.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security for the due performance of the Contract in the amount **specified in the PCC**.

13.3.2 The Performance Security shall be denominated in the currency or currencies of the Contract, or in a freely convertible currency acceptable to the Employer, and shall be in the form provided in Section X, Contract Forms, corresponding to the type of bank guarantee stipulated by the Employer in the PCC, or in another form acceptable to the Employer.

13.3.3 Unless otherwise specified in the PCC, the security shall be reduced by half on the date of the Operational Acceptance. The Security shall become null and void, or shall be reduced pro rata to the Contract Price of a part of the Facilities for which a separate Time for Completion is provided, five hundred and forty (540) days after Completion of the Facilities or three hundred and sixty five (365) days after Operational Acceptance of the Facilities, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GCC Sub-Clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GCC Sub-Clause

27.10, is liable for an extended defect liability obligation, the Performance Security shall be extended for the period specified in the PCC pursuant to GCC Sub-Clause 27.10 and up to the amount specified in the PCC.

13.3.4 The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract. The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

14. Taxes and Duties

14.1. Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located.

14.2. Notwithstanding GCC Sub-Clause 14.1 above, the Employer shall bear and promptly pay

- (a) all customs and import duties for the Plant specified in Price Schedule No. 1; and
- (b) other domestic taxes such as, sales tax and value added tax (VAT) on the Plant specified in Price Schedules No. 1 and No. 2 and that is to be incorporated into the Facilities, and on the finished goods, imposed by the law of the country where the Site is located.

14.3. If any tax exemptions, reductions, allowances or privileges may be available to the Contractor in the country where the Site is located, the Employer shall use its best endeavors to enable the Contractor to benefit from any such tax savings to the maximum allowable extent.

14.4. For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date twenty-eight (28) days prior to the date of Bid submission in the country where the Site is located (hereinafter called "Tax" in this GCC Sub-Clause 14.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of Contract, which was or will be assessed on the Contractor, Subcontractors or their employees in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take

into account any such change by addition to the Contract Price or deduction therefrom, as the case may be, in accordance with GCC Clause 36 hereof.

C. Intellectual Property

15. License/Use of Technical Information

- 15.1. For the operation and maintenance of the Plant, the Contractor hereby grants a non-exclusive and non-transferable license (without the right to sub-license) to the Employer under the patents, utility models or other industrial property rights owned by the Contractor or by a third Party from whom the Contractor has received the right to grant licenses thereunder, and shall also grant to the Employer a non-exclusive and non-transferable right (without the right to sub-license) to use the know-how and other technical information disclosed to the Employer under the Contract. Nothing contained herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how or other intellectual property right from the Contractor or any third Party to the Employer.
- 15.2. The copyright in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third Party, including suppliers of materials, the copyright in such materials shall remain vested in such third Party.

16. Confidential Information

- 16.1. The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other Party hereto, divulge to any third Party any documents, data or other information furnished directly or indirectly by the other Party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this GCC Clause 16.
- 16.2. The Employer shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the Employer for any purpose other than the design, procurement of Plant, construction or such other work and services as are required for the performance of the Contract.

16.3. The obligation of a Party under GCC Sub-Clauses 16.1 and 16.2 above, however, shall not apply to that information which

- (a) now or hereafter enters the public domain through no fault of that Party
- (b) can be proven to have been possessed by that Party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other Party hereto
- (c) otherwise lawfully becomes available to that Party from a third Party that has no obligation of confidentiality
- (d) is being provided to the Bank.

16.4. The above provisions of this GCC Clause 16 shall not in any way modify any undertaking of confidentiality given by either of the Parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.

16.5. The provisions of this GCC Clause 16 shall survive termination, for whatever reason, of the Contract.

D. Execution of the Facilities

17. Representatives

17.1. Project Manager

If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the Facilities. Such appointment shall only take effect upon receipt of such notice by the Contractor. The Project Manager shall represent and act for the Employer at all times during the performance of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.

All notices, instructions, information and other communications given by the Contractor to the Employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.

17.2. Contractor's Representative & Construction Manager

17.2.1 If the Contractor's Representative is not named in the Contract, then within fourteen (14) days of the Effective Date, the Contractor shall appoint the Contractor's Representative and shall request the Employer in writing to approve the person so appointed. If the Employer makes no objection to the appointment within fourteen (14) days, the Contractor's Representative shall be deemed to have been approved. If the Employer objects to the appointment within fourteen (14) days giving the reason therefor, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GCC Sub-Clause 17.2.1 shall apply thereto.

17.2.2 The Contractor's Representative shall represent and act for the Contractor at all times during the performance of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract.

All notices, instructions, information and all other communications given by the Employer or the Project Manager to the Contractor under the Contract shall be given to the Contractor's Representative or, in its absence, its deputy, except as herein otherwise provided.

The Contractor shall not revoke the appointment of the Contractor's Representative without the Employer's prior written consent, which shall not be unreasonably withheld. If the Employer consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in GCC Sub-Clause 17.2.1.

17.2.3 The Contractor's Representative may, subject to the approval of the Employer which shall not be unreasonably withheld, at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions and authorities thereby delegated or revoked. No such delegation or revocation shall take

effect unless and until a copy thereof has been delivered to the Employer and the Project Manager.

Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GCC Sub-Clause 17.2.3 shall be deemed to be an act or exercise by the Contractor's Representative.

17.2.4 From the commencement of installation of the Facilities at the Site until Completion, the Contractor's Representative shall appoint a suitable person as the Construction Manager. The Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as the Construction Manager's deputy.

17.2.5 The Project Manager may require the Contractor to remove (or cause to be removed) the Contractor's Representative or any other person employed by the Contractor in the execution of the Contract, who:

- (a) persists in any misconduct or lack of care;
- (b) carries out duties incompetently or negligently;
- (c) fails to comply with any provision of the Contract;
- (d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment;
- (e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Contract;
- (f) has been recruited from the Employer's Personnel in breach of GCC Sub-Clause 22.2.2;
- (g) undertakes behavior which breaches the Code of Conduct (ES), as applicable;

If appropriate, the Contractor shall then promptly appoint (or cause to be appointed) a suitable replacement with equivalent skills and experience.

Notwithstanding any requirement from the Project Manager to remove or cause to remove any person, the

Contractor shall take immediate action as appropriate in response to any violation of (a) through (g) above. Such immediate action shall include removing (or causing to be removed) from the Site or other places where the Contract is being executed, any Contractor's Personnel who engages in (a), (b), (c), (d), (e) or (g) above or has been recruited as stated in (f) above.

17.2.6 If any representative or person employed by the Contractor is removed in accordance with GCC Sub-Clause 17.2.5, the Contractor shall, where required, promptly appoint a suitable replacement with equivalent skills and experience.

18. Work Program

18.1. Contractor's Organization

The Contractor shall supply to the Employer and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities within twenty-one (21) days of the Effective Date. The chart shall include the identities of the key personnel and the curricula vitae of such key personnel to be employed shall be supplied together with the chart. The Contractor shall promptly inform the Employer and the Project Manager in writing of any revision or alteration of such an organization chart.

18.2. Program of Performance

Within twenty-eight (28) days after the Effective Date, the Contractor shall submit to the Project Manager a detailed program of performance of the Contract, made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and precommission the Facilities, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve Completion, Commissioning and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in the Appendix to the Contract Agreement titled Time Schedule, and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion specified in the PCC pursuant to Sub-Clause 8.2 and any extension granted in

accordance with GCC Clause 40, and shall submit all such revisions to the Project Manager.

18.3. Progress Report

The Contractor shall monitor progress of all the activities specified in the program referred to in GCC Sub-Clause 18.2 above, and supply a progress report to the Project Manager every month.

The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.

Unless otherwise stated in the Specifications, each progress report shall include the Environmental and Social (ES) metrics set out in Appendix C.

In addition to the progress reports, the Contractor shall inform the Project Manager immediately of any allegation, incident or accident in the Site, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer's Personnel or Contractor's Personnel. This includes, but is not limited to, any incident or accident causing fatality or serious injury; significant adverse effects or damage to private property; or any allegation of SEA and/or SH. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information.

The Contractor, upon becoming aware of the allegation, incident or accident, shall also immediately inform the Project Manager of any such incident or accident on the Subcontractors' or suppliers' premises relating to the Facilities which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer's Personnel, or Contractor's, its Subcontractors' and suppliers' personnel. The notification shall provide sufficient detail regarding such incidents or accidents. The Contractor shall provide full details of such incidents or accidents to the Project Manager within the timeframe agreed with the Project Manager.

The Contractor shall require its Subcontractors and suppliers to immediately notify the Contractor of any incidents or accidents referred to in this Subclause.

18.4. Progress of Performance

If at any time the Contractor's actual progress falls behind the program referred to in GCC Sub-Clause 18.2, or it becomes apparent that it will so fall behind, the Contractor shall, at the request of the Employer or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under GCC Sub-Clause 8.2, any extension thereof entitled under GCC Sub-Clause 40.1, or any extended period as may otherwise be agreed upon between the Employer and the Contractor.

18.5. Procedures

The Contract shall be executed in accordance with the Contract Documents including the procedures given in the Forms and Procedures of the Employer's Requirements.

The Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.

19. Subcontracting

- 19.1. The Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved Subcontractors, specifies major items of supply or services and a list of approved Subcontractors against each item, including manufacturers. Insofar as no Subcontractors are listed against any such item, the Contractor shall prepare a list of Subcontractors for such item for inclusion in such list. The Contractor may from time to time propose any addition to or deletion from any such list. The Contractor shall submit any such list or any modification thereto to the Employer for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Employer for any of the Subcontractors shall not relieve the Contractor from any of its obligations, duties or responsibilities under the Contract.
- 19.2. The Contractor shall select and employ its Subcontractors for such major items from those listed in the lists referred to in GCC Sub-Clause 19.1.

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- 19.3. For items or parts of the Facilities not specified in the Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved Subcontractors, the Contractor may employ such Subcontractors as it may select, at its discretion.
- 19.4. Each sub-contract shall include provisions which would entitle the Employer to require the sub-contract to be assigned to the Employer under GCC 19.5 (if and when applicable), or in event of termination by the Employer under GCC 42.2.
- 19.5. If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Liability Period and the Project Manager, prior to that date, instructs the Contractor to assign the benefits of such obligations to the Employer, then the Contractor shall do so.
- 19.6. The Contractor shall require that its Subcontractors execute the Facilities in accordance with the Contract, including complying with the relevant ES requirements and the obligations set out in GCC Sub-Clause 22.4.

20. Design and Engineering

20.1. Specifications and Drawings

20.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.

The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Employer.

20.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Employer, by giving a notice of such disclaimer to the Project Manager.

20.2. Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of Bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Employer and shall be treated in accordance with GCC Clause 39.

20.3. Approval/Review of Technical Documents by Project Manager

20.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the Project Manager the documents listed in the Appendix to the Contract Agreement titled List of Documents for Approval or Review, for its approval or review as specified and in accordance with the requirements of GCC Sub-Clause 18.2 (Program of Performance).

Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof.

GCC Sub-Clauses 20.3.2 through 20.3.7 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only.

20.3.2 Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GCC Sub-Clause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes.

If the Project Manager fails to take such action within the said fourteen (14) days, then the said document shall be deemed to have been approved by the Project Manager.

20.3.3 The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with the Contract or that it is contrary to good engineering practice.

20.3.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it

for the Project Manager's approval in accordance with GCC Sub-Clause 20.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), whereupon the document shall be deemed to have been approved.

20.3.5 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) thereto that cannot be settled between the Parties within a reasonable period, then such dispute or difference may be referred to a Dispute Board for determination in accordance with GCC Sub-Clause 46.1 hereof. If such dispute or difference is referred to a Dispute Board, the Project Manager shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the Dispute Board upholds the Contractor's view on the dispute and if the Employer has not given notice under GCC Sub-Clause 46.3 hereof, then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Dispute Board shall decide, and the Time for Completion shall be extended accordingly.

20.3.6 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.

20.3.7 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GCC Sub-Clause 20.3.

If the Project Manager requests any change in any already approved document and/or in any document

based thereon, the provisions of GCC Clause 39 shall apply to such request.

21. Procurement

21.1. Plant

Subject to GCC Sub-Clause 14.2, the Contractor shall procure and transport all Plant in an expeditious and orderly manner to the Site.

21.2. Employer-Supplied Plant

If the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, provides that the Employer shall furnish any specific items to the Contractor, the following provisions shall apply:

21.2.1 The Employer shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the Parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to GCC Sub-Clause 18.2, unless otherwise mutually agreed.

21.2.2 Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect or default. The Employer shall immediately remedy any shortage, defect or default, or the Contractor shall, if practicable and possible, at the request of the Employer, remedy such shortage, defect or default at the Employer's cost and expense. After inspection, such item shall fall under the care, custody and control of the Contractor. The provision of this GCC Sub-Clause 21.2.2 shall apply to any item supplied to remedy any such shortage or default or to substitute for any defective item, or shall apply to defective items that have been repaired.

