

STANDARD BID SOLICITATION DOCUMENT

GOVERNMENT OF GUYANA



*Design, Supply, Installation and
Commissioning of Solar Photovoltaic Systems
and Distribution Networks for Mazaruni Prisons
Region 7*

GUYANA ENERGY AGENCY

April 3, 2024



GOODS AND RELATED SERVICES (VALUE G\$15 million and above)

Introduction

Preface

This Standard Bid Solicitation Document (SBSD) has been prepared by the National Procurement and Tender Administration Board (NPTAB) for use by Procuring Entities for the procurement of goods and services. The procedures and methods presented in this document have been developed on the basis of practical experience and are mandatory for use in the procurement carried out in whole or in part from the state funds in accordance with the provisions of Guyana's Public Procurement Legislation.

In order to simplify the preparation of the bid document for each individual procurement proceeding, the SBSB groups the provisions that are not intended to be changed in "the Instructions to Bidders" and in "the General Conditions of Contract". Data and provisions specific to each procurement and contract should be included in the Bid Data Sheet, the Special Conditions of the Contract, Technical specifications, price schedule, schedule of requirements and the Evaluation Criteria. The applicable forms are listed in the table of contents, below.

Request for additional information can be forwarded to:

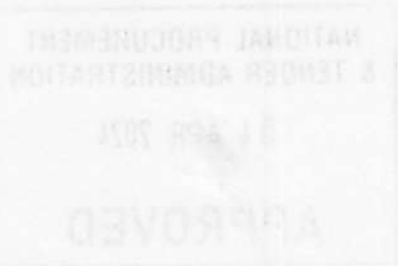
The Guyana Energy Agency

295 Quamina Street, South Cummingsburg, Georgetown

Tel Numbers: 226-0394 ext. 223/241

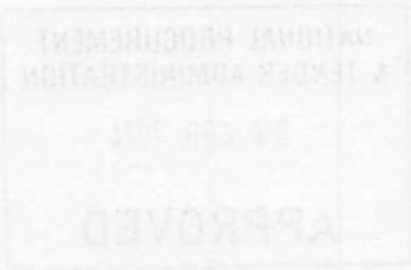
gea@gea.gov.gy

<https://gea.gov.gy/>



CONTENTS

Invitation For Bids (IFB)	.....	3
Instructions To Bidders (ITB)	.....	4
Bid Data Sheet (BDS)	.....	10
General Conditions of Contract (GCC)	.....	13
Special Conditions of Contract (SCC)	.....	17
Delivery Schedule	.....	19
Technical Specifications	.....	21
Supplier's Bid	.....	22
Price Schedule	.....	23
Contract	.....	25
Bid Security	.....	26
Manufacturer's Authorization	.....	27
Performance Security	.....	28
Letter of Acceptance	.....	29
Authorization for Signing the Bid	.....	30
Evaluation and Qualification criteria	.....	31-33
Pending Litigation Form	.....	34



INVITATION FOR BIDS (IFB)

1. **The Guyana Energy Agency** hereinafter referred to as “the Procuring Entity”, invites eligible bidders to submit bids for the **Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7**, as per the required specifications mentioned in the Bidding Documents.
2. Required period of supply: **Three Hundred (300) days from the signing of the Contract.**

Bidders are required to visit the site to carry out their own assessment of how the systems will be installed. GEA would facilitate contacting the appropriate entities and request access to the site by the bidders upon the bidder’s request. The costs of visiting the site shall be at the bidder’s own expense.

3. The bidding documents may be obtained and be examined by any interested bidder. Bids can be purchased for a non-refundable fee in the amount of Two thousand dollars Guyana Dollars (G\$2,000) from the Cashier at the *Guyana Energy Agency, 295 Quamina Street, South Cummingsburg, Georgetown*, telephone 226-0394 or fax 226-5227, email at gea@gea.gov.gy. Alternatively, interested eligible bidders may download a free copy of the Bidding Documents from the GEA website at www.gea.gov.gy
4. All Bidders should submit their bids together with an original bid security of 2% of the tendered amount not later than 9:00 hours on the **April 25, 2024** at the: **National Procurement & Tender Administration Board, Ministry of Finance, 49 Main & Urquhart Streets, Georgetown.**

Clarifications must be submitted in writing to the GEA’s email address at gea@gea.gov.gy no later than one week prior to the deadline for bid submission.

5. Bids shall be valid for ninety (90) days after the date of bid opening.
6. Bids shall be opened by the National Procurement and Tender Administration Board in the presence of Bidders’ representatives who wish to attend, at 9:00 hours on **April 25, 2024** at the address: 49 Main and Urquhart Streets, Georgetown.
7. Bidders are required to complete the Bidders Registration via the following NPTA website: <https://www.npta.gov.gy/bidders-registration/>.



Dr. Mahender Sharma-Chief Executive Officer
Guyana Energy Agency



INSTRUCTIONS TO BIDDERS

A. Introduction

1. Description of the Procurement

The Procuring Entity identified in the *Bid Data Sheet* intends to procure the goods identified in the *Bid Data Sheet* and in the Schedule of Requirements.

2. Eligibility and Qualifications of Bidders

- 2.1 In order to be awarded a procurement contract, Bidders should possess the technical and financial capacity needed to perform the contract, should fulfill their tax and social insurance fund liabilities in Guyana, should not currently be subject to a debarment penalty, and must comply with the specific eligibility and qualification requirements referred to in the *Bid Data Sheet and Evaluation Criteria*.
- 2.2 The bidders should not have conflicts of interest, including involvement in more than one bid in this proceeding, should not be associated nor have been associated in the past, directly or indirectly, with any agency or any of its representative(s), affiliate(s), that have been engaged by the Procuring Entity to provide consulting services at the preparation stage of the bidding documents, technical specifications and other documentation that are subject to be used in the procurement of goods which must be purchased in accordance with the Invitation for Bids. In cases when the indicated facts are discovered, the Bidder's bid shall be rejected.

B. Bidding Documents

3. Clarification and Amendment of Bidding Documents

- 3.1 The Procuring Entity, in not more than three (3) working days, will respond in writing or electronic mail to any request for clarification of the bidding documents to be received (in writing or electronic mail) not later than seven (7) days before the expiry of a deadline for submission of bids. At the same time, the Procuring Entity's response shall without identifying its source of the request, be distributed to all bidders who have received the bidding documents from the Procuring Entity.
- 3.2 At any time before the deadline for submission of bids, the Procuring Entity may amend the bid documents by issuing an Addendum to the bidders.

C. Preparation of Bid

4. Language of Bid

- 4.1 The bid prepared by the Bidder, as well as all correspondence and documents related to that bid and exchanged by the Bidder and the Procuring Entity shall be written in the language *specified in the Bid Data Sheet*.

5. Documents Included in Bid

- 5.1 The bid prepared by the Bidder should contain the Form of Bid, the Price Schedules and the other documents to be submitted in accordance with these Instructions to Bidders, Bid Data Sheet and Evaluation Criteria.

6. Bid Price

6.1. Subject to the choice of INCOTERMS as indicated in the Bid Data Sheet, the prices given in the Price Schedule shall include all transportation costs to the destination point indicated in the Contract, all taxes, duties, payments collected, in accordance with the laws of Guyana and delivery related and other costs on performing of contractual obligations.