21.2.3 The foregoing responsibilities of the Contractor and its obligations of care, custody and control shall not relieve the Employer of liability for any undetected shortage, defect or default, nor place the Contractor under any liability for any such shortage, defect or default whether under GCC Clause 27 or under any other provision of Contract.

21.3. Transportation

21.3.1 The Contractor shall at its own risk and expense transport all the materials and the Contractor's

Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

21.3.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment.

21.3.3 Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile or electronic means, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the Parties.

21.3.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site.

21.4. Customs Clearance

The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Employer's obligations under GCC Sub-Clause 14.2, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Employer, the Employer shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance that are not the fault of the Contractor, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GCC Clause 40.

22. Installation

22.1. Setting Out/Supervision

22.1.1 Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Employer.

If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.

22.1.2 Contractor's Supervision: The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

22.2. Labor:

22.2.1 Engagement of Staff and Labor

Except as otherwise stated in the Employer's Requirements, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, housing, feeding and transport.

The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills.

The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into the country where the Site is located. The Employer will, if requested by the

Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor's Personnel.

The Contractor shall at its own expense provide the means of repatriation to all of its Contractor's Personnel employed for the execution of the Contract at the Site or other places where the Installation Services are carried out to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.

22.2.2 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Employer's Personnel.

22.2.3 Labor Laws

The Contractor shall comply with all the relevant labor laws applicable to the Contractor's Personnel, including laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.

The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labor.

22.2.4 Rates of Wages and Conditions of Labor

The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are

applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of the Country for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such laws.

22.2.5 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the PCC, unless:

- (a) otherwise stated in the Contract,
- (b) the Project Manager gives consent, or
- (c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Facilities, in which case the Contractor shall immediately advise the Project Manager.

If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Project Manager's consent thereto, the Project Manager shall not unreasonably withhold such consent.

This Sub-Clause shall not apply to any work which is customarily carried out by rotary or double-shifts.

22.2.6 Facilities for Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel employed for the execution of the Contract at the Site or other places where the Installation Services are carried out. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Employer's Requirements.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent

living quarters within the structures forming part of the Facilities.

22.2.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel employed for the execution of Installation Services at the Site (or other places in the country where the Site is located).

Subject to GCC Sub-Clause 9.8, the Contractor shall submit to the Engineer for its approval a health and safety manual which has been specifically prepared for the Contract.

The health and safety manual shall be in addition to any other similar document required under applicable health and safety regulations and Laws.

The health and safety manual shall set out all the health and safety requirements under the Contract,

- (a) which shall include at a minimum:
 - (i) the procedures to establish and maintain a safe working environment without risk to health at all workplaces, machinery, equipment and processes under the control of the Contractor, including control measures for chemical, physical and biological substances and agents;
 - (ii) details of the training to be provided, records to be kept;
 - (iii) the procedures for prevention, preparedness and response activities to be implemented in the case of an emergency event (i.e. an unanticipated incident, arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks or spills, which may occur for a variety of different reasons including failure to implement operating procedures that are designed to prevent their occurrence, extreme weather or lack of early warning);
 - (iv) the measures to be taken to avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases,

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- (v) the measures to be implemented to avoid or minimize the spread of communicable diseases (including transfer of Sexually Transmitted Diseases or Infections (STDs), such as HIV virus) and non-communicable diseases associated with the execution of the Contract, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. This includes taking measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent Contract-related labor;
 - (vi) the policies and procedures on the management and quality of accommodation and welfare facilities if such accommodation and welfare facilities are provided by the Contractor in accordance with GCC Sub-Clause 22.2.6; and
- (b) any other requirements stated in the Specification.

22.2.8 Funeral Arrangements

In the event of the death of any of the Contractor's Personnel or accompanying members of their families, the Contractor shall be responsible for making the appropriate arrangements for their return or burial, unless otherwise specified in the PCC.

22.2.9 Records of Contractor's Personnel

The Contractor shall keep accurate records of the Contractor's Personnel, including the number of each class of Contractor's personnel on the Site and the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis in a form approved by the Project Manager and shall be available for inspection by the Project Manager until the Contractor has completed all work.

22.2.10 Supply of Foodstuffs

The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Employer's Requirements at reasonable prices for the Contractor's personnel for the purposes of or in connection with the Contract.

22.2.11 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's personnel.

22.2.12 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

22.2.13 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the laws of the Country, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal by Contractor's personnel.

22.2.14 Arms and Ammunition

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

22.2.15 Workers' Organizations

In countries where the relevant labor laws recognize workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference, the Contractor shall comply with such laws. In such circumstances, the role of legally established workers' organizations and legitimate workers' representatives will be respected, and they will be provided with information needed for meaningful negotiation in a timely manner. Where the relevant labor laws substantially restrict workers' organizations, the Contractor shall enable alternative means for the Contractor's and its Subcontractors' personnel to express their grievances and protect their rights regarding working conditions and terms of employment. The Contractor shall not seek to influence or control these alternative means. The Contractor shall not discriminate or retaliate against the Contractor's and its Subcontractors' personnel who participate, or seek to participate, in such organizations and collective bargaining or alternative mechanisms. Workers'

organizations are expected to fairly represent the workers in the workforce.

22.2.16 Non-Discrimination and Equal Opportunity

The Contractor shall not make decisions relating to the employment or treatment of Contractor's Personnel on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment of Contractor's Personnel on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to any aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices.

Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination. The Contractor shall provide protection and assistance as necessary to ensure non-discrimination and equal opportunity, including for specific groups such as women, people with disabilities, migrant workers and children (of working age in accordance with GCC Sub-Clause 22.2.19).

22.2.17 Contractor's Personnel Grievance Mechanism

The Contractor shall have a grievance mechanism for the Contractor's Personnel, and where relevant the workers' organizations stated in subclause 22.2.15, to raise workplace concerns. The grievance mechanism shall be proportionate to the nature, scale, risks and impacts of the Contract. The mechanism shall address concerns promptly, using an understandable and transparent process that provides timely feedback to those concerned in a language they understand, without any retribution, and shall operate in an independent and objective manner.

The Contractor's Personnel shall be informed of the grievance mechanism at the time of engagement for the Contract, and the measures put in place to protect them against any reprisal for its use. Measures will be put in place to make the grievance mechanism easily accessible to all Contractor's and its Subcontractors' personnel.

The grievance mechanism shall not impede access to other judicial or administrative remedies that might be available, or substitute for grievance mechanisms provided through collective agreements.

The grievance mechanism may utilize existing grievance mechanisms, providing that they are properly designed and implemented, address concerns promptly, and are readily accessible to such project workers. Existing grievance mechanisms may be supplemented as needed with Contract-specific arrangements.

22.2.18 Forced Labor

The Contractor, including its Subcontractors, shall not employ or engage forced labor. Forced labor consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

No persons shall be employed or engaged who have been subject to trafficking. Trafficking in persons is defined as the recruitment, transportation, transfer, harbouring or receipt of persons by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purposes of exploitation.

22.2.19 Child Labor

The Contractor, including its Subcontractors, shall not employ or engage a child under the age of 14 unless the national law specifies a higher age (the minimum age).

The Contractor, including its Subcontractors, shall not employ or engage a child between the minimum age and the age of 18 in a manner that is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

The Contractor including its Subcontractors, shall only employ or engage children between the minimum age and the age of 18 after an appropriate risk assessment has been conducted by the Contractor with the Engineer's consent. The Contractor shall be subject to

regular monitoring by the Project Manager that includes monitoring of health, working conditions and hours of work.

Work considered hazardous for children is work that, by its nature or the circumstances in which it is carried out, is likely to jeopardize the health, safety, or morals of children. Such work activities prohibited for children include work:

- (a) with exposure to physical, psychological or sexual abuse;
- (b) underground, underwater, working at heights or in confined spaces;
- (c) with dangerous machinery, equipment or tools, or involving handling or transport of heavy loads;
- (d) in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or
- (e) under difficult conditions such as work for long hours, during the night or in confinement on the premises of the employer.

22.3. Contractor's Equipment

22.3.1 All Contractor's Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.

22.3.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.

22.3.3 The Employer will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.

22.4. Site Regulations

The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Project Manager with a copy to the Employer, proposed Site regulations for the Project Manager's approval, which approval shall not be unreasonably withheld.

Such Site regulations shall include, but shall not be limited to, Code of Conduct for environmental and social aspects submitted as part of the Bid and agreed to by the Employer, security arrangements in accordance with GCC Sub-Clause 22.8, safety of the Facilities, gate control, sanitation, medical care, and fire prevention.

The Contractor shall take all necessary measures to ensure that each Contractor's Personnel, employed for the execution of the Contract at the Site or other places where the Installation Services are carried out, is made aware of the Code of Conduct including specific behaviors that are prohibited, and understands the consequences of engaging in such prohibited behaviors.

These measures include providing instructions and documentation that can be understood by the Contractor's Personnel and seeking to obtain that person's signature acknowledging receipt of such instructions and/or documentation, as appropriate.

The Contractor shall also ensure that the Code of Conduct is visibly displayed in multiple locations on the Site and any other place where the Installation Services will be carried out, as well as in areas outside the Site accessible to the local community and project affected people. The posted Code of Conduct shall be provided in languages comprehensible to Contractor's Personnel, Employer's Personnel and the local community.

The Contractor's Management Strategy and Implementation Plans shall include appropriate processes for the Contractor to verify compliance with these obligations.

22.5. Opportunities for Other Contractors

22.5.1 The Contractor shall, upon written request from the Employer or the Project Manager, give all reasonable opportunities for carrying out the work to any other

contractors employed by the Employer on or near the Site.

22.5.2 If the Contractor, upon written request from the Employer or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.

22.5.3 The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors and the workers of the Employer in regard to their work.

22.5.4 The Contractor shall notify the Project Manager promptly of any defects in the other contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.

22.6. Emergency Work

If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work.

If the Contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons therefor. If the work done or caused to be done by the Employer is work that the Contractor was liable to do at its own expense under the

Contract, the reasonable costs incurred by the Employer in connection therewith shall be paid by the Contractor to the Employer. Otherwise, the cost of such remedial work shall be borne by the Employer.

22.7. Site Clearance

22.7.1 Site Clearance in Course of Performance: In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

22.7.2 Clearance of Site after Completion: After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and Facilities in a clean and safe condition.

22.8. Security of the Site

The Contractor shall be responsible for the security of the Site including providing and maintaining at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

If required in the Employer's Requirements, the Contractor shall submit for the Project Manager's No-objection a security management plan that sets the security arrangements for the Site.

In making security arrangements, the Contractor shall be guided by applicable laws and any other requirements stated in the Employer's Requirements.

The Contractor shall (i) conduct appropriate background checks on any personnel retained to provide security; (ii) train the security personnel adequately (or determine that they are properly trained) in the use of force (and where applicable, firearms), and appropriate conduct towards Contractor's and Sub-contractor's personnel, Employer's personnel and affected communities; and (iii) require the security personnel to act within the applicable Laws and any requirements set out in the Employer's Requirements.

The Contractor shall not permit any use of force by security personnel in providing security except when used for

preventive and defensive purposes in proportion to the nature and extent of the threat.

22.9. Protection of the Environment

The Contractor shall take all necessary measures to:

- i. protect the environment (both on and off the Site); and
- ii. limit damage and nuisance to people and property resulting from pollution, noise and other results of the Contractor's operations and/ or activities.

The Contractor shall ensure that emissions, surface discharges, effluent and any other pollutants from the Contractor's activities shall exceed neither the values indicated in the Employer's Requirements, nor those prescribed by applicable laws.

In the event of damage to the environment, property and/or nuisance to people, on or off Site as a result of the Contractor's operations, the Contractor shall agree with the Project Manager the appropriate actions and time scale to remedy, as practicable, the damaged environment to its former condition. The Contractor shall implement such remedies at its cost to the satisfaction of the Project Manager.

22.10. Cultural Heritage Findings

All fossils, coins, articles of value or antiquity, structures, groups of structures, and other remains or items of geological, archaeological, paleontological, historical, architectural, religious interest found on the Site shall be placed under the care and custody of the Employer.

The Contractor shall take all reasonable precautions, including fencing-off the area or site of the finding, to avoid further disturbance and prevent Contractor's Personnel or other persons from removing or damaging any of these findings;

As soon as practicable after discovery of any such finding, the Contractor shall give a notice to the Project Manager, to give the Project Manager the opportunity to promptly inspect and/or investigate the finding before it is disturbed and to issue instructions for dealing with it.

23. Test and Inspection

- 23.1. The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such tests and/or inspections of the Plant and any part of the Facilities as are specified in the Contract.

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- 23.2. The Employer and the Project Manager or their designated representatives shall be entitled to attend the aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.
- 23.3. Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project Manager. The Contractor shall obtain from any relevant third Party or manufacturer any necessary permission or consent to enable the Employer and the Project Manager or their designated representatives to attend the test and/or inspection.
- 23.4. The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection.
- If the Employer or Project Manager or their designated representatives fails to attend the test and/or inspection, or if it is agreed between the Parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.
- 23.5. The Project Manager may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impede the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.
- 23.6. If any Plant or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GCC Sub-Clause 23.3.
- 23.7. If any dispute or difference of opinion shall arise between the Parties in connection with or arising out of the test and/or inspection of the Plant or part of the Facilities that cannot be settled between the Parties within a reasonable period of time, it may be referred to an Dispute Board for determination in accordance with GCC Sub-Clause 46.3.

23.8. The Contractor shall afford the Employer and the Project Manager, at the Employer's expense, access at any reasonable time to any place where the Plant are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice. Without prejudice to GCC Sub-Clause 9.7, as instructed by the Project Manager, the Contractor shall also afford other relevant entities (at the Employer's or their respective entities' expense, as appropriate) access to the Facilities, to inspect progress and the manner of the execution of the Facilities, carry out environmental and social audit, as appropriate, or carry out any other duty as stated in the Employer's Requirements or as instructed by the Project Manager.

23.9. The Contractor agrees that neither the execution of a test and/or inspection of Plant or any part of the Facilities, nor the attendance by the Employer or the Project Manager, nor the issue of any test certificate pursuant to GCC Sub-Clause 23.4, shall release the Contractor from any other responsibilities under the Contract.

23.10. No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such parts of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.

23.11. The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.

If any parts of the Facilities or foundations have been covered up at the Site after compliance with the requirement of GCC Sub-Clause 23.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Employer, and the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.

24. Completion of the Facilities

24.1. As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified

in the Employer's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Employer in writing.

- 24.2. Within seven (7) days after receipt of the notice from the Contractor under GCC Sub-Clause 24.1, the Employer shall supply the operating and maintenance personnel specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer for Precommissioning of the Facilities or any part thereof.

Pursuant to the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, the Employer shall also provide, within the said seven (7) day period, the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Precommissioning of the Facilities or any part thereof.

- 24.3. As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters have been provided by the Employer in accordance with GCC Sub-Clause 24.2, the Contractor shall commence Precommissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GCC Sub-Clause 25.5.

- 24.4. As soon as all works in respect of Precommissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall so notify the Project Manager in writing.

- 24.5. The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 24.4, either issue a Completion Certificate in the form specified in the Employer's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice under GCC Sub-Clause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.

If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GCC Sub-Clause 24.4.

If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities

or that part thereof have reached Completion as of the date of the Contractor's repeated notice.

If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within seven (7) days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.

- 24.6. If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 24.4 or within seven (7) days after receipt of the Contractor's repeated notice under GCC Sub-Clause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.
- 24.7. As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.
- 24.8. Upon Completion, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

25. Commissioning and Operational Acceptance

- 25.1. Commissioning
- 25.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the Project Manager, pursuant to GCC Sub-Clause 24.5, or immediately after the date of the deemed Completion, under GCC Sub-Clause 24.6.
- 25.1.2 The Employer shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning.
- 25.1.3 In accordance with the requirements of the Contract, the Contractor's and Project Manager's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Employer.

25.2. Guarantee Test

25.2.1 Subject to GCC Sub-Clause 25.5, the Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test and any repeats thereof.

25.2.2 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion **specified in the PCC** or any other period agreed upon by the Employer and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GCC Sub-Clauses 28.2 and 28.3 shall not apply.

25.3. Operational Acceptance

25.3.1 Subject to GCC Sub-Clause 25.4 below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when

- (a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or
- (b) the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion specified in the PCC pursuant to GCC Sub-Clause 25.2.2 above or any other period agreed upon by the Employer and the Contractor; or
- (c) the Contractor has paid the liquidated damages specified in GCC Sub-Clause 28.3 hereof; and
- (d) any minor items mentioned in GCC Sub-Clause 24.7 hereof relevant to the Facilities or that part thereof have been completed.

25.3.2 At any time after any of the events set out in GCC Sub-Clause 25.3.1 have occurred, the Contractor may give a

notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Employer's Requirements (Forms and Procedures) in respect of the Facilities or the part thereof specified in such notice as of the date of such notice.

25.3.3 The Project Manager shall, after consultation with the Employer, and within seven (7) days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.

25.3.4 If within seven (7) days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.

25.4. Partial Acceptance

25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.

25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.

25.5. Delayed Precommissioning and/or Guarantee Test

25.5.1 In the event that the Contractor is unable to proceed with the Precommissioning of the Facilities pursuant to Sub-Clause 24.3, or with the Guarantee Test pursuant to Sub-Clause 25.2, for reasons attributable to the Employer either on account of non availability of other facilities under the responsibilities of other contractor(s), or for reasons beyond the Contractor's control, the provisions leading to "deemed" completion

of activities such as Completion, pursuant to GCC Sub-Clause 24.6, and Operational Acceptance, pursuant to GCC Sub-Clause 25.3.4, and Contractor's obligations regarding Defect Liability Period, pursuant to GCC Sub-Clause 27.2, Functional Guarantee, pursuant to GCC Clause 28, and Care of Facilities, pursuant to GCC Clause 32, and GCC Clause 41.1, Suspension, shall not apply. In this case, the following provisions shall apply.

25.5.2 When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to above Sub-Clause 25.5.1, the Contractor shall be entitled to the following:

- (a) the Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GCC Sub-Clause 26.2;
- (b) payments due to the Contractor in accordance with the provision specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which would not have been payable in normal circumstances due to non-completion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Employer, and which shall become null and void when the Contractor will have complied with its obligations regarding those payments, subject to the provision of Sub-Clause 25.5.3 below;
- (c) the expenses towards the above security and extension of other securities under the contract, of which validity needs to be extended, shall be reimbursed to the Contractor by the Employer;
- (d) the additional charges towards the care of the Facilities pursuant to GCC Sub-Clause 32.1 shall be reimbursed to the Contractor by the Employer for the period between the notification mentioned above and the notification mentioned in Sub-Clause 25.5.4 below. The provision of GCC Sub-Clause 33.2 shall apply to the Facilities during the same period.

25.5.3 In the event that the period of suspension under above Sub-Clause 25.5.1 actually exceeds one hundred eighty (180) days, the Employer and Contractor shall mutually

agree to any additional compensation payable to the Contractor.

25.5.4 When the Contractor is notified by the Project Manager that the Plant is ready for Precommissioning, the Contractor shall proceed without delay in performing Precommissioning in accordance with Clause 24.

E. Guarantees and Liabilities

26. Completion Time Guarantee

26.1. The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the PCC pursuant to GCC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.

26.2. If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 40, the Contractor shall pay to the Employer liquidated damages in the amount **specified in the PCC** as a percentage rate of the Contract Price or the relevant part thereof. The aggregate amount of such liquidated damages shall in no event exceed the amount **specified as “Maximum” in the PCC** as a percentage rate of the Contract Price. Once the “Maximum” is reached, the Employer may consider termination of the Contract, pursuant to GCC Sub-Clause 42.2.2.

Such payment shall completely satisfy the Contractor’s obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GCC Clause 40. The Contractor shall have no further liability whatsoever to the Employer in respect thereof.

However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract.

Save for liquidated damages payable under this GCC Sub-Clause 26.2, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in the Appendix to the Contract Agreement titled Time Schedule, and/or other program of work prepared pursuant to GCC Sub-Clause 18.2 shall not render the Contractor liable for any loss or damage thereby suffered by the Employer.

**27. Defect
Liability**

26.3. If the Contractor attains Completion of the Facilities or any part thereof before the Time for Completion or any extension thereof under GCC Clause 40, the Employer shall pay to the Contractor a bonus in the amount **specified in the PCC**. The aggregate amount of such bonus shall in no event exceed the amount **specified as “Maximum” in the PCC**.

27.1. The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant supplied and of the work executed.

27.2. The Defect Liability Period shall be five hundred and forty (540) days from the date of Completion of the Facilities (or any part thereof) or one year from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the PCC pursuant to GCC Sub-Clause 27.10.

If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes:

- (a) improper operation or maintenance of the Facilities by the Employer;
- (b) operation of the Facilities outside specifications provided in the Contract; or
- (c) normal wear and tear.

27.3. The Contractor's obligations under this GCC Clause 27 shall not apply to:

- (a) any materials that are supplied by the Employer under GCC Sub-Clause 21.2, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein;
- (b) any designs, specifications or other data designed, supplied or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein; or

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- (c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under GCC Sub-Clause 27.7.

27.4. The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.

27.5. The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GCC Clause 27.

The Contractor may, with the consent of the Employer, remove from the Site any Plant or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.

27.6. If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests.

If such part fails the tests, the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests shall be agreed upon by the Employer and the Contractor.

27.7. If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due the Contractor or claimed under the Performance Security.

27.8. If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons.

27.9. Except as provided in GCC Clauses 27 and 33, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Plant, design or engineering or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, or criminal or willful action of the Contractor.

27.10. In addition, any such component of the Facilities, and during the period of time as may be **specified in the PCC**, shall be subject to an extended defect liability period. Such obligation of the Contractor shall be in addition to the defect liability period specified under GCC Sub-Clause 27.2.

28. Functional Guarantees

28.1. The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, subject to and upon the conditions therein specified.

28.2. If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/or additions to the Plant or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract, pursuant to GCC Sub-Clause 42.2.2.

28.3. If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the said Appendix to the Contract Agreement is met, the Contractor shall, at the Contractor's option, either

- (a) make such changes, modifications and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Employer to repeat the Guarantee Test or

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- (b) pay liquidated damages to the Employer in respect of the failure to meet the Functional Guarantees in accordance with the provisions in the Appendix to the Contract Agreement titled Functional Guarantees.

28.4. The payment of liquidated damages under GCC Sub-Clause 28.3, up to the limitation of liability specified in the Appendix to the Contract Agreement titled Functional Guarantees, shall completely satisfy the Contractor's guarantees under GCC Sub-Clause 28.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

**29. Patent
Indemnity**

29.1. The Contractor shall, subject to the Employer's compliance with GCC Sub-Clause 29.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located; and (b) the sale of the products produced by the Facilities in any country.

Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, Plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.

29.2. If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in GCC Sub-Clause 29.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to

conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

- 29.3. The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.

30. Limitation of Liability

- 30.1. Except in cases of criminal negligence or willful misconduct,
- (a) neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and
 - (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the amount resulting from the application of the multiplier specified in the PCC, to the Contract Price or, if a multiplier is not so specified, the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement.

F. Risk Distribution

31. Transfer of Ownership

- 31.1. Ownership of the Plant (including spare parts) to be imported into the country where the Site is located shall be transferred to the

Employer upon loading on to the mode of transport to be used to convey the Plant from the country of origin to that country.

- 31.2. Ownership of the Plant (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Plant are brought on to the Site.
- 31.3. Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.
- 31.4. Ownership of any Plant in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Employer and the Contractor agree that the Plant in question are no longer required for the Facilities.
- 31.5. Notwithstanding the transfer of ownership of the Plant, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to GCC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant are incorporated.

32. Care of Facilities

- 32.1. The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GCC Clause 24 or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GCC Clause 27. Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clauses 32.2 and 38.1.
- 32.2. If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of
 - (a) insofar as they relate to the country where the Site is located, nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as

such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GCC Clause 34 hereof; or

- (b) any use or occupation by the Employer or any third Party other than a Subcontractor, authorized by the Employer of any part of the Facilities; or
- (c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Employer, or any such matter for which the Contractor has disclaimed responsibility herein,

the Employer shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the Employer requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Employer in accordance with GCC Clause 39. If the Employer does not request the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Employer shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Employer shall terminate the Contract pursuant to GCC Sub-Clause 42.1 hereof.

32.3. The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GCC Sub-Clause 32.2 with respect to the Contractor's temporary facilities, and (ii) where such loss or damage arises by reason of any of the matters specified in GCC Sub-Clauses 32.2 (b) and (c) and 38.1.

32.4. With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in GCC Sub-Clause 38.1, the provisions of GCC Sub-Clause 38.3 shall apply.

**33. Loss of or
Damage to
Property;
Accident or
Injury to**

33.1. Subject to GCC Sub-Clause 33.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and

**Workers;
Indemnifica-
tion**

expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Employer, its contractors, employees, officers or agents.

- 33.2. If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under GCC Sub-Clause 33.1, the Employer shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

- 33.3. The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 34, provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.

- 33.4. The Party entitled to the benefit of an indemnity under this GCC Clause 33 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the Party fails to take such measures, the other Party's liabilities shall be correspondingly reduced.

34. Insurance

- 34.1. To the extent specified in the Appendix to the Contract Agreement titled Insurance Requirements, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the

Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.