6.2. The prices offered by the Bidders shall remain fixed during the whole period of Contract performance and shall not be modified in any circumstance.

7. Bid and Payment Currency

7.1 The prices shall be indicated in Guyana Dollars, unless otherwise specified in the *Bid Data Sheet*.

8. Bid Security

8.1 Unless otherwise provided in the *Bid Data Sheet*, the Bidder shall furnish, as part of his bid, an original Bid Security, in the form, currency and amount specified in the *Bid Data Sheet* with a validity period for not less than two (2) weeks upon the expiry of the bid validity period and in accordance with the specified form.

8.2 The bid security may be forfeited, if the Bidder:

(a) withdraws their bid after it is opened during the period of validity specified in the bid; or,

(b) having been awarded the contract fails:

(1) to sign the contract on the terms and conditions provided in their bid; or

(2) to furnish the Performance Security, if required to do so.

9. Period of Validity of Bid

9.1 Bids shall remain in force during the period specified in the *Bid Data Sheet* after the date of bid opening.

10. Format, Signing and Submission of Bid

10.1 The Bidder shall prepare one (1) original bid and one (1) hard copy which shall be completed in writing in indelible ink and shall be signed by the Bidder, or by the person (persons) duly authorized to sign the bid in accordance with the power of attorney and 2 (two) exact electronic PDF copies of the bid on Flash Drive, to be submitted with the bid. All pages of the bid where new information, modifications or erasures entered shall be initialed (signed) by the person or persons signing the bid. In the event of discrepancies between them, the original shall prevail.

10.2 The bid shall contain no interlineations, erasures or overwriting, except the cases when the Bidder needs to correct errors which must be initialed by the person or persons signing the bid.

10.3 The Bidder shall seal the original and Electronic PDF copies of the bid in different envelopes, marking them "ORIGINAL" and "COPIES", as appropriate. The envelopes shall then be sealed in an outer envelope.

10.4 The outer envelope shall:

- (a) be addressed to the **Chairman, National Procurement & Tender Administration Board (NPTAB), Main & Urquhart Streets, Georgetown** (the address specified in the Invitation for Bids);
- (b) **bear the Name of the Project “Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7” and the words: “DO NOT OPEN BEFORE” 9:00 hours on April 25, 2024.**

11. Deadline for Submission of Bids

- 11.1 Bids must be received by the Procuring Entity at the address and within the periods specified in *the Bid Data Sheet*. All bids received by the Procuring Entity upon the expiry of a period established for submission of bids as indicated by the Procuring Entity shall be rejected and returned to the Bidder unopened.

12. Modification and Withdrawal of Bids

- 12.1 The Bidder may modify or withdraw their bid after the bid’s submission, provided that the Procuring Entity will receive a written notice of modification, substitution or withdrawal of bid before the deadline for submission of bids.
- 12.2 The Bidder’s modification, substitution or withdrawal notice shall be prepared, sealed, marked, and sent in accordance with the provisions of ITB Clause 10. In that case the outer and inner envelopes will be additionally marked as “**MODIFICATION**” or “**WITHDRAWAL**”, as appropriate. A withdrawal notice may also be sent by email with a subsequent written confirmation not later than the deadline for submission of bids.

D. Opening and Evaluation of Bids

13. Opening of Bids

- 13.1 The Procuring Entity will open all bids in the presence of bidders’ representatives who wish to attend, at the time, on the date, and at the address specified in the *Bid Data Sheet*. The bidders’ representatives who are present shall sign a register evidencing their attendance.
- 13.2 The bidders’ names, bid prices, including alternatives (if permitted), information on the presence or absence of required bid security, information on the presence (absence) of tax debts and debts of social insurance payments will be announced at the opening. No bid shall be rejected at the opening, exclusive of late bids and unidentified Bids to be returned to the Bidder unopened.
- 13.3 Bids and modifications sent pursuant to ITB Clause 12.2 that are not opened and read out during the bid opening shall not be accepted for further evaluation, regardless of circumstances.

14. Evaluation of Bids

- 14.1 During the evaluation of bids, the Procuring Entity may, at its discretion, request the Bidder to provide clarification of their bid. The request for clarification and the response thereto shall be made in writing, and in that case no change in price or substance of the bid shall be sought, offered, or permitted.
- 14.2 The Procuring Entity shall determine the responsiveness of each bid to requirements of the bidding documents. For the purposes of this Clause a substantially responsive bid is one which satisfies all the indicated provisions without a material deviation or reservation.

- 14.3 The Procuring Entity may regard a tender as responsive if it contains any minor deviations, that do not materially alter or depart from the characteristics, terms and conditions and other requirements of the bid solicitation documents, or if it contains errors or oversights that are capable of being corrected without touching the substance of the tender. To the extent feasible and appropriate, for the purposes of comparing bids, acceptable deviations shall be quantified in monetary terms, and reflected in adjustments to the bid price (for the purposes only of comparison of bids).
- 14.4 Arithmetical errors shall be rectified in the following manner. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected. If there is a discrepancy between words and figures, the amount in words shall prevail. If the Bidder disagrees with such correction of errors, their bid shall be rejected.
- 14.5 The Procuring Entity shall evaluate and compare only the bids that are determined to be responsive to the Bid Solicitation Document.

15. Confidentiality and Contacting the Procuring Entity

- 15.1 No Bidder shall contact the Procuring Entity on any matter related to their bid from the date of bid opening until the date of contract award, except for requests related to clarification of the bid. Information concerning the evaluation of bids is confidential.
- 15.2 Any effort by the Bidder to influence the Procuring Entity's decision on bid evaluation and comparison, or contract award may result in the rejection of that Bidder's bid and subjected to debarment in accordance with Regulation 3(1)(b) of the Procurement (suspension and debarment) Regulations 2019.

E. Award of Contract

16. Award Criteria

- 16.1 Subject to ITB Clause 18, the Procuring Entity will award the Contract to the Bidder whose bid is determined to be substantially responsive to the requirements of the bid solicitation document, and who offered **the Lowest Evaluated Bid**, provided that the Bidder has been determined:
- (a) to be eligible pursuant to Clause 2;
 - (b) to comply with qualification requirements, in accordance with Clause 2, and any technical requirements and evaluation criteria disclosed in the bid solicitation documents.

17. Procuring Entity's Right to Vary Quantities at Time of Entering into a Contract

- 17.1 The Procuring Entity reserves the right, when entering into a contract, to increase or decrease the quantity of goods and related services specified in the Schedule of Requirements, by the percentage indicated in the *Bid Data Sheet*, no change in the unit price or other conditions shall be made (an increase of quantity **not exceeding 10 percent variation**)

18. Procuring Entity's Right to Accept Any Bid and to Reject All Bids

- 18.1 The Procuring Entity reserves the right to accept or reject any bid or all bids, and to cancel the bidding process at any time prior to award of contract, without thereby incurring any liability to

Bidders and without being required to inform the Bidder or Bidders of reasons of such actions.

19. Notification of Award

- 19.1. The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the bid validity period.
- 19.2. The notice of acceptance shall be given to the successful bidder within fourteen (14) days of the award of contract.
- 19.3. At the same time that the Procuring Entity notifies the successful Bidder in accordance with sub-clause (1), the Procuring Entity will notify all other Bidders of the name of successful Bidder, and their bid price.

20. Signing of Contract and Performance Security

- 20.1 The Procuring Entity will send the successful Bidder the Form of Contract contained in the bid solicitation document. The successful Bidder shall sign and date the Contract and return it to the Procuring Entity within seven (7) days of receipt of notice of award.
- 20.2 Together with the signed Contract, the Bidder shall, if required to do so by the *Bid Data Sheet*, furnish the Procuring Entity with a Performance Security in the amount and form specified in the *Bid Data Sheet*.
- 20.3 If the successful Bidder fails to furnish the performance security, if required to do so, or within 7 (seven) days fails to return the Contract signed by them, then it shall be a sufficient ground to refuse the award of Contract, and to forfeit the bid security. In that case the Procuring Entity shall award the Contract to the next lowest evaluated Bidder, subject to the right of the Procuring Entity to reject all bids.

21. Settlement of Disputes

- 21.1 To settle the disputes which may arise during the execution of Contract, the parties shall follow the procedure referred to in the *Bid Data Sheet*.

22. Corrupt and Fraudulent Practices

- 22.1 The Procuring Entity requires that Bidders observe the highest standards of ethics during the bidding process and execution of such contracts. In pursuance of this policy, the Procuring Entity:
 - (a) will reject the bid if it establishes that the Bidder recommended for award has engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract in question.
 - (b) refer the matter to the Public Procurement Commission (PPC) in accordance with the provisions of Procurement (Suspension and Debarment) Regulations 2019.

23. Compliances

- 23.1 Bidder must submit valid certificates of compliances from Guyana Revenue Authority (GRA), National Insurance Scheme (NIS), and VAT registration (*where applicable*).

24. Defects Liability:

24.1 The "Defects Liability Period" for the goods and related services is six (6) months from the date of taking over possession or such other period as may be specified in the Bid Data Sheet. During this period, the supplier will be responsible for rectifying any defects or replacement of goods free of cost to the Procuring Entity.

BID DATA SHEET (BDS)

**NATIONAL PROCUREMENT
& TENDER ADMINISTRATION**
 04 APR 2024
APPROVED

The following specific data to clauses of the provisions of Instructions to Bidders which supplement or amend the provisions of the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

Item No.	
ITB 1.1	<p>Guyana Energy Agency, 295 Quamina Street, South Cummingsburg, Georgetown, Tel:226-0394, gea@gea.gov.gy.</p> <p>The subject of the procurement is: <i>Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7.</i></p>
ITB 2.1	To qualify for award of the Contract, the bidders shall meet the qualification requirements set out in the evaluation criteria (page 31-33)
ITB 4.1	<p>Language of Bid shall be English Language</p> <p>All submission must be in English</p>
ITB 5.1	<p>The Bidder shall submit the following additional documents in its bid:</p> <ol style="list-style-type: none"> 1. Evidence of Financial Capability in the amount of 30% of the bid price in the form of a bank statement as at January 2023 or letter of credit from a commercial bank in the name of the bidder. Letter of credit must state a figure. The document must be dated within one month of the bid opening date and be clearly legible. When a photocopy of the letter of credit or bank statement is presented, it must be certified a "true copy of the original" by the issuing company. 2. Submission of a valid business registration or certificate of incorporation, inclusive of list of directors, that is clearly legible. Where bidder is part of an unincorporated joint venture, a legible copy of joint venture agreement is required. Copy of joint venture agreement must state the joint venture partner to which invoice will be paid and contract to be signed. Where bidder is a joint venture company, a legible copy of certificate of incorporation is to be submitted. Each party must submit valid compliance as per items 2 and 3 of the Evaluation Criteria. 3. Written confirmation of authorizing signatory must be provided. For the incorporated company this must be in the form of a Power of Attorney endorsed by a Commissioner of Oaths or Justice of Peace. For a registered business that has appointed an employee to sign the bid, a letter of authorizing signatory must be provided. 4. Valid certificates of compliance from GRA and NIS and VAT registration (only applicable to Bidders resident in the country of the Procuring Entity). 5. Completed litigation form on page 34 of the bidding documents. 6. A letter stating any or no termination or abandonment of projects. The letter must be dated within one month of the bid opening date. 7. Provide documentary evidence that the goods are ISO certified and Tropic resistant; 8. Provide documentary evidence that the PV modules comply with IEC 61215, IEC 62804 and UL 1703 listed for Crystalline Silicon PV Modules (or equivalent) standards, and that the inverters are UL 1741 listed or equivalent.

	<p>9. Provide documentary evidence to demonstrate that the Goods offered meet all the technical specifications of the bidding document. Technical literature must include data sheets and specific technical information on each of the items of equipment and components proposed for the photovoltaic system;</p> <p>10. A detailed schematic design layout for the solar PV systems (schematic should be NEC 2017 Compliant), including explanatory notes for sizing of equipment and components that comprise the system, and energy production calculations using a PV modelling software;</p> <p>11. Certificates of product quality (modules and inverters) issued by a recognized laboratory accredited by the International Laboratory Accreditation Cooperation (ILAC) and which must be valid up to the date of commissioning of the system;</p> <p>12. Documentary evidence that batteries comply with IEC 61427:1999 and the manufacturing process conformed to environmental management standard ISO 14001.</p> <p>13. An implementation schedule indicating important milestones such as equipment delivery to site, installation, testing and commissioning. Frequent (at least monthly) progress reports and work plan are to be provided to the Procuring Entity as required by the procuring entity during project execution.</p> <p>14. Bidder must provide audited financial statements for the past three years for incorporated companies. Financial statements must be audited by a Chartered accountant/accountancy firm and include an auditor's note. OR Registered businesses must provide Balance Sheets, Profit and Loss Accounts, and Income and Expenditure Accounts for the past three years. These financial statements must be approved by a Chartered accountant/accountancy firm.</p> <p>The detailed evaluation criteria can be found on Page 31-33 of the bidding documents</p>
ITB 6.1	<p>The price quoted by bidders shall be on the basis of CIF to port Georgetown for goods delivered to Guyana, including cost for transport to the site. 2010 incoterms are applicable. Bidders shall quote for the <i>Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7 for the Guyana Energy Agency</i> 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 to the <i>Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7 for the Guyana Energy Agency</i>. Items against which no price is entered by the Bidder for the <i>Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7</i> will not be paid for by the Employer when executed and shall be deemed to be covered by the prices for other items.</p>
ITB 7.1	<p>Currency of Bid shall be in Guyana Dollars.</p>
ITB 8.1	<p>A bid security of two percent (2%) of the tendered sum is required in the form of a Bank guarantee or a bond from an Insurance company licensed by the Bank of Guyana.</p>
ITB 9.1	<p>The period of validity of bid is ninety (90) days</p>
ITB 11.1	<p>Deadline and place for submission of bids: 9:00 hours on the April 25, 2024 at <i>The National Procurement & Tender Administration Board, Ministry of Finance, Main & Urquhart Streets, Georgetown, Guyana</i></p>

ITB 13.1	Time and place for opening of bid: 9:00 hours on April 25, 2024 at <i>The National Procurement & Tender Administration Board, Ministry of Finance, Main & Urquhart Streets, Georgetown, Guyana.</i>
ITB 17.1	Increase or decrease in the quantity of goods and services not exceeding 10%
ITB 20.2	The amount of the performance security is 10% of the contract price. Performance Security must be in the form of a Bank Guarantee or a bond from an Insurance company licensed by the Bank of Guyana. This shall be valid for the duration of the contract period.
ITB 21.1	Disputes that may arise in the performance of the contract shall be settled in accordance with the applicable Laws of Guyana.
ITB 24.1	The duration of the defect's liability period is twelve (12) months following provisional acceptance.