(a) Cargo Insurance During Transport

Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant (including spare parts therefor) and to the Contractor's Equipment.

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third Parties including the Employer's personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(g) Other Insurances

Such other insurances as may be specifically agreed upon by the Parties hereto as listed in the Appendix to the Contract Agreement titled Insurance Requirements.

- 34.2. The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1 except for the Cargo Insurance During Transport, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.
- 34.3. The Contractor shall, in accordance with the provisions of the Appendix to the Contract Agreement titled Insurance Requirements, deliver to the Employer certificates of insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.
- 34.4. The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.
- 34.5. The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix to the Contract Agreement titled Insurance Requirements, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insureds under all such policies. All insurers' rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Employer shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than twenty-one (21) days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Employer shall provide copies of the policies taken out by the Employer under this GCC Sub-Clause 34.5.

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- 34.6. If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 34.1, the Employer may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer fails to take out and/or maintain in effect the insurances referred to in GCC 34.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.
- 34.7. Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GCC Clause 34, and all monies payable by any insurers shall be paid to the Contractor. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

**35. Unforeseen
Conditions**

- 35.1. If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions other than climatic conditions, or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities including any data as to boring tests, provided by the Employer, and on the basis of information that it could have obtained from a visual inspection of the Site if access thereto was available, or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical

conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and before performing additional work or using additional Plant or Contractor's Equipment, notify the Project Manager in writing of

- (a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen;
- (b) the additional work and/or Plant and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions;
- (c) the extent of the anticipated delay; and
- (d) the additional cost and expense that the Contractor is likely to incur.

On receiving any notice from the Contractor under this GCC Sub-Clause 35.1, the Project Manager shall promptly consult with the Employer and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.

- 35.2. Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.

If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1, the Time for Completion shall be extended in accordance with GCC Clause 40.

**36. Change in
Laws and
Regulations**

36.1. If, after the date twenty-eight (28) days prior to the date of Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed which shall be deemed to include any change in interpretation or application by the competent authorities, that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the PCC pursuant to GCC Sub-Clause 11.2.

37. Force Majeure

37.1. “Force Majeure” shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the Party affected, and shall include, without limitation, the following:

- (a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war
- (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts
- (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority
- (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague
- (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster

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- (f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.

37.2. If either Party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

37.3. The Party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such Party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GCC Clause 40.

37.4. The Party or Parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either Party's right to terminate the Contract under GCC Sub-Clauses 37.6 and 38.5.

37.5. No delay or nonperformance by either Party hereto caused by the occurrence of any event of Force Majeure shall

- (a) constitute a default or breach of the Contract, or
- (b) give rise to any claim for damages or additional cost or expense occasioned thereby, subject to GCC Sub-Clauses 32.2, 38.3 and 38.4

if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.

37.6. If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other, but without prejudice to either Party's right to terminate the Contract under GCC Sub-Clause 38.5.

37.7. In the event of termination pursuant to GCC Sub-Clause 37.6, the rights and obligations of the Employer and the Contractor shall be as specified in GCC Sub-Clauses 42.1.2 and 42.1.3.

37.8. Notwithstanding GCC Sub-Clause 37.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

38. War Risks

38.1. “War Risks” shall mean any event specified in paragraphs (a) and (b) of GCC Sub-Clause 37.1 and any explosion or impact of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war, occurring or existing in or near the country (or countries) where the Site is located.

38.2. Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to

- (a) destruction of or damage to Facilities, Plant, or any part thereof;
- (b) destruction of or damage to property of the Employer or any third Party; or
- (c) injury or loss of life

if such destruction, damage, injury or loss of life is caused by any War Risks, and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising in consequence of or in connection with the same.

38.3. If the Facilities or any Plant or Contractor’s Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any War Risks, the Employer shall pay the Contractor for

- (a) any part of the Facilities or the Plant so destroyed or damaged to the extent not already paid for by the Employer and so far as may be required by the Employer, and as may be necessary for completion of the Facilities
- (b) replacing or making good any Contractor’s Equipment or other property of the Contractor so destroyed or damaged
- (c) replacing or making good any such destruction or damage to the Facilities or the Plant or any part thereof .

If the Employer does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Employer shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GCC Sub-Clause 42.1.

If the Employer requires the Contractor to replace or make good on any such destruction or damage to the Facilities, the Time for Completion shall be extended in accordance with GCC 40.

- 38.4. Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any War Risks, provided that the Contractor shall as soon as practicable notify the Employer in writing of any such increased cost.
- 38.5. If during the performance of the Contract any War Risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any War Risks, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other.
- 38.6. In the event of termination pursuant to GCC Sub-Clauses 38.3 or 38.5, the rights and obligations of the Employer and the Contractor shall be specified in GCC Sub-Clauses 42.1.2 and 42.1.3.

G. Change in Contract Elements

39. Change in the Facilities

39.1. Introducing a Change

39.1.1 Subject to GCC Sub-Clauses 39.2.5 and 39.2.7, the Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities hereinafter called "Change", provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.

39.1.2 The Contractor may from time to time during its performance of the Contract propose to the Employer with a copy to the Project Manager, any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor, provided that the Employer shall approve any Change proposed by the Contractor to ensure the safety of the Facilities.

39.1.3 Notwithstanding GCC Sub-Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.

39.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Sub-Clauses 39.2 and 39.3, and further details and forms are provided in the Employer's Requirements (Forms and Procedures).

39.2. Changes Originating from Employer

39.2.1 If the Employer proposes a Change pursuant to GCC Sub-Clause 39.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following:

- (a) brief description of the Change
- (b) effect on the Time for Completion
- (c) estimated cost of the Change
- (d) effect on Functional Guarantees (if any)
- (e) effect on the Facilities
- (f) effect on any other provisions of the Contract.

39.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the Project Manager an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:

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- (a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal
 - (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate
 - (c) advise the Contractor that the Employer does not intend to proceed with the Change.

39.2.3 Upon receipt of the Employer's instruction to proceed under GCC Sub-Clause 39.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GCC Sub-Clause 39.2.1.

39.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the Parties thereto shall agree on specific rates for the valuation of the Change.

39.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GCC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen percent (15%), the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor's objection, the Employer shall withdraw the proposed Change and shall notify the Contractor in writing thereof.

The Contractor's failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.

39.2.6 Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.

If the Employer is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GCC Sub-Clause 39.2.2.

39.2.7 If the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a “Pending Agreement Change Order.”

Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The Parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.

If the Parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Dispute Board in accordance with the provisions of GCC Sub-Clause 46.1.

39.3. Changes Originating from Contractor

39.3.1 If the Contractor proposes a Change pursuant to GCC Sub-Clause 39.1.2, the Contractor shall submit to the Project Manager a written “Application for Change Proposal,” giving reasons for the proposed Change and including the information specified in GCC Sub-Clause 39.2.1.

Upon receipt of the Application for Change Proposal, the Parties shall follow the procedures outlined in GCC Sub-Clauses 39.2.6 and 39.2.7. However, the Contractor shall not be entitled to recover the costs of preparing the Application for Change Proposal.

**40. Extension of
Time for
Completion**

40.1. The Time(s) for Completion specified in the PCC pursuant to GCC Sub-Clause 8.2 shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

- (a) any Change in the Facilities as provided in GCC Clause 39
- (b) any occurrence of Force Majeure as provided in GCC Clause 37, unforeseen conditions as provided in GCC Clause 35, or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clause 32.2
- (c) any suspension order given by the Employer under GCC Clause 41 hereof or reduction in the rate of progress pursuant to GCC Sub-Clause 41.2 or
- (d) any changes in laws and regulations as provided in GCC Clause 36 or
- (e) any default or breach of the Contract by the Employer, Appendix to the Contract Agreement titled ,or any activity, act or omission of the Employer, or the Project Manager, or any other contractors employed by the Employer, or
- (f) any delay on the part of a Subcontractor, provided such delay is due to a cause for which the Contractor himself would have been entitled to an extension of time under this sub-clause, or
- (g) delays attributable to the Employer or caused by customs, or
- (h) any other matter specifically mentioned in the Contract

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

40.2. Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to GCC Sub-Clause 46.1.

40.3. The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

40.4. In all cases where the Contractor has given a notice of a claim for an extension of time under GCC 40.2, the Contractor shall consult with the Project Manager in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall thereafter comply with all reasonable instructions which the Project Manager shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GCC 40.1, the amount of such extra costs shall be added to the Contract Price.

41. Suspension

41.1. The Employer may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the Project Manager.

If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GCC Clause 39, excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GCC Clause 39 or, where it affects the whole of the Facilities, as termination of the Contract under GCC Sub-Clause 42.1.

41.2. If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to

approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice or

- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas in accordance with GCC Sub-Clause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may by fourteen (14) days' notice to the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

- 41.3. If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GCC Clause 41, then the Time for Completion shall be extended in accordance with GCC Sub-Clause 40.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.

- 41.4. During the period of suspension, the Contractor shall not remove from the Site any Plant, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.

42. Termination

42.1. Termination for Employer's Convenience

- 42.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GCC Sub-Clause 42.1.

42.1.2 Upon receipt of the notice of termination under GCC Sub-Clause 42.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii) below
- (c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition, and
- (d) subject to the payment specified in GCC Sub-Clause 42.1.3,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - (iii) deliver to the Employer all non-proprietary drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

42.1.3 In the event of termination of the Contract under GCC Sub-Clause 42.1.1, the Employer shall pay to the Contractor the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination
- (b) the costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment from the

Site and in the repatriation of the Contractor's and its Subcontractors' personnel

- (c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges
- (d) costs incurred by the Contractor in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.1.2
- (e) the cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third Parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

42.2. Termination for Contractor's Default

42.2.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Contractor, referring to this GCC Sub-Clause 42.2:

- (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up, other than a voluntary liquidation for the purposes of amalgamation or reconstruction, a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any other analogous action in consequence of debt
- (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 43.
- (c) if the Contractor, in the judgment of the Employer has engaged in Fraud and Corruption, as defined in paragraph 2.2 a. of Appendix B to the GCC, in competing for or in executing the Contract.

42.2.2 If the Contractor

- (a) has abandoned or repudiated the Contract
- (b) has without valid reason failed to commence work on the Facilities promptly or has suspended, other

than pursuant to GCC Sub-Clause 41.2, the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the Employer to proceed

- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause
- (d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Facilities in the manner specified in the program furnished under GCC Sub-Clause 18.2 at rates of progress that give reasonable assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended,

then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GCC Sub-Clause 42.2.

42.2.3 Upon receipt of the notice of termination under GCC Sub-Clauses 42.2.1 or 42.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination,

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below
- (c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
- (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any

subcontracts concluded between the Contractor and its Subcontractors

- (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.2.4 The Employer may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third Party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, with all the maintenance costs to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of the Employer's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Facilities for such reasonable period as the Employer considers expedient for the supply and installation of the Facilities.

Upon completion of the Facilities or at such earlier date as the Employer thinks appropriate, the Employer shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.

42.2.5 Subject to GCC Sub-Clause 42.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as of the date of termination, the value of any unused or partially used Plant on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.2.3. Any sums due the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.

42.2.6 If the Employer completes the Facilities, the cost of completing the Facilities by the Employer shall be determined.

If the sum that the Contractor is entitled to be paid, pursuant to GCC Sub-Clause 42.2.5, plus the reasonable costs incurred by the Employer in completing the

Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.

If such excess is greater than the sums due the Contractor under GCC Sub-Clause 42.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due the Contractor under GCC Sub-Clause 42.2.5, the Employer shall pay the balance to the Contractor.

The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

42.3. Termination by the Contractor

42.3.1 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice, or
- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28)

days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Employer referring to this GCC Sub-Clause 42.3.1, forthwith terminate the Contract.

42.3.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this GCC Sub-Clause 42.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Employer takes or suffers any other analogous action in consequence of debt.

42.3.3 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, then the Contractor shall immediately

- (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii)
- (c) remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractors' personnel from the Site, and
- (d) subject to the payment specified in GCC Sub-Clause 42.3.4,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors, and

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- (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.3.4 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, the Employer shall pay to the Contractor all payments specified in GCC Sub-Clause 42.1.3, and reasonable compensation for all loss, except for loss of profit, or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.

42.3.5 Termination by the Contractor pursuant to this GCC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GCC Sub-Clause 42.3.

42.4. In this GCC Clause 42, the expression “Facilities executed” shall include all work executed, Installation Services provided, and all Plant acquired, or subject to a legally binding obligation to purchase, by the Contractor and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.

42.5. In this GCC Clause 42, in calculating any monies due from the Employer to the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment.

43. Assignment

43.1. Neither the Employer nor the Contractor shall, without the express prior written consent of the other Party, which consent shall not be unreasonably withheld, assign to any third Party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

44. Export Restrictions

44.1. Notwithstanding any obligation under the Contract to complete all export formalities, any export restrictions attributable to the Employer, to the country of the Employer or to the use of the Plant and Installation Services to be supplied which arise from trade regulations from a country supplying those Plant and

Installation Services, and which substantially impede the Contractor from meeting its obligations under the Contract, shall release the Contractor from the obligation to provide deliveries or services, always provided, however, that the Contractor can demonstrate to the satisfaction of the Employer and of the Bank that it has completed all formalities in a timely manner, including applying for permits, authorizations and licenses necessary for the export of the Plant and Installation Services under the terms of the Contract. Termination of the Contract on this basis shall be for the Employer's convenience pursuant to Sub-Clause 42.1.

H. Claims, Disputes and Arbitration

45. Contractor's Claims

45.1. If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Employer's liability, the Project Manager may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.

Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim which includes full supporting particulars of the basis of the claim and of

the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

- (a) this fully detailed claim shall be considered as interim;
- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and
- (c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager.

Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

Each Payment Certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The Project Manager shall agree with the Contractor or estimate:
(i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GCC Clause 40, and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

In the event that the Contractor and the Employer cannot agree on any matter relating to a claim, either Party may refer the matter to the Dispute Board pursuant to GCC 46 hereof.

46. Disputes and Arbitration

46.1. Appointment of the Dispute Board

Disputes shall be referred to a DB for decision in accordance with GCC Sub-Clause 46.3. The Parties shall appoint a DB by the date stated in the PCC.

The DB shall comprise, as stated in the PCC, either one or three suitably qualified persons (“the members”), each of whom shall meet the criteria set forth in Sub-Clause 3 of Appendix A- General Conditions of Dispute Board Agreement.. If the number is not so stated and the Parties do not agree otherwise, the DB shall comprise three persons, one of whom shall serve as chairman.

If the Contract is with a foreign Contractor, the DB members shall not have the same nationality as the Employer or the Contractor.

If the Parties have not jointly appointed the DB 21 days before the date stated in the PCC and the DB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.

However, if a list of potential members is included in the PCC, the members shall be selected from those on the list, other than anyone who is unable or unwilling to accept appointment to the DB.

The agreement between the Parties and either the sole member or each of the three members shall incorporate by reference the General Conditions of Dispute Board Agreement contained in the Appendix to these General Conditions, with such amendments as are agreed between them.

The DB shall be deemed to be constituted on the date the Parties and the sole member or the three members (as the case may be) of the DB have all signed a DB agreement.

The terms of the remuneration of either the sole member or each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment of the member or such expert (as the case may be). Each Party shall be responsible for paying one-half of this remuneration.

If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause.

The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DB (including each member) shall expire when the Operational Acceptance Certificate has been issued in accordance with GCC Sub-Clause 25.3.

46.2. Failure to Agree on the Composition of the Dispute Board

If any of the following conditions apply, namely:

- (d) the Parties fail to agree upon the appointment of the sole member of the DB by the date stated in the first paragraph of GCC Sub-Clause 46.1,
- (e) either Party fails to nominate a member (for approval by the other Party) of a DB of three persons by such date,
- (f) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DB by such date, or
- (g) the Parties fail to agree upon the appointment of a replacement person within 42 days after the date on which the sole member or one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,

then the appointing entity or official **named in the PCC** shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

46.3. Obtaining Dispute Board's Decision

If a dispute (of any kind whatsoever) arises between the Parties in connection with the performance of the Contract, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Project Manager, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the Project Manager. Such reference shall state that it is given under this Sub-Clause.

For a DB of three persons, the DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB.

Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a

decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s).

Within 84 days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue with the performance of the Facilities in accordance with the Contract.

If either Party is dissatisfied with the DB's decision, then either Party may, within 28 days after receiving the decision, give notice to the other Party of its dissatisfaction and intention to commence arbitration. If the DB fails to give its decision within the period of 84 days (or as otherwise approved) after receiving such reference, then either Party may, within 28 days after this period has expired, give notice to the other Party of its dissatisfaction and intention to commence arbitration.

In either event, this notice of dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in GCC Sub-Clauses 46.6 and 46.7, neither Party shall be entitled to commence arbitration of a dispute unless a notice of dissatisfaction has been given in accordance with this Sub-Clause.

If the DB has given its decision as to a matter in dispute to both Parties, and no notice of dissatisfaction has been given by either Party within 28 days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

46.4. Amicable Settlement

Where notice of dissatisfaction has been given under GCC Sub-Clause 46.3 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.

46.5. Arbitration

Unless **indicated otherwise in the PCC**, any dispute not settled amicably and in respect of which the DB's decision (if any) has

not become final and binding shall be finally settled by arbitration. Unless otherwise agreed by both Parties, arbitration shall be conducted as follows:

(a) For contracts with foreign contractors:

unless otherwise specified in the PCC; the dispute shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce; by one or three arbitrators appointed in accordance with these Rules. The place of arbitration shall be the neutral location **stated in the PCC**; and the arbitration shall be conducted in the ruling language **stated in the PCC**;

and

(b) For contracts with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer's Country.

The arbitrator(s) shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Project Manager, and any decision of the DB, relevant to the dispute. Nothing shall disqualify the Project Manager from being called as a witness and giving evidence before the arbitrator(s) on any matter whatsoever relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrator(s) to the evidence or arguments previously put before the DB to obtain its decision, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the DB shall be admissible in evidence in the arbitration.

Arbitration may be commenced prior to or after completion of the Facilities. The obligations of the Parties, the Project Manager and the DB shall not be altered by reason of any arbitration being conducted during the progress of the execution of the Facilities.

46.6. Failure to Comply with Dispute Board's Decision

In the event that a Party fails to comply with a DB decision which has become final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under GCC Sub-Clause 46.5. GCC Sub-Clauses 46.3 and 46.4 shall not apply to this reference.

46.7. Expiry of Dispute Board's Appointment

If a dispute arises between the Parties in connection with the performance of the Contract, and there is no DB in place, whether by reason of the expiry of the DB's appointment or otherwise:

- (a) GCC Sub-Clauses 46.3 and 46.4 shall not apply, and
- (b) the dispute may be referred directly to arbitration under GCC Sub-Clause 46.5

APPENDIX A

General Conditions of Dispute Board Agreement

1. Definitions

Each “Dispute Board Agreement” is a tripartite agreement by and between:

the “Employer”;

the “Contractor”; and

the “Member” who is defined in the Dispute Board Agreement as being:

- (i) the sole member of the “DB” and, where this is the case, all references to the “Other Members” do not apply, or
- (ii) one of the three persons who are jointly called the “DB” (or “dispute board”) and, where this is the case, the other two persons are called the “Other Members”.

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the “Contract” and is defined in the Dispute Board Agreement, which incorporates this Appendix. In the Dispute Board Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

2. General Provisions

Unless otherwise stated in the Dispute Board Agreement, it shall take effect on the latest of the following dates:

- (a) the Commencement Date defined in the Contract,
- (b) when the Employer, the Contractor and the Member have each signed the Dispute Board Agreement, or
- (c) when the Employer, the Contractor and each of the Other Members (if any) have respectively each signed a dispute board agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days’ notice of resignation to the Employer and to the Contractor, and the Dispute Board Agreement shall terminate upon the expiry of this period.

3. Warranties

The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Project Manager. The Member shall promptly disclose, to each of them and to the Other Members (if any), any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

When appointing the Member, the Employer and the Contractor relied upon the Member's representations that he/she:

- a) has at least a bachelor's degree in relevant disciplines such as law, engineering, construction management or contract management;
- b) has at least ten years of experience in contract administration/management and dispute resolution, out of which at least five years of experience as an arbitrator or adjudicator in construction-related disputes;
- c) has received formal training as an adjudicator from an internationally recognized organization;
- d) has experience and/or is knowledgeable in the type of work which the Contractor is to carry out under the Contract;
- e) has experience in the interpretation of construction and/or engineering contract documents; and
- f) is fluent in the language for communications defined in GCC Sub-Clause 5.3 (or the language as agreed between the Parties and the DB).

4. General Obligations of the Member

The Member shall:

- (a) have no interest financial or otherwise in the Employer, the Contractor or the Project Manager, nor any financial interest in the Contract except for payment under the Dispute Board Agreement;
- (b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Project Manager, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Board Agreement;
- (c) have disclosed in writing to the Employer, the Contractor and the Other Members (if any), before entering into the Dispute Board Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Project Manager, and any previous involvement in the overall project of which the Contract forms part;
- (d) not, for the duration of the Dispute Board Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Project Manager, except as may be agreed in writing by the Employer, the Contractor and the Other Members (if any);
- (e) comply with the annexed procedural rules and with GCC Sub-Clause 46.3;
- (f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;

-
- (g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Project Manager regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Board Agreement;
 - (h) ensure his/her availability for all site visits and hearings as are necessary;
 - (i) become conversant with the Contract and with the progress of the Facilities (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;
 - (j) treat the details of the Contract and all the DB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members (if any); and
 - (k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members (if any).

5. General Obligations of the Employer and the Contractor

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DB's activities under the Contract and the Dispute Board Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the Contractor's Personnel respectively.

The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members (if any):

- (a) be appointed as an arbitrator in any arbitration under the Contract;
- (b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or
- (c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding paragraph.

Whenever the Employer or the Contractor refers a dispute to the DB under GCC Sub-Clause 46.3, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

6. Payment

The Member shall be paid as follows, in the currency named in the Dispute Board Agreement:

- (a) a retainer fee per calendar month, which shall be considered as payment in full for:
 - (i) being available on 28 days' notice for all site visits and hearings;
 - (ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - (iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and
 - (iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Clause.

The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Board Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Facilities.

With effect from the first day of the calendar month following the month in which Taking-Over Certificate is issued for the whole of the Facilities, the retainer fee shall be reduced by one third. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Board Agreement is otherwise terminated.

- (b) a daily fee which shall be considered as payment in full for:
 - (i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Member's home and the site, or another location of a meeting with the Other Members (if any);
 - (ii) each working day on site visits, hearings or preparing decisions; and
 - (iii) each day spent reading submissions in preparation for a hearing.
- (c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, faxes and telexes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Clause;
- (d) any taxes properly levied in the Country on payments made to the Member (unless a national or permanent resident of the Country) under this Clause 6.

The retainer and daily fees shall be as specified in the Dispute Board Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the date on which the Dispute Board Agreement became effective.

If the Parties fail to agree on the retainer fee or the daily fee the appointing entity or official named in the PCC shall determine the amount of the fees to be used.

The Member shall submit invoices for payment of the monthly retainer and air fares quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

If the Contractor fails to pay to the Member the amount to which he/she is entitled under the Dispute Board Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer shall be entitled to reimbursement of all sums paid in excess of one-half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in accordance with GCC Sub-Clause 12.3.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

7. Termination

At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Board Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for in Clause 2.

If the Member fails to comply with the Dispute Board Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.

If the Employer or the Contractor fails to comply with the Dispute Board Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

8. Default of the Member

If the Member fails to comply with any of his obligations under Clause 4 concerning his impartiality or independence in relation to the Employer or the Contractor, he/she shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members (if any), for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

9. Disputes

Any dispute or claim arising out of or in connection with this Dispute Board Agreement, or the breach, termination or invalidity thereof, shall be finally settled by institutional arbitration. If no other arbitration institute is agreed, the arbitration shall be conducted under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with these Rules of Arbitration.

Annex

DISPUTE BOARD GUIDELINES

1. Unless otherwise agreed by the Employer and the Contractor, the DB shall visit the site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.
2. The timing of and agenda for each site visit shall be as agreed jointly by the DB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DB. The purpose of site visits is to enable the DB to become and remain acquainted with the progress of the execution of the Contract and of any actual or potential problems or claims, and, as far as reasonable, to prevent potential problems or claims from becoming disputes.
3. Site visits shall be attended by the Employer, the Contractor and the Project Manager and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.
4. The Employer and the Contractor shall furnish to the DB one copy of all documents which the DB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DB and the Employer or the Contractor shall be copied to the other Party. If the DB comprises three persons, the Employer and the Contractor shall send copies of these requested documents and these communications to each of these persons.
5. If any dispute is referred to the DB in accordance with GCC Sub-Clause 46.3, the DB shall proceed in accordance with GCC Sub-Clause 46.3 and these Guidelines. Subject to the time allowed to give notice of a decision and other relevant factors, the DB shall:
 - (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
 - (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.
6. The DB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.
7. Except as otherwise agreed in writing by the Employer and the Contractor, the DB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Project Manager, and to proceed in the absence of any Party who the DB is satisfied received notice of the

hearing; but shall have discretion to decide whether and to what extent this power may be exercised.