GENERAL CONDITIONS OF CONTRACT (GCC)

The General Conditions are the Standard General Conditions of Contract. No alteration shall be made on the pages of these Conditions. The Procuring Entity, when amending or supplementing the General Conditions of Contract should do so only in the Special Conditions of Contract. Any amendment or addenda of the General Conditions of Contract shall conform to the legislation of Guyana.

1. Definitions and application

1.1 This Contract lists below the terms that have the following interpretation:

- (a) **“Contract”** means the agreement entered into between the Procuring Entity and the Supplier, as recorded in the Form of Contract signed by the parties, including all attachments and appendices thereto and all the documents referenced therein.
- (b) **“Contract Price”** means the price payable to the Supplier under the Contract for complete and proper performance of his contractual obligations.
- (c) **“Goods”** means the item (s) referred to in the Schedule of Requirements contained in the Bid Solicitation Document.
- (d) **“GCC”** means the General Conditions of Contract contained in this Section.
- (e) **“SCC”** means the Special Conditions of Contract.
- (f) **“Procuring Entity”** – means the Procuring entity carrying out the procurement of Goods, specified in the SCC.
- (g) **“Supplier”** means an individual or legal entity, or a combination of any abovementioned forms which operate under the existing agreement as a joint venture and supply the Goods and Services under the Contract.
- (h) **“Day”** means calendar day.

1.2 The General Conditions of Contract shall apply in the procurement of goods; the specific amendment, addition and alteration shall be indicated in the Special Conditions of Contract.

1.3 Warranty requirements are as specified in the Special Conditions of Contract.

2. Contract Documents

2.1 Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The contract shall be read as a whole.

3. Performance Security

3.1 If required by the SCC, within seven (7) days of receipt of notification of award, the successful Bidder shall furnish the Procuring Entity with the performance security the amount and form of which are indicated in the SCC.

4. Packing

- 4.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to final destination specified in the Contract, and as may be required by the Special Conditions of Contract.

5. Delivery, Transportation, Mobilization Advance

- 5.1 The Supplier must deliver the Goods within the periods and to the Destination point indicated in the Schedule of Requirements and shall provide the documentation indicated in the SCC. Subject to the SCC, transportation of the Goods to the place specified by the Procuring Entity shall be carried out and paid by the Supplier and related costs shall be included in the Contract Price.

6. Payment

- 6.1 The payment to the Supplier for the Goods delivered shall be made in accordance with the Contract in the form and within the periods specified in the SCC.
- 6.2 If the Procuring Entity does not pay the Supplier the sum due within the periods specified in the Contract, in that case the Procuring Entity shall pay the Supplier [interest at the rate specified or determined pursuant to the Special Conditions of Contract].

7. Prices

- 7.1 Prices established by the Supplier in the Contract for goods delivered shall not vary from the prices quoted by the Supplier in his bid.

8. Assignment

- 8.1 The Supplier shall not assign, in whole or in part, his obligations under the Contract to a third party for the execution without the Procuring Entity's prior written consent.

9. Delays in the Supplier's Performance and Liquidated Damages

- 9.1 Delivery of the Goods shall be carried out by the Supplier, in accordance with the schedule indicated by the Procuring Entity in the *Schedule of Requirements*.
- 9.2 Except as provided under GCC Clause 13, any delay in the Supplier's performance of their delivery obligations shall render the Supplier liable for payment of liquidated damages in the amount specified in the SCC, unless an extension of time is agreed upon by the parties without application of liquidated damages. Once the maximum deduction specified in the SCC is reached, the Procuring Entity may consider termination of the Contract, in accordance with Clause 10 of the General Conditions of Contract.

10. Termination

- 10.1 The Procuring Entity, without detriment to any other sanctions of infringement of the provisions of Contract, by written notice of default sent to the Supplier, may terminate this Contract in whole or in part:
- (a) if the Supplier fails to deliver a portion or all of the Goods within the periods provided for in the Contract, or within an extension period of that Contract, or to perform any of his obligations under the Contract.
 - (b) if bankruptcy procedures are applied to the Supplier, or it is declared insolvent.

- (c) if the Supplier, in the Procuring Entity's opinion, has engaged in corrupt, fraudulent, collusive or coercive practices when entering into or executing the Contract.
- (d) If the Procuring Entity deems that continued implementation of the contract would no longer be expedient from the standpoint of the public interest.

10.2 The notice of termination shall specify the reason of termination, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

10.3 Notwithstanding clauses 9 and 10.1(d), the Supplier shall not forfeit their performance security, and shall not be liable for payment of liquidated damages, or termination for default, if delay in executing the Contract or failure to perform obligations under the Contract is the result of an event of force majeure. When force majeure arises, the Supplier shall promptly notify the Procuring Entity in writing of such circumstance and its causes.

10.4 When the contract is terminated in accordance with clause 10.1(d), the Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier's receipt of notice of termination shall be accepted by the Procuring Entity at the Contract terms and prices. For the remaining Goods, the Procuring Entity may elect:

- (a) to have any portion completed and delivered at the Contract terms and prices; and/or
- (b) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Related Services and for materials and parts previously procured by the Supplier.

11. Settlement of Disputes

11.1 If any dispute or disagreement arises between the Procuring Entity and the Supplier for the Contract or in connection with it, the parties shall make every effort to resolve the dispute or disagreement amicably by mutual consultation.

11.2 If during twenty one (21) days, the parties failed to resolve their dispute or disagreement by mutual consultation; either the Procuring Entity or the Supplier may send the other party the notice of intent to commence arbitration, if an arbitration is incorporated in the Contract in the Special Conditions of Contract or otherwise agreed by the parties, or in the Court of General Jurisdiction if no arbitration is envisaged, and no arbitration or litigation in respect of that matter may be commenced unless such notice is given.

Any dispute or disagreement in respect of which the notice of intent is sent to commence trial shall be heard by the [Court of General Jurisdiction].

11.3 Notwithstanding any reference to dispute settlement herein, the parties shall continue to perform their obligations under the Contract, unless they agree otherwise.

12. Applicable Law

12.1 The Contract shall be interpreted in accordance with the Laws of Guyana.

13. Formal Communication between the Procuring Entity and the Supplier

13.1 Any notice given by one party to the other pursuant to the Contract shall be in force if it is done

in writing and sent at the address of other party in the SCC.

13.2 A notice shall be effective when delivered or on the specified date, whichever is later.

14. Taxes and Duties

14.1 The Supplier shall be fully responsible for all taxes, duties, license taxes, etc., levied in accordance with the legislation of Guyana, and subject to the application of INCOTERMS in accordance with the SCC.

15. Retention

15.1 No retention shall be applied on consumables, but warranties, guarantees and expiry dates to apply.

15.2 Retention on fixed assets shall be determined by the Procuring Entity on a case-by-case basis.

APPROVED
01 APR 2007
LEADER ADMINISTRATION
NATIONAL PROCUREMENT

SPECIAL CONDITIONS OF CONTRACT (SCC)

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract.

GCC Clause No.	Special Conditions of Contract
1.1	<p>Definitions</p> <p>The Procuring Entity is the Guyana Energy Agency, 295 Quamina Street, South Cummingsburg, Georgetown, Tel:226-0394, Fax:226-5227, gea@gea.gov.gy.</p> <p>The Supplier is _____ (indicate full name, legal address, phone, fax and e-mail of Supplier)</p> <p>The Subject of procurement is: <i>Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7</i></p> <p>Warranty</p> <p>The supplier warrants all Goods supplied under the contract are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the contract. The supplier further warrants that all Goods supplied under this contract shall have no defect, arising from design, materials or workmanship or from any act or omission of the supplier, that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.</p> <p>24 months complete system warranty is applicable from provisional acceptance date. A final completion certificate shall be issued upon satisfactory commissioning of the systems.</p>
3.1	<p>Performance Security</p> <p>The amount and form of Performance Security is: 10% of the contract price in the form of a Bank Guarantee or a bond from an Insurance company licensed by the Bank of Guyana. The bond shall be valid for the entirety of the contract period.</p>
4.1	<p>Packing:</p> <p>The Supplier shall provide such packing of the Goods as is required to prevent damage or deterioration during transit to final destination, as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit.</p>
5.1	<p>Delivery, Transportation</p> <p>The following documentation is to be provided by the Supplier to the Procuring Entity:</p> <p>(1) Copies of Supplier's invoice(s) indicating a description, quantity, unit price of the Goods and sum total. (2) Shipping order, railway receipt or truck receipt. (3) Warranty certificate of Manufacturer or Supplier; (4) Inspection certificate issued by the authorized inspection service, and the supplier's factory inspection report (if any); (5) Certificate of origin; (6) Certificate of conformity</p>

NATIONAL PROCUREMENT
 & TENDER ADMINISTRATION
 04 APR 2024
APPROVED

	(7) Certificate of Quality
6.1	<p>Payment schedule: <i>Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Orealla and Siparuta, Region 6 as per Payment Schedule below:</i></p> <p><i>Payments Schedule shall be as follows:</i></p> <ul style="list-style-type: none"> a) <i>Ten percent (10%) of the contract price shall be paid to the Contractor no later than 21 days after approval of the Bank Guarantee. This Advance Payment shall be issued only when the Design is finalized and approved by the Contracting Agency.</i> b) <i>Twenty percent (20%) of the contract price upon physical verification by the contracting agency that major components such as PV panel mounts, PV modules, inverters, transformer, and batteries are in country and have complied with the technical specifications.</i> c) <i>Thirty percent (30%) of the contract price upon physical verification by the contracting agency that major components such as PV panel mounts, PV modules, inverters, transformer, and batteries have been installed by the supplier and have complied with the technical specifications.</i> d) <i>Thirty percent (30%) of the contract price upon testing and acceptance of the system by the contracting agency.</i> e) <i>Ten percent (10%) of the contract price upon expiry of the defects liability period barring the correction of defects.</i>
9.2	<p>Liquidated Damages Applicable rate: 0.05% per week for untimely execution of order. Maximum deduction: 10% of the delayed works/delivery</p>
11.2	<p>Settlement of Disputes Disputes arising out of or in connection with the Contract shall be settled in accordance with the Laws of Guyana.</p>
14.1	<p>Taxes and Duties The version edition of INCOTERMS shall be: 2010</p>
16.1	<p>Defects Liability The duration of the defect's liability period is 6 months following provisional acceptance. During this period, the contractor will be responsible for rectifying any defects free of cost to the Procuring Entity.</p>



DELIVERY SCHEDULE/ SCHEDULE OF REQUIREMENTS

The delivery schedule expressed as days specifies hereafter the date of delivery to destination point. In column "the delivery schedule", the Procuring Entity shall indicate the date from which schedule starts. It should be either the date of award, or the date of signing of Contract, or the date of opening of letter of credit, or the date of confirming the letter of credit (subject to circumstances). The Form of Bid shall specify only reference to that schedule.

Item No.	Brief Description of Goods	Quantity	Place of Delivery	Procuring Entity's Completion Schedule (---days as of signing of the contract)	Bidder's Offered Completion Schedule	
					Earliest Delivery	Latest Delivery
1	<p>Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7 as follows:</p> <ul style="list-style-type: none"> a) PV module b) Mounting structure: c) Inverter d) Charge Controller e) Hybrid Inverter f) BESS g) Transformer h) Switchgear i) j) SCADA and Web-based energy monitoring and control system k) Cabling and miscellaneous l) Grounding and Lightening protection system m) Fire Extinguisher 	To be determined by bidder	Mazaruni Prisons, Region 7, Essequibo River, Lat: 6°24'0.79"N and Lon: 58°39'32.92"W	300 days		

	<p>n) Installation and commissioning materials for PV system (including all materials/components required for interconnection to on-site)</p> <p>o) Lighting and Surge Protection</p> <p>p) Auxiliary services and Housing infrastructure for ESS & Inverters</p>					
--	---	--	--	--	--	--

Duly authorized to sign for and on behalf of

.....

_____ (name of Bidder)

_____ (Full name)

_____ (Title)

_____ (Signature and seal)

TECHNICAL SPECIFICATIONS

1. General

The tender calling for convenient bids is dedicated to identifying and contracting a Supplier and Installer for the following services:

Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7.

The minimum capacities required for the Solar Photovoltaic System are as follows:

No.	Location	PV Array (MWp)	BESS (MWh)
1	Mazaruni Prisons	1.2	4.0

1.2 Provide all technical documentations including user and operational manuals to the GEA. **The bidder must include all brochures, certifications, technical specifications, brand, and models of ALL equipment provided in one location in their submission in the following order.**

- 1) PV Modules
- 2) PV Array Mounting Structure
- 3) All Inverters/Converters
- 4) Combiners
- 5) Battery Energy Storage System
- 6) Transformers
- 7) Battery Monitoring System
- 8) Energy Management System
- 9) Energy Meters
- 10) Switchgears
- 11) Solar Powered Security Lights
- 12) Cables
- 13) SCADA System
- 14) HVAC
- 15) Weather Station
- 16) Schematic Diagram in accordance with NEC 2017 Article 690 and NEC 705

Bidders must ensure that all equipment supplied under the contract is new, unused and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

1.3 Provide 3 years after sales services to GEA. Bidders must provide a statement indicating its acceptance or otherwise of this requirement.

SUPPLIER'S BID



TO: _____
(Name and address of Procuring Entity)

Dear Sir / Madam,

Having examined the bidding documents including Annexes and Addenda No _____ [specify numbers], the receipt of which is hereby acknowledged, we offer to execute the **Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7.** in accordance with the Contract conditions attached herein for the total amount of _____

The Value Added Tax (VAT) for our bid is

.....
.....
(amount in words and figures)

The Price of our bid, including VAT is

.....
.....(insert the total bid price in words and figures, in Guyana dollars as per details given in the price schedule attached)

Alternative bids (at the Employer's request):

Also we offer to execute the works pursuant to alternative bids for the amount of _____ GYD

- (a) We, including all subcontractors, regarding any part of the Contract, in accordance with the bidding documents, have no conflict of interests pursuant to subclause 2 (i) of the Instructions to Bidders;
- (b) We, including all subcontractors, regarding any part of the Contract, in accordance with the bidding documents, have not been declared by the authorized State body on procurement to be ineligible, or are not ineligible, in accordance with the legislation of Guyana.