8. The Employer and the Contractor empower the DB, among other things, to:

- (a) establish the procedure to be applied in deciding a dispute,
- (b) decide upon the DB's own jurisdiction, and as to the scope of any dispute referred to it,
- (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Guidelines,
- (d) take the initiative in ascertaining the facts and matters required for a decision,
- (e) make use of its own specialist knowledge, if any,
- (f) decide upon the payment of financing charges in accordance with the Contract,
- (g) decide upon any provisional relief such as interim or conservatory measures,
- (h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Project Manager, relevant to the dispute, and
- (i) appoint, should the DB so consider necessary and the Parties agree, a suitable expert/s (including legal and technical expert(s)) at the cost of the Parties to give advice on a specific matter relevant to the dispute.

9. The DB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DB shall make and give its decision in accordance with GCC Sub-Clause 46.3, or as otherwise agreed by the Employer and the Contractor in writing. If the DB comprises three persons:

- (a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
- (b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
- (c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - (i) either the Employer or the Contractor does not agree that they do so, or
 - (ii) the absent Member is the chairman and he/she instructs the other Members to not make a decision.

APPENDIX B

Bank's Policy- Corrupt and Fraudulent Practices

(Text in this Appendix shall not be modified)

Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011:

“Fraud and Corruption:

1.16 It is the Bank's policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts.¹⁶ In pursuance of this policy, the Bank:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;¹⁷
 - (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;¹⁸
 - (iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;¹⁹

¹⁶ In this context, any action to influence the procurement process or contract execution for undue advantage is improper.

¹⁷ For the purpose of this sub-paragraph, “another party” refers to a public official acting in relation to the procurement process or contract execution. In this context, “public official” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

¹⁸ For the purpose of this sub-paragraph, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

¹⁹ For the purpose of this sub-paragraph, “parties” refers to participants in the procurement process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish bid prices at artificial, non-competitive levels, or are privy to each other's bid prices or other conditions.

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- (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;²⁰
 - (v) "obstructive practice" is:
 - (aa) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
 - (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 1.16(e) below.
 - (b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
 - (c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
 - (d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank’s sanctions procedures,²¹ including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated²² sub-contractor, consultant, supplier,

²⁰ For the purpose of this sub-paragraph, “party” refers to a participant in the procurement process or contract execution.

²¹ A firm or individual may be declared ineligible to be awarded a Bank financed contract upon: (i) completion of the Bank’s sanctions proceedings as per its sanctions procedures, including, inter alia, cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks, and through the application the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption; and (ii) as a result of temporary suspension or early temporary suspension in connection with an ongoing sanctions proceeding. See footnote 14 and paragraph 8 of Appendix 1 of these Guidelines.

²² A nominated sub-contractor, consultant, manufacturer or supplier, or service provider (different names are used depending on the particular bidding document) is one which has either been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

or service provider of an otherwise eligible firm being awarded a Bank-financed contract;

- (e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank.”

APPENDIX C

Metrics for Progress Reports- Environmental and Social (ES)

[Note to Employer: the following metrics is taken from large Work's Standard Procurement Documents (SPDs). This should be suitably amended to reflect the specifics of the Contract. The Employer shall ensure that the metrics provided are appropriate for Plant and impacts/key issues identified in the environmental and social assessment]

Metrics for regular reporting:

- a. *environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;*
- b. *health and safety incidents, accidents, injuries that require treatment and all fatalities;*
- c. *interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);*
- d. *status of all permits and agreements:*
 - i. *work permits: number required, number received, actions taken for those not received;*
 - ii. *status of permits and consents:*
 - *list areas/facilities with permits required (quarries, asphalt & batch plants), dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);*
 - *list areas with landowner agreements required (borrow and spoil areas, camp sites), dates of agreements, dates submitted to resident engineer (or equivalent);*
 - *identify major activities undertaken in each area in the reporting period and highlights of environmental and social protection (land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation);*

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- for quarries: status of relocation and compensation (completed, or details of activities and current status in the reporting period).
 - e. *health and safety supervision:*
 - i. safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;
 - ii. number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);
 - f. *worker accommodations:*
 - i. number of expats housed in accommodations, number of locals;
 - ii. date of last inspection, and highlights of inspection including status of accommodations' compliance with national and local law and good practice, including sanitation, space, etc.;
 - iii. actions taken to recommend/require improved conditions, or to improve conditions.
 - g. *Health services: provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);*
 - h. *gender (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);*
 - i. *training:*
 - i. number of new workers, number receiving induction training, dates of induction training;
 - ii. number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;
 - iii. number and dates of communicable diseases (including STDs) sensitization and/or training, no. workers receiving training (in the reporting period and in the past); same questions for gender sensitization, flag person training.

iv. number and date of SEA and SH prevention, sensitization and/or training events, including number of workers receiving training on Code of Conduct for Contractor's Personnel (in the reporting period and in the past), etc.

j. *environmental and social supervision:*

i. environmentalist: days worked, areas inspected and numbers of inspections of each (road section, work camp, accommodations, quarries, borrow areas, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;

ii. sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, quarries, borrow areas, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and

iii. community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.

k. *Grievances: list new grievances (e.g. number of allegations of SEA and SH) received in the reporting period and number of unresolved past grievances by date received, complainant's age and sex, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up (Cross-reference other sections as needed):*

i. Worker grievances;

ii. Community grievances

l. *Traffic, road safety and vehicles/equipment:*

i. traffic and road safety incidents and accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;

ii. traffic and road safety incidents and accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;

iii. overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).

m. *Environmental mitigations and issues (what has been done):*

- i. dust: number of working bowzers, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve; highlights of quarry dust control (covers, sprays, operational status); % of rock/ spoil lorries with covers, actions taken for uncovered vehicles;
- ii. erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;
- iii. quarries, borrow areas, spoil areas, asphalt plants, batch plants: identify major activities undertaken in the reporting period at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;
- iv. blasting: number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);
- v. spill clean-ups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination);
- vi. waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;
- vii. details of tree plantings and other mitigations required undertaken in the reporting period;
- viii. details of water and swamp protection mitigations required undertaken in the reporting period.

n. *compliance:*

- i. compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;
- ii. compliance status of C-ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
- iii. compliance status of SEA and SH prevention and response action plan: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance

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- iv. compliance status of Health and Safety Management Plan re: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
 - v. other unresolved issues from previous reporting periods related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed

APPENDIX D

Sexual Exploitation and Abuse (SEA) and/or Sexual Harassment (SH) Performance Declaration for Subcontractors

[The following table shall be filled in by each subcontractor proposed by the Contractor, that was not named in the Contract]

Subcontractor's Name: *[insert full name]*

Date: *[insert day, month, year]*

Contract reference *[insert contract reference]*

Page *[insert page number]* of *[insert total number]* pages

SEA and/or SH Declaration
<p>We:</p> <p><input type="checkbox"/> (a) have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.</p> <p><input type="checkbox"/> (b) are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.</p> <p><input type="checkbox"/> (c) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations. An arbitral award on the disqualification case has been made in our favor.</p>
<p><i>[If (c) above is applicable, attach evidence of an arbitral award reversing the findings on the issues underlying the disqualification.]</i></p>

Name of the Subcontractor _____

Name of the person duly authorized to sign on behalf of the Subcontractor _____

Title of the person signing on behalf of the Subcontractor _____

Signature of the person named above _____

Date signed _____ day of _____, _____

Countersignature of authorized representative of the Contractor:

Signature: _____

Date signed _____ day of _____, _____

Section IX. Particular Conditions of Contract

The following Particular Conditions of Contract shall supplement the General Conditions of Contract in Section VIII. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions.

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Particular Conditions of the Contract

The following Particular Conditions of Contract (PCC) shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC. The clause number of the PCC is the corresponding clause number of the GCC.

PCC 1. Definitions	<p>The Employer is: National Power Corporation</p> <p>The Project Manager is: Project Director, NPC-ASEP Project Management Office, National Power Corporation</p> <p>The Bank is: World Bank</p> <p>Country of Origin: All countries and territories as indicated in Section V of the Bidding Documents, Eligible Countries. Alternatively, it also refers to the country defined in GC 3.9.</p> <p>Addition to PCC 1.1</p> <p>“Owner” means the concerned electric cooperative that will eventually operative and maintain the Solar PV Plant following its Completion and Operational Acceptance.</p>
CC 5. Law and Language	<p>PCC 5.1 The Contract shall be interpreted in accordance with the laws of: the Republic of the Philippines.</p> <p>PCC 5.2 The ruling language is: English</p> <p>PCC 5.3 The language for communications is: English</p>
PCC 7. Scope of Facilities [Spare Parts] (GCC Clause 7)	<p>PCC 7.3 The Contractor agrees to supply spare parts for a period of years: 5 Years for the Defect Liability Period of the Contract. The Contractor shall ensure that the remaining performance security after Operational Acceptance Test of the Facility shall cover for the total period of the Defect Liability Warranty under the contract.</p> <p>Addition to PCC 7.3</p> <p>The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares for the Plant. Other spare parts and components shall be supplied promptly as possible but at the most, within six (6) months from written advice from the Employer or Owner. In addition, in the event of termination of the production of such spare parts, advance notification to the Owner of such pending termination shall be made by Contractor to permit sufficient time for Owner to procure its needed requirement. Following such termination, the Contractor will furnish to the extent possible and at no cost to the</p>

	Owner the blueprints, drawings and specifications of the spare parts, if requested.
PCC 8. Time for Commencement and Completion	<p>PCC 8.1 The Contractor shall commence work on the Facilities within thirty (30) days from the Effective Date for determining Time for Completion as specified in the Contract Agreement.</p> <p>PCC 8.2 The Time for Completion of the whole of the Facilities shall be one hundred fifty (180) days from the Effective Date as defined in the Contract Agreement.</p>
PCC 11. Contract Price	PCC 11.2 The Contract Price shall be not be subject to adjustment.
PCC 13. Securities	<p>PCC 13.2.1 The amount of the Advance Payment Security which shall be equal to the amount of the advance payment made by the Employer for the Facility, shall be provided by the Contractor within fourteen (14) days from notification of contract award.</p> <p>PCC 13.2.2 The Advance Payment Security shall be in the form of Bank Guarantee, attached hereto in Section IX, Contract Forms.</p> <p>PCC 13.3.1 The amount of the Performance Security, as a percentage of the Contract Price for the Facility, shall be ten percent (10%) and shall be provided by the Contractor within twenty eight (28) days from notification of contract award.</p> <p>PCC 13.3.2 The Performance Security shall be in the form of Bank Guarantee, attached hereto in Section IX, Contract Forms.</p> <p>PCC 13.3.3 The Performance Security shall not be reduced on the date of the Operational Acceptance.</p> <p>PCC 13.3.3 The Performance Security shall be reduced to ten percent (10%) of the value of the components of the Facilities covered by the Contractor's defect liability and extended liability period only in accordance with the provision in the PC and pursuant to GC Sub-Clause 27.10.</p>
PCC 21 Procurement	<p>Additional:</p> <p>PCC 21.2 Except for the site where the Facility shall be constructed by the Contractor, no supplies or works will be provided by the Employer to the Contractor.</p>
PCC 22 Installation	PCC 22.2.5 Working Hours

	<p>Normal Working Hours are: 8:00 AM – 5:00 PM (Mondays thru Saturdays except holidays & declared non-working days)</p> <p>PCC 22.2.7 Health and Safety: “Engineer” under para. 2 shall be “Project Manager”</p> <p>PCC 22.2.8 Funeral Arrangements: For Contractor’s sole account</p> <p>Additional: PCC 22.8 Fencing shall be the responsibility of the Electric Cooperative, the eventual Owner of the Facilities.</p>
PCC 24 Completion of the Facilities	<p>PCC 24.2 The Employer shall coordinate with the Owner to supply the operating and maintenance personnel who will eventually operate and maintain the Facilities. However, it shall not be responsible for all materials and consumables necessary for the Precommissioning of the Facility and any part thereof.</p> <p>PCC 24.8 The Employer shall not be responsible for the care and custody of the Facilities or any part thereof, until issuance of the Operational Acceptance Certificate of the Facilities.</p>
PCC 25. Commissioning and Operational Acceptance	<p>PCC 25.1.2 The Employer shall coordinate with the Owner to supply the operating and maintenance personnel who will participate in the commissioning and operational acceptance test of the Facilities. However, it shall be the Contractor’s responsibility for any or all materials and consumables required for Commissioning of the Facility and any part thereof.</p> <p>PCC 25.2.2 The Guarantee Test/Operational Acceptance Test of the Facilities shall be successfully completed within fifteen (15) days from the date of Completion.</p> <p>Additional: PCC 25.3.5 The issuance of Operational Acceptance Certificate by the Employer to the Contractor shall coincide with the transfer of ownership to the Electric Cooperative.. All rights of the Employer and remaining defect liability and warranty obligations of the Contractor under the contract shall transfer to the Electric Cooperative upon issuance of the Operational Acceptance Certificate.</p> <p>PCC 25.4.1 Partial Acceptance of the main components of the Plant prior to Completion and Commissioning including Guarantee Test is not allowed.</p>