We undertake, if our Bid is accepted, to supply the Goods, in accordance with a delivery schedule given in the Schedule of Requirements.

If our Bid is accepted, we undertake to furnish the Performance security in the form of _____ to the amount of _____, comprising _____% of the Contract Price in order to execute the Contract properly and within the time period(s) specified in the Bidding Documents.

We hereby confirm that this bid shall be valid during _____ days starting from the date established for bid opening, and it shall be binding until the expiry of the indicated period.

We understand that you are not bound to accept the lowest or any bid you receive.

Dated the _____ day of _____ 202__.

Duly authorized to sign the Bid for and on behalf of

_____ (name of Supplier)

_____ (Full name) _____ (Title) _____ (Signature and seal)

PRICE SCHEDULE

Item No.	Brief Description of Goods	Quantity	Unit Price (GYD)	Delivery Cost plus taxes	Installation Cost plus taxes	Total Cost (GYD)
1	<p>Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7 as follows:</p> <ul style="list-style-type: none"> a) PV module b) Mounting structure: c) Inverter d) Charge Controller e) Hybrid Inverter f) Batteries g) Web-based energy monitoring system h) Cabling and miscellaneous i) Grounding and Lightning protection system j) Fire Extinguisher k) Installation and commissioning materials for PV system (including all materials/components required for interconnection to on-site) <p>Lighting, Auxiliary services and Housing infrastructure for ESS & Inverters</p>	To be determined by bidder				
	Total (GYD)					

Please note that the Procuring Entity will not be responsible for customs clearance of the

goods.

Duly authorized to sign for and on behalf of

_____ *(name of Bidder)*

_____ *(Full name)*

_____ *(Title)*

_____ *(Signature and seal)*

SUPPLY CONTRACT FOR GOODS

THIS CONTRACT made the _____ day of _____ 202__ between *Guyana Energy Agency* (hereinafter referred to as "the Procuring Entity"), on the one hand, and _____ [name of Supplier] from _____ [city and country of Supplier] (hereinafter referred to as "the Supplier"), on the other hand have come to an Agreement on the following:

The Procuring Entity has announced bid for procurement of goods and services, namely ***Design, Supply, Installation and Commissioning of Solar Photovoltaic Systems and Distribution Networks for Mazaruni Prisons Region 7*** and has accepted the Supplier's bid for the supply of indicated goods and services to the sum of _____ [Contract Price in words and figures] (hereinafter referred to as "the Contract Price").

THIS CONTRACT WITNESSES AS FOLLOWS:

1. In this Contract, the terms and expressions have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall form the Contract and shall be deemed its integral part, viz.:
 - (a) Procuring Entity's Notification of Award;
 - (b) Bid and Price Schedule submitted by Bidder;
 - (c) Schedule of Requirements;
 - (d) Technical Specifications;
 - (e) General Conditions of Contract;
 - (f) Special Conditions of Contract;
 - (g) Other documents included in the Contract documents;
3. This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.
4. In consideration of the payments to be made by the Procuring Entity to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Procuring Entity to provide the Goods and Services, and remedy defects therein in conformity in all respects with the provisions of the Contract.
5. The Procuring Entity hereby agrees to pay the Supplier in consideration of the delivery of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS of the aforesaid, the parties hereto have caused this Contract to be executed in accordance with the legislation of Guyana the day and year first above written in the beginning of the document.

Signed and Sealed _____ [Full name and title of Procuring Entity's representative]

Signed and Sealed _____ [Full name and title of Supplier's representative]

Manufacturer's Authorization

The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Bidder shall include it in its bid, if so indicated in the BDS.]

Date of Bid Submission (day/ month/ year):
IFB No.: [insert number of bidding process]
Alternative No.: [insert identification No if this is a Bid for an alternative]

To: _____ [insert complete name of Purchaser]

WHEREAS

We _____ [insert complete name of Manufacturer], who are official manufacturers of _____ [insert type of goods manufactured], having factories at _____ [insert full address of Manufacturer's factories], do hereby authorize _____ [insert complete name of Bidder] to submit a bid the purpose of which is to provide the following Goods, manufactured by us _____ [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 1.3 of the General Conditions of Contract, with respect to the Goods offered by the above firm.

Signed: _____ [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: _____ [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: _____ [insert title]

Duly authorized to sign this Authorization on behalf of: _____ [insert complete name of Bidder]

Dated on _____ day of _____, _____ [insert date of signing]

Letter of Acceptance
(Letterhead paper of Procuring Entity)

_____ (date)

To: _____
(Name of Supplier)

(address of Supplier)

We hereby notify you that your bid dated the ____ day of _____ 202__, for the supply of goods _____ (*description of goods*) up to a total of _____ (*amount in figures and words*)

as amended and modified in accordance with the Instructions to Bidders is hereby accepted by our agency.

Simultaneously, we send you the Form of Contract and request you, pursuant to Clause 20.1 of the Instructions to Bidders, during seven (7) days to sign and date the Form of Contract and return it at our address. Jointly with the signed Contract, we request you to furnish the performance security, in accordance with ITB Clause 20.2.

You hereby entrusted to start supply of the Goods, in accordance with the terms and conditions of a Contract.

Name of Agency _____

Full name and Title _____

Signature of Authorized Representative _____

Annex: The Contract

Affidavit of Authorization

TO: _____ *[name of Procuring Entity]*

WHEREAS _____ *[name of Supplier]*, who
is the Supplier _____ *[name and/or description of goods]*.

do hereby authorize _____ *[name and address of
Supplier's Representative]* to submit the Bid, and sign the Contract based on *Invitation for Bids* for the
abovementioned goods to be supplied by us, and

[Full name, title, signature for and on behalf of Supplier]

Dated on « _____ » day of _____ 202 _____. (seal)
(date)

Note: The affidavit of authorization must be drafted on a letterhead of the Supplier and signed by a Commissioner of Oats to Affidavit or Justice of the peace. The Bidder shall include this authorization in their Bid.

EVALUATION AND QUALIFICATION CRITERIA

NO.	DESCRIPTION	PASS/FAIL
1.	Submission of a valid business registration or certificate of incorporation that is clearly legible. Incorporated companies must submit a list of directors.	
2.	Submission of a valid NIS compliance certificate in the name of the business as per business registration. Document must be clearly legible.	
3.	Submission of a valid GRA compliance certificate in the name of the business as per business registration. Document must be clearly legible.	
4.	Completed and signed supplier's bid form (page 22).	
5.	Completed and signed price schedule must be submitted.	
6.	Completed and signed delivery schedule (page 19) or statement of agreement to supply goods/services within the period specified by the Procuring Entity in the delivery schedule.	
7.	Provision of documentation detailing the technical specifications for the items listed in the Schedule of Requirement (page 19) or evidence to show that the goods match the requirements of the items listed in the Technical Specifications.	
8.	Submission of bid security in the amount of 2% of the bid price in the form of a bond from an Insurance company licensed by the Bank of Guyana or a bank guarantee or manager's cheque.	
9.	Demonstrate experience and technical capacity by providing documentary evidence that shows the completion of a minimum of two (2) contracts of similar size and scope to the Project over the last two (2) years. Bidder must provide copies of contracts with previous clients. Bidder must also demonstrate the experience of completing contracts of a minimum value of \$4,000,000 for each year over two (2) years.	
10.	Evidence of financial capacity, in the name of the bidder, representing 30% of the bid price. Financial Capacity must be evidence in the form of a bank statement or Line of credit from a bank or Insurance company licensed by the Bank of Guyana. The line of credit must state a figure. The document must be dated within one month of the bid opening date and be clearly legible. When a photocopy is presented, it must be certified a 'true copy of original' by the issuing company	
11.	Bidder must provide a letter of Authorization for the Procuring Entity to seek reference from the bidder's Bank/financial institution relating to the financial capacity evidence supplied. The document must be dated within one month of the bid opening date and be clearly legible.	
12.	Written confirmation of authorizing signatory must be provided. This must be in the form of an Affidavit of Authorization endorsed by a Commissioner of Oaths or Justice of Peace.	
13.	Bidder must provide audited financial statements for the past three years for incorporated companies. Financial statements must be audited by a Chartered accountant/accountancy firm and include an auditor's note. OR Registered businesses must provide Balance Sheets, Profit and Loss Accounts, and Income and Expenditure Accounts for the past three years These financial statements must be approved by a Chartered accountant/accountancy firm. The	

	financial analysis would include: Current ratio: >1 for each year of the last 3 years; Net worth: +ve and minimum of 20% of bid value; Average annual turnover: GYD 4million.	
14.	The Bidder shall provide accurate information on the related bidding form as provided on page 34 about any litigation or arbitration resulting from contracts completed or on-going under its execution over the last five years. Pending Litigation: All pending litigation shall in total not represent more 50% of the Bidder's net worth and shall be treated as resolved against the bidder. If bidder has pending litigation representing more than the stated percentage, the bid will not be considered. Litigation History: Non-performance of a contract did not occur as result of supplier's default since 1st January, 2019. If bidder has a history of nonperforming contract the bid will not be considered.	
15.	Bidder must provide a letter stating any or no terminated or abandonment of projects . The letter must be dated within one month of the bid opening date.	
	Technical Requirements	
16.	PV Module <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
17.	PV Structure <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
18.	PV Array <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
19.	Inverters/Converters <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
20.	Battery Energy Storage System <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
21.	AC Balance of Plant <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
22.	Transformer <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
23.	Control <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
24.	Monitoring <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
25.	Surveillance System <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	

26.	Lighting and auxiliary services <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
27.	Fencing <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
28.	Health and Safety Plan <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
29.	Training <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	
30.	Technical Support <ul style="list-style-type: none"> • Technical specifications as described in Annex 1 	

Award of contract

The contract will be awarded to the Bidder who is substantially responsive to the bid document and who has offered the lowest bid price.

Pending Litigation Format				
<input type="checkbox"/> No pending litigation in accordance with Evaluation Criteria # 14				
Year of dispute	Amount in dispute (currency)	Outcome as Percentage of Net Worth	Contract Identification	Total Contract Amount (current value, currency, exchange rate and USD equivalent)
[insert year]	[insert amount]	[insert percentage]	<ul style="list-style-type: none"> Contract Identification: [indicate complete contract name, number, and any other identification] Name of Purchaser: [insert full name] Address of Purchaser: [insert street/ city/ country] Matter in dispute: [indicate main issues in dispute] Status of dispute: [indicate if it is being treated under Arbitration or being dealt with by the Judiciary] 	[insert amount]

Litigation History

Litigation History Format		
<input type="checkbox"/> No court/arbitral award decisions against the Bidder since 1 st January 2019, in accordance with Evaluation Criteria # 14		
Year of award	Contract Identification	Total Contract Amount (current value, currency, exchange rate and USD equivalent)
[insert year]	<ul style="list-style-type: none"> Contract Identification: [indicate complete Contract name, number, and any other identification] Name of Purchaser: [insert full name] Address of Purchaser: [insert street/city/country] Matter in dispute: [indicate main issues in dispute] Party who initiated the dispute: [indicate "Purchaser" or "Supplier"] Status of dispute: [indicate if it is being treated by under Arbitration or being dealt with by the Judiciary] 	[insert amount]

Work Package 1: Technical Tender Specifications Mazaruni Solar PV Plant

March, 2024

Project: Design, Supply, Installation and Commissioning of a 1.2 MWp Solar PV Plant for the Mazaruni Prison, Region 7

Site: Mazaruni Prison, Region 7 – Essequibo River, Guyana

This document provides the technical specifications for the procurement of a Turnkey Solar PV Plant in Leguan. This document is an Annex of the Bidding package prepared by Guyana Energy .

Content

1	INTRODUCTION.....	4
1.1	HINTERLAND ELECTRIFICATION PROGRAMME	ERROR! BOOKMARK NOT DEFINED.
1.2	LEGUAN	ERROR! BOOKMARK NOT DEFINED.
1.3	ELECTRICAL DEMAND	4
1.4	DIESEL POWER GENERATION.....	ERROR! BOOKMARK NOT DEFINED.
1.5	LEGUAN SOLAR PV FARM	ERROR! BOOKMARK NOT DEFINED.
1.6	STAKEHOLDERS.....	ERROR! BOOKMARK NOT DEFINED.
2	SCOPE OF WORK	6
3	TECHNICAL SPECIFICATIONS – GENERAL.....	7
3.1	INTRODUCTION.....	7
3.2	QUALITY ASSURANCE.....	8
3.3	HEALTH AND SAFETY PLAN	8
3.4	ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)	9
3.5	SITE VISIT.....	10
3.6	CIVIL WORKS	10
3.7	FENCING	11
3.8	LIGHTING AND AUXILIARY SERVICES.....	11
3.9	INSTALLATION	12
3.10	SECURITY.....	12
3.11	TAXES.....	12
3.12	WORK PERMIT.....	12
3.13	TRANSPORT	12
3.14	IDENTIFICATION	13
3.15	DOCUMENTATION.....	13
3.16	TOOLS AND SPARE PARTS.....	14
4	TECHNICAL SPECIFICATIONS – PARTICULAR	15
4.1	GENERAL.....	15
4.2	PV MODULES	15
4.3	PV STRUCTURE	16
4.4	PV ARRAYS	17
4.5	INVERTERS	17
4.6	BATTERY STATION	17
4.7	AC BALANCE OF PLANT	18
4.8	TRANSFORMER	19
4.9	INTERCONNECTION.....	19
4.10	CONTROL	19
4.11	MONITORING.....	20
4.12	COMMISSIONING	21
4.13	TRAINING	ERROR! BOOKMARK NOT DEFINED.
4.14	TECHNICAL SUPPORT	22
4.15	ECONOMIC EVALUATION OF BID SUBMISSION	22

Acronyms:

EA	Executing Agency
DG	Distributed Generation
DOD	Depth of Discharge
EPA	Environmental Protection Agency
ESAR	Environmental and Social Analysis Report
ESMP	Environmental and Social Management Plan
ESRA	Electricity Sector Reform Act 1999
GEA	Guyana Energy Agency
GEI	Government Electrical Inspectorate
GoG	Government of Guyana
GYD	Guyana Dollar
H&S	Health and Safety
GPL	Hinterland Electrification Company Inc.
kWh	Kilo Watt Hour
kWp	Kilo Watt Peak
LCOE	Levelized Cost of Energy
LFO	Light Fuel Oil
MoPI	Ministry of Public Infrastructure
MWp	Mega Watt Peak
O&M	Operation and Maintenance
PCU	Project Coordinating Unit
PUC	Public Utilities Commission
RE	Renewable Energy
RET	Renewable Energy Technology
T&D	Transmission and Distribution
USD	United States Dollar

1 Introduction

1.1 Mazaruni Prisons

The Mazaruni Prison serves as a detention center for individuals who have been convicted of crimes in Guyana. It is a significant correctional institution which house inmates from various backgrounds and serving as a facility for rehabilitation and incarceration. The prison plays a vital role in the criminal justice system of Guyana, providing both security and rehabilitation services for its inmates.