PCC 26. Completion Time Guarantee	<p>PCC 26.2 Applicable rate for liquidated damages: one half percent (0.5%) of Contract Price per Week</p> <p>The above rate applies to the price of the part of the Facilities, as quoted in the Price Schedule, for that part for which the Contractor fails to achieve Completion within the particular Time for Completion</p> <p>Maximum deduction for liquidated damages: Ten Percent (10%) of Contract Price</p> <p>PCC 26.3 No bonus will be given for earlier Completion of the Facilities or part thereof.</p>
PCC 27. Defect Liability	<p>PCC 27.2 The period of the defect liability shall be five (5) years from the date of Operational Acceptance Certificate.</p> <p>PCC 27.10 Extended defect liability in addition to that specified in PC 27.2 shall apply to components that fail during the defect liability period. The extended defect liability, which shall cover only the affected component, shall correspond to the period from Operational Acceptance to component failure/malfunction. However, Contractor is requested to provide its recommended list of spare parts including their latest costs of an additional five (5) years defect liability for information or eventual consideration by the Owner of the Facility.</p> <p>Add:</p> <p>PCC 27.11 Following the completion of the defect liability period and/or, as applicable, the extended defect liability period, the Owner of the Facility shall issue a Defect Liability Period Completion Certificate provided that all notified defects are corrected by the Contractor to the satisfaction of the Owner. Attached is the Defect Liability Period Warranty Completion Certificate.</p>
PCC 30. Limitation of Liability	<p>PCC 30.1(b) The multiplier of the Contract Price is not applicable.</p>
PCC 31. Transfer of Ownership	<p>PCC 31.1 Ownership of the Plant including spare parts procured abroad shall remain with the Contractor until issuance of Operational Acceptance Certificate by the Employer.</p> <p>PCC 31.2 Ownership of the Plant including spare parts procured locally shall remain with the Contractor until issuance of Operational Acceptance Certificate by the Employer.</p> <p>PCC 31.3 Ownership of the spare parts in excess of those required after Operational Acceptance shall remain with the Contractor.</p>

	PCC 31.4 Care and custody of the plant together with the risk of loss or damage thereto shall remain with the Contractor until Operational Acceptance of the Facilities.
PC 34. Insurance	PCC 34.5 Employer shall not take out and maintain any insurance in relation to the construction of the Facility. All necessary insurances to protect the Project and the interest of the Contractor shall be the responsibility of the Contractor.
PCC 46. Disputes and Arbitration	<p>PCC 46.1 The DB shall be appointed within [28 days] after the Effective Date.</p> <p>PCC 46.1 The DB shall comprise of three (3) members.</p> <p>PCC 46.2 Appointment entity or authority shall be agreed by the Parties</p>

Section X. - Contract Forms

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Notification of Award - Letter of Acceptance

To: _____

This is to notify you that your Bid dated _____ for execution of the *<insert number of units won>* x 1.0 MWp Solar PV Plant for Luzon Electric Cooperatives at the Contract Price in the aggregate of _____, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in Section X, - Contract Forms, of the Bidding Document

Authorized Signature: **USec DONATO D. MARCOS**

Name and Title of Signatory: OIC-President and Chief Executive Officer

Name of Agency: National Power Corporation

Attachment: Contract Agreement

Contract Agreement

THIS AGREEMENT is made the _____ day of _____, _____,
BETWEEN

- (1) The National Power Corporation, a government-owned and controlled corporation, duly organized and existing under and by virtue of Republic Act No. 6395 of the Republic of the Philippines, and having its principal place of business at BIR Road corner Quezon Avenue, Diliman, Quezon City, Philippines 1100 (hereinafter called “the Employer which is also referred to as the Employer herein”), and (2) _____, a corporation incorporated under the laws of _____ and having its principal place of business at _____, (hereinafter called “the Contractor”).

WHEREAS the Employer desires to engage the Contractor to design, supply and install, complete and commission *<insert number of units won>* x 1.0 MWp Grid Tied Solar Farm for Luzon Electric Cooperatives, (“the Facilities”), and the Contractor has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

**Article 1.
Contract
Documents**

1.1 Contract Documents (Reference GCC Clause 2)

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract:

- (a) This Contract Agreement and the Appendices hereto
- (b) Letter of Bid and Price Schedules submitted by the Contractor
- (c) Particular Conditions
- (d) General Conditions
- (e) Specification
- (f) Drawings
- (g) Other completed bidding forms submitted with the Bid
- (h) Any other documents forming part of the contract, including, but not limited to:
 - i. ES Management Strategies and Implementation Plans; and
 - ii. Code of Conduct for Contractor’s Personnel (ES).

**Article 2.
Contract Price
and Terms of
Payment**

1.2 Order of Precedence (Reference GCC Clause 2)

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

1.3 Definitions (Reference GCC Clause 1)

Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the General Conditions.

2.1 Contract Price (Reference GCC Clause 11)

The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of: *<in words>*, *<(in figures)>* as specified in Price Schedule No. 5 (Grand Summary).

2.2 Terms of Payment (Reference GCC Clause 12)

The terms and procedures of payment according to which the Employer will reimburse the Contractor are given in the Appendix (Terms and Procedures of Payment) hereto.

The Employer may instruct its bank to issue an irrevocable confirmed documentary credit made available to the Contractor in a bank in the country of the Contractor. The credit shall be for an amount of *<insert amount in words and (figures)>*; and shall be subject to the Uniform Customs and Practice for Documentary Credits 1993 Revision, ICC Publication No. 600.

In the event that the amount payable under Schedule No. 1 is adjusted in accordance with GCC 11.2 or with any of the other terms of the Contract, the Employer shall arrange for the documentary credit to be amended accordingly.

**Article 3.
Effective Date**

3.1 Effective Date (Reference GCC Clause 1)

The Effective Date from which the Time for Completion of the Facilities shall be counted is the date when all of the following conditions have been fulfilled:

- (a) This Contract Agreement has been duly executed for and on behalf of the Employer and the Contractor;
- (b) The Contractor has submitted to the Employer the performance security and the advance payment guarantee;
- (c) The Employer has paid the Contractor the advance payment

(d) The Contractor has been advised that the documentary credit referred to in Article 2.2 above has been issued in its favor.

(e) constitution of the DB.

Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.

3.2 If the conditions listed under 3.1 are not fulfilled within two (2) months from the date of this Contract notification because of reasons not attributable to the Contractor, the Parties shall discuss and agree on an equitable adjustment to the Contract Price and the Time for Completion and/or other relevant conditions of the Contract.

**Article 4.
Communications**

4.1 The address of the Employer for notice purposes, pursuant to GC 4.1 is:

*Chairman, Bids and Awards Committee
National Power Corporation
BIR Road corner Quezon Avenue
Diliman, Quezon City*

4.2 The address of the Contractor for notice purposes, pursuant to GC 4.1 is: **<insert address of Contractor>**

**Article 5.
Appendices**

5.1 The Appendices listed in the attached List of Appendices shall be deemed to form an integral part of this Contract Agreement.

5.2 Reference in the Contract to any Appendix shall mean the Appendices attached hereto, and the Contract shall be read and construed accordingly.

IN WITNESS WHEREOF, the Employer and the Contractor have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by, for and on behalf of the Employer

USec DONATO D. MARCOS

[Signature]

OIC-President and Chief Executive Officer, National Power Corporation

[Title]

in the presence of **<name & signature of Employer's witness>**

Signed by, for and on behalf of the Contractor

<signature of contractor's authorized official>

[Signature]

<position title of contractor's authorized official>

[Title]

in the presence of <name & signature of contractor's witness>

APPENDICES

- Appendix 1 Terms and Procedures of Payment
- Appendix 2 Price Adjustment
- Appendix 3 Insurance Requirements
- Appendix 4 Time Schedule
- Appendix 5 List of Major Items of Plant and Installation Services and List of Approved Subcontractors
- Appendix 6 Scope of Works and Supply by the Employer
- Appendix 7 List of Documents for Approval or Review
- Appendix 8 Functional Guarantees

Appendix 1. Terms and Procedures of Payment

In accordance with the provisions of GC Clause 12 (Terms of Payment), the Employer shall pay the Contractor in the following manner and at the following times, on the basis of the Price Breakdown given in the section on Price Schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the Parties. Applications for payment in respect of part deliveries may be made by the Contractor as work proceeds.

TERMS OF PAYMENT

Schedule No. 1. Plant and Equipment Supplied from Abroad

In respect of plant and equipment supplied from abroad, the following payments shall be made:

Ten percent (10%) of the total CIP amount as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of the plant and equipment delivered to the site, as evidenced by shipping and delivery documents.

Eighty percent (80%) of the total or pro rata CIP amount upon Incoterm “CIP”, upon delivery to the carrier within forty-five (45) days after receipt of documents.

Five percent (5%) of the total or pro rata CIP amount upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata CIP amount upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

Schedule No. 2. Plant and Equipment Supplied from within the Employer's Country

In respect of plant and equipment supplied from within the Employer's country, the following payments shall be made:

Ten percent (10%) of the total EXW amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of the plant and equipment delivered to the site, as evidenced by shipping and delivery documents.

Eighty percent (80%) of the total or pro rata EXW amount upon Incoterm “Ex-Works,” upon delivery to the carrier within forty-five (45) days after receipt of invoice and documents.

Five percent (5%) of the total or pro rata EXW amount upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata EXW amount upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

Schedule No. 3. Design Services

In respect of design services for both the foreign currency and the local currency portions, the following payments shall be made:

Ten percent (10%) of the total design services amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer.

Ninety percent (90%) of the total or pro rata design services amount upon acceptance of design in accordance with GC Clause 20 by the Project Manager within forty-five (45) days after receipt of invoice.

Schedule No. 4. Installation Services

In respect of installation services for both the foreign and local currency portions, the following payments shall be made:

Ten percent (10%) of the total installation services amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of work performed by the Contractor as evidenced by the invoices for installation services.

Eighty percent (80%) of the measured value of work performed by the Contractor, as identified in the said Program of Performance, during the preceding month, as evidenced by the Employer's authorization of the Contractor's application, will be made monthly within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the Operational Acceptance Certificate within forty five (45) days after receipt of invoice.

In the event that the Employer fails to make any payment on its respective due date, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate of six percent (6.0%) per annum for period of delay starting on the 60th day after receipt of invoice until payment has been made in full. However, this shall not apply if the non-payment is due to circumstances beyond NPC's control despite its due diligence or for reason(s) attributable to the Contractor and provided that Contractor has submitted complete supporting documents with its claim.

PAYMENT PROCEDURES

Payments to the Supplier/Contractor shall be made through Direct Payment Method set by the World Bank in accordance with the Grant Agreement. The procedure of payment to be made shall be as follow:

1. The Supplier's/Contractor's request for payment shall be made to the Employer in writing, accompanied by invoices describing, as appropriate, the Goods delivered and related Services performed together with the related documents pertinent thereto and upon fulfilment of all other obligations stipulated in the Contract. Payments by the Bank will be upon the instruction of the Employer in Client Connection and acceptance of the goods/services is the responsibility of the Employer.
2. In case of Advance Payment, the Employer shall pay only upon request by the Contractor and subject to submission of an acceptable security to cover for such payment.
3. Payments shall be processed by the Employer subject to government audit rules and regulations after submission of the request and after the Employer has accepted it.
4. The Employer shall submit to the World Bank the Application for Withdrawal from the Grant corresponding to the audited amount of payment being requested through the website portal of World Bank or the Client Connection no later than Grant Closing Date..
5. The World Bank shall approve accordingly the request for payment and release the amount by transferring the funds to the designated bank account of the Supplier/Contractor.

The Employer shall monitor the release of funds through the Client Connection for record and reporting purposes.

Appendix 2. Price Adjustment

(Prices are to remain firm and fixed for the duration of the Contract)

Where the Contract Period (excluding the Defects Liability Period) exceeds eighteen (18) months, it is normal procedure that prices payable to the Contractor shall be subject to adjustment during the performance of the Contract to reflect changes occurring in the cost of labor and material components. In such cases the bidding documents shall include in this Appendix 2 a formula of the following general type, pursuant to GC Sub-Clause 11.2.

Where Contracts are of a shorter duration than eighteen (18) months or in cases where there is to be no Price Adjustment, the following provision shall not be included. Instead, it shall be indicated under this Appendix 2 that the prices are to remain firm and fixed for the duration of the Contract.

Appendix 3. Insurance Requirements

Insurances to be Taken Out by the Contractor

In accordance with the provisions of GC Clause 34, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

(a) Cargo Insurance

Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts thereof) and to the construction equipment to be provided by the Contractor or its Subcontractors.

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u> <u>From</u>	<u>To</u>
110% of value of equipment being shipped	USD 20,000		

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u> <u>From</u>	<u>To</u>
100% of contract amount	USD 20,000		

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property (including the Employer's property and any parts of the Facilities that have been accepted by the Employer) occurring in connection with the supply and installation of the Facilities.