1.2 Electrical Supply

1.2.1 Electricity is supplied to the facility continuously, 24 hours a day, by two diesel gensets with capacities of 250 kVA and 340 kVA respectively. Details including nameplates and other information for these gensets are provided in Appendix 1A. Each genset operates independently and is connected to the loads (distribution network) through an Automatic Transfer Switch. A single line diagram illustrating this configuration is available in Append 1B while a proposed general layout is shown in Annex 1C. The google image below shows the location of the generators.

1.2.2 Electricity is distributed to the various building in the Prison’s compound via 3 – 100 kVA 120/240 Vac pole mounted transformers seen in appendix 1A. These distribution transformers are connected to an existing 3-wire 13.8 kV distribution network.



Figure 1: Map showing the location (red box) of existing Gensets

1.3 PV Installation Site

- 1.3.1 The proposed site for the solar PV installation is located at latitude 6°24'0.79"N and longitude 58°39'32.92"W. The site is approximately 6 acres.
- 1.3.2 The site is relatively clear containing mostly shrubs and small trees which would require clearing before the commencement of this project.
- 1.3.3 *Figure 2* provides a google earth image of the proposed location for the solar PV plant.
- 1.3.4 The solar plant shall be connected to the existing 13.8 kV transmission line.



Figure 2: Solar PV Site

2 Scope of Work

- 2.1.1 This scope of work describes the requirements for a photovoltaic (PV) power plant with battery energy storage system (BESS) for the Mazaruni Prison:
- Turnkey Delivery of 1.2MWp solar PV power plant with a 4.0 MWh Battery Energy Storage System, including the engineering, procurement, construction, testing, commissioning, and training of operators.
- 2.1.2 The design, supply and installation of the solar PV system must comply with the **National Grid Code** which can be found in Annex 3
- 2.1.3 The 1.2 MWp solar PV plant shall consist of two (2) PV sub-systems with install capacity of 0.6 MWp or more for each sub-system.
- 2.1.4 The battery storage system (energy storage and battery inverter) shall provide the primary function of 'grid forming' and shall supply the entire power demand of the Mazaruni Prison's transmission and distribution system without any support from the diesel generators, during the periods for which the battery State of Charge is greater than 15%. The battery system shall be capable of working in parallel with the existing diesel gensets, providing grid support (frequency and voltage regulation) and rapid response to variations in the intermittent solar PV source and variations in the demand.
- 2.1.5 The solar PV Plant shall be the primary source of energy for the loads connected to the distribution network, while the existing diesel gensets shall only be utilized in instances where the load demand exceeds the capacity of the PV Plant or in the event the state of charge (SOC) of the battery energy storage system meets 15%.
- 2.1.6 This 'predefined critical level' of the SOC mention in 2.1.5 shall be selectable or adjustable by the operator.
- 2.1.7 Electricity generated from the PV arrays shall be used for real-time consumption, and recharging of the battery energy storage system. Excess energy shall be curtailed and shall NOT be back-fed to the existing diesel generator; thus, appropriate reverse power protection must be employed.
- 2.1.8 The solar PV power plant and BESS shall have a point of common coupling within the boundaries of the solar Plant and connected to a Low Voltage (LV) terminal of a 1.5 MVA/13.8 kV step-up transformer located within the boundaries of the solar PV power plant.
- 2.1.9 The Contractor shall provide all required hardware and software for the SCADA system to control and monitor the solar PV plant and the existing diesel gensets from a central location. The contractor shall design, supply, install and commission the new control system and the necessary modifications to the diesel genset controls to fulfil the requirements in this tender. All human-machine interfaces shall be in the English Language.
- 2.1.10 The contractor is responsible for relocating the existing gensets from the current location to within the boundary of the solar plant. The contractor will be required to conduct all associated works including but not limited to, disconnection, transport, re-installation, interconnection and the construction of appropriate concrete base for both the gensets.
- 2.1.11 The contractor shall carefully coordinate the relocation of the gensets to avoid any outages to the facilities.
- 2.1.12 The 480 Vac loads that are currently connected to the gensets as shown in Annex 3 will be disconnected (from the gensets) and reconnected to the LV side of the existing 3 – 100 kVA transformers after the gensets have been relocated. Thus, the 3 – 100 kVA 13.8/0.480 kV transformers will now be used to provide power to the 480 Vac loads.

- 2.1.13 All civil works must be provided by the Contractor, including, but not limited to, site clearance and land preparation, foundation and housing for equipment to be installed. Fencing of the solar PV farm, construction of an appropriately size control room and construction of 2 Security Shed(s) as needed to adequately secure the site.
- 2.1.14 The Contractor shall conduct all necessary engineering study, such as, geotechnical and topographical, flood risk, soil resistivity, etc. Contractor is responsible to provide a Quality Control Plan, a Health and Safety Plan and Environmental and Social Management Plan.
- 2.1.15 Special attention must be paid to the tropical, high humidity and, the marine and saline environment regarding the selection of the materials to be used for the erection of support structures and buildings, fencing as well as the PV power system components themselves.
- 2.1.16 Owing to the nature of the facility, the contractor shall design and implement a high-security surveillance system to cover all areas within the solar PV plant. The system shall provide comprehensive monitoring, detection capabilities to mitigate security risk effectively. The security system shall encompass advance features and capabilities to address various security challenges.

3 Technical Specifications – General

3.1 Introduction

- 3.1.1 All designs, materials, installations, and services under this tender shall comply with the latest issues of the following standards:
- Relevant standards and publications of the International Electrotechnical Commission (IEC) for electrical equipment
 - Relevant Institute of Electrical and Electronics Engineers (IEEE) standards and recommendations.
 - The Contractor shall ensure that the entire generation system, including the PV and BESS is solidly grounded and shall provide an effective grounding design as per IEEE 62.92 recommendations.
 - NFPA 855, Standard for the Installation of Stationary Energy Storage Systems
 - National Electrical Code (NEC) 2020
 - GPL's National Grid Code
 - EPA's Permitting Requirements for Solar Photovoltaic Systems

3.2 Quality Assurance

- 3.2.1 To ensure that the Works are in accordance with the outlined specification, regulations and authorised international standards, the Contractor shall have in place suitable Quality Assurance Programs and Procedures.
- 3.2.2 The Contractor must demonstrate that all equipment is from manufacturers using technology that have been proven to work reliably.
- 3.2.3 The Contractor must submit a Provisional Quality Assurance Plan in the Bid. The final Quality Assurance plan shall be approved by the contracting agency before signing of Contract.
- 3.2.4 The Contracting Agency is entitled to supervise or to have supervised the Quality assurance Plan of the Contractor with respect to the Works in all phases of the project (design, engineering, material handling, manufacturing, testing, inspection, construction and erection, commissioning). When required by the Contracting Agency, the Contractor must facilitate all requested tests, inspections and sample submissions.
- 3.2.5 The Quality