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u> <u>From</u>	<u>To</u>
USD 20,000	10% of loss		

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the supply and installation of the Facilities that have been accepted by the Employer). Third Party Liability (TPL) in accordance with statutory requirements of the Land Transportation Office of the Philippines.

(e) Workers' Compensation

Contractor to open a Special Bank Account with any reputable bank acceptable to NPC within the particular area or province where the project site is located in the amount equivalent to one (1) salary of all hired personnel in accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

None

(h) Other Insurances

The Contractor is also required to take out and maintain at its own cost the following insurance:

Sabotage and Terrorism Insurance

Amount

100% of contract amount

Deductible limits

USD 20,000

Parties insured From To

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GC Sub-Clause 34.1, except for the Cargo, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

Insurances To Be Taken Out By The Employer

The Employer shall at its expense take out and maintain in effect during the performance of the Contract the following insurances.

Details:

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u>	<u>From</u>	<u>To</u>
<i>None</i>				

Appendix 4. Time Schedule

Appendix 5. List of Major Items of Plant and Installation Services and List of Approved Subcontractors

A list of major items of Plant and Installation Services is provided below.

The following Subcontractors and/or manufacturers are approved for carrying out the items of the Facilities indicated below. Where more than one Subcontractor is listed, the Contractor is free to choose between them, but it must notify the Employer of its choice in good time prior to appointing any selected Subcontractor. In accordance with GC Sub-Clause 19.1, the Contractor is free to submit proposals for Subcontractors for additional items from time to time. No Subcontracts shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Employer and their names have been added to this list of Approved Subcontractors.

Major Items of Plant and Installation Services	Approved Subcontractors/Manufacturers	Nationality

Appendix 6. Scope of Works and Supply by the Employer

The following personnel, facilities, works and supplies will be provided/supplied by the Employer, and the provisions of GC Clauses 10, 21 and 24 shall apply as appropriate.

All personnel, facilities, works and supplies will be provided by the Employer in good time so as not to delay the performance of the Contractor, in accordance with the approved Time Schedule and Program of Performance pursuant to GC Sub-Clause 18.2.

Unless otherwise indicated, all personnel, facilities, works and supplies will be provided free of charge to the Contractor.

<u>Personnel</u>	<u>Charge to Contractor (if any)</u>
<i>Operating and Maintenance Personnel (from Electric Cooperative during Training, Operational Acceptance and Handover)</i>	<i>None</i>

<u>Facilities</u>	<u>Charge to Contractor (if any)</u>
<i>None</i>	<i>N/A</i>

<u>Works</u>	<u>Charge to Contractor (if any)</u>
<i>None</i>	<i>N/A</i>

<u>Supplies</u>	<u>Charge to Contractor (if any)</u>
<i>None</i>	<i>N/A</i>

Appendix 7. List of Documents for Approval or Review

Pursuant to GC Sub-Clause 20.3.1, the Contractor shall prepare, or cause its Subcontractor to prepare, and present to the Project Manager in accordance with the requirements of GC Sub-Clause 18.2 (Program of Performance), the following documents for

A. Approval

1. Detailed Engineering Design Drawings and Specifications
2. General Arrangement Drawings & Layout Plans
3. Site Development & Drainage Plans
4. Foundation and Mounting Structure Plans
5. Foundation Design & Structural Analysis of Mounting Structures
6. Factory Acceptance Tests & Pre-Inspection Reports
7. Field Design Changes
8. Pre-commissioning and Commissioning Reports
9. Thermographic Analysis Reports
10. Operational Acceptance & Guarantee Tests
11. Operation and Maintenance Plan and Manual
12. O & M Training Plan
13. Inventory of Spares & Consumables including Special Tools
14. Contractor's Environmental and Social Management Plan (CESMP)
15. Other engineering documents requiring Employer's approval

B. Review

1. Site Organization
2. Project Construction Schedules
3. Geotechnical Investigation Reports
4. Flooding Risk Study
5. Main Equipment Technical Specifications
6. Manufacturers' Test Certificates
7. Power & Control Diagrams and Schematics
- 8.
9. Health and Safety Manual
10. Manufacturer Warranty Confirmation & Certifications
11. As-Built Drawings
12. Other technical documents requiring Employer's review

C. Information and Reference

1. SolarGIS Data & Simulations
2. Contractor's Permits and Consents

-
3. Contractor/Manufacturers' ISO 9001 Certifications
 4. Erection & Installation Guides
 5. Technical Brochures, Literatures & References
 6. Quality Assurance Plan
 7. Construction Occupational Health and Safety Program (COHSP)
 8. Code of Conduct for Contractor's Personnel
 9. Other information & references of the PV Plant

Appendix 8. Functional Guarantees

1. General

This Appendix sets out

- (a) the functional guarantees referred to in GCC Clause 28 (Functional Guarantees)
- (b) the preconditions to the validity of the functional guarantees, either in production and/or consumption, set forth below
- (c) the minimum level of the functional guarantees
- (d) the formula for calculation of liquidated damages for failure to attain the functional guarantees.

2. Preconditions

The Contractor gives the functional guarantees (specified herein) for the facilities, subject to the following preconditions being fully satisfied:

3. Functional Guarantees

Subject to compliance with the foregoing preconditions, the Contractor guarantees as follows:

3.1 Peak Capacity, MWp

Not Less than 1,000 MWp (based on STC Rating) Installed

3.2 Performance Ratio, %

Not Less than 75%

3.3 Acceptance Net Energy Output, kWh

Not Less than 95.0% as compared to calculated figure based on guaranteed performance ratio

3.4 Annual Net Energy Output, kWh and Solar Module Degradation Factor

Not Less than 95.0% as compared to guaranteed annual figures and/or the allowable yearly degradation factor

4. Failure in Guarantees and Liquidated Damages

4.1 Failure to Attain Guaranteed Net Energy Output

If the Actual Measured Energy Output of the Facilities attained during the Operational Acceptance test, pursuant to GCC Sub-Clause 25.2, is below 95% of the Calculated Energy Output (based on guaranteed PR) as specified in para. 4.3 below, Contractor has the obligation to correct the nonconformance(s) or deviation(s) and to repeat the Operational Acceptance test within a maximum period of fifteen (15) calendar days. Subsequent to rectification/correction, the Facilities shall be re-tested. Until successfully passing the Operational Acceptance test and not beyond the Grant Closing Date, delay damages according to the contract shall apply. Should the Contractor elects to pay liquidated damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities, pursuant to GC Sub-Clause 28.3, then Contractor shall pay liquidated damages to the Employer equivalent to 1% of the Total Contract value for every complete 1% deviation below 95% of the calculated energy output or at a proportionately reduced rate for any deficiency, or part thereof, of less than a complete one percent (1%) using the below formula:

$$= \text{Total Contract Price} \times [(95\% \text{ of Calculated Energy Output} - \text{Measured Actual Net Energy Output}) / 95\% \text{ of Calculated Energy Output}] \times 100\%$$

This is in addition to liquidated damages due to delays in completing of the Facility per PCC Clause 26.2. Should the maximum amount of liquidated damages is reached, the Employer has the right to terminate the Contract in accordance with the provisions of Clause 42 of the General Conditions of Contract and imposed appropriate penalties in accordance with Clause 4.5 below.

4.2 Failure to Meet Guaranteed Annual Net Energy Output

After Operational Acceptance Certificate issuance, Contractor shall still be legally bound for warranting their net energy output values during the useful life (25 Years) of the Solar PV Plant and their guaranteed solar module degradation as follows:

- Actual annual net energy outputs shall not be lower than 95% of the guaranteed annual net energy outputs.
- Variation in actual annual module degradation starting from the 2nd year shall not exceed 1/25th of 20%.
- If the actual annual net energy output falls below 95% of the guaranteed annual net energy value or higher than 1/25th of the acceptable module degradation of 20%, the EPC Contractor shall be liable for monetary compensation to the EC for loss in revenue due to lower generation, provided that the Contractor is not able to remedy the issue(s).

Should Contractor elects to pay loss of revenue to the Electric Cooperative in lieu of making changes, modifications and/or additions to the Facilities for such year pursuant to GCC Sub-Clause 28.3, the Contractor's liability shall be computed as follows, whichever is higher:

$$= \text{LCOE} \times (95\% \text{ of Guaranteed Annual Net Energy Output} - \text{Actual Annual Net Energy Output}). \text{ or}$$

= LCOE x (Actual Annual % Module Degradation – 20%/25) x 95% of Guaranteed Annual Net Energy Output

Where:

Actual Annual % Module Degradation = [(Actual Annual Net Energy Output of Previous Year – Actual Annual Net Energy Output of Current Year) / Actual Annual Net Energy Output of Previous Year] x100%

In the event that Contractor wishes to fully settle its liability under the contract for not meeting 95% of its guaranteed annual net energy outputs, the loss of revenue to be paid shall be computed based on the multiple of the remaining years and its latest liability as computed above.

4.2 Raw Materials and Utilities Consumption in Excess of Guaranteed Level

Not Applicable

4.3 Minimum Levels

Notwithstanding the provisions of this paragraph, if as a result of the guarantee test(s), the following minimum levels of performance guarantees are not attained by the Contractor, the Contractor shall at its own cost make good any deficiencies until the Facilities reach any of such minimum performance levels, pursuant to GC Sub-Clause 28.2:

- (a) Actual Measured Energy Output of the Facilities attained during the Operational Acceptance test, pursuant to GCC Sub-Clause 25.2, is below the Calculated Energy Output (based guaranteed PR) by less than 5%.
- (b) Actual Annual Net Energy Output falls to 95% of the Guaranteed Annual Net Energy Output or module degradation factor is 1/25th of the acceptable degradation of 20%.
- (c) There shall be no minimum levels for the guaranteed Peak Capacity and Performance Ratio.

4.4 Limitation of Liability

Subject to para. 4.3 above, the Contractor's aggregate liability to pay liquidated damages for failure to attain the functional guarantees shall not exceed *ten percent (10 %)* of the Contract Price

Performance Security Form – *Bank Guarantee*²³

Beneficiary:

Date: _____

PERFORMANCE GUARANTEE No.: _____

We have been informed that _____ (hereinafter called “the Contractor”) has entered into Contract No. _____ dated _____ with you, for the execution of _____ (hereinafter called “the Contract”).

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we _____ hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ (____)²⁴, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall be reduced by half upon our receipt of:

- (a) a copy of the Operational Acceptance Certificate; or
- (b) a registered letter from the Contractor (i) attaching a copy of its notice requesting issuance of the Operational Acceptance Certificate and (ii) stating that the project manager has failed to issue such Certificate within the time required or provide in writing justifiable reasons why such Certificate has not been issued, so that Operational Acceptance is deemed to have occurred.

This guarantee shall expire no later than the earlier of:²⁵

- (a) twelve months after our receipt of either (a) or (b) above; or

²³ The Employer should insert either the Bank Guarantee (4.1) or the Conditional Guarantee (4.2).

²⁴ The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract and denominated either in the currency(ies) of the Contract or a freely convertible currency acceptable to the Employer.

²⁵ This text shall be revised as and where necessary to take into account (i) partial acceptance of the Facilities in accordance with Sub-Clause 25.4 of the GCC; and (ii) extension of the performance security when the Contractor is liable for an extended warranty obligation pursuant to Sub-Clause 27.10 of the GCC (although in this latter case the Employer might want to consider an extended warranty security in lieu of the extension of the performance security).

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- (b) eighteen months after our receipt of:
- (i) a copy of the Completion Certificate; or
 - (ii) a registered letter from the Contractor, attaching a copy of the notice to the project manager that the Facilities are ready for commissioning, and stating that fourteen days have elapsed from receipt of such notice (or seven days have elapsed if the notice was a repeated notice) and the project manager has failed to issue a Completion Certificate or inform the Contractor in writing of any defects or deficiencies; or
 - (iii) a registered letter from the Contractor stating that no Completion Certificate has been issued but the Employer is making use of the Facilities; or
- (c) the ____ day of ____, 2____.²⁶

Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458, except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.

[signature(s)]

²⁶ Insert the date twenty-eight days after the expected expiration date of the Defect Liability Period. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: “The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer’s written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.”

Bank Guarantee Form for Advance Payment

Beneficiary: _____

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that _____ (hereinafter called “the Contractor”) has entered into Contract No. _____ dated _____ with you, for the execution of _____ (hereinafter called “the Contract”).

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum of _____ (_____) is to be made against an advance payment guarantee.

At the request of the Contractor, we _____ hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than toward the execution of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on his account number at _____.

The maximum amount of this guarantee is valid shall be progressively reduced in proportion to the value of each part-shipment or part-delivery of plant and equipment to the site, as indicated in copies of the relevant shipping and delivery documents that shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of documentation indicating full repayment by the Contractor of the amount of the advance payment, or on the ____ day of _____, 2____, whichever is earlier.²⁷ Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s) name of bank or financial institution]

²⁷ Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: “The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer’s written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.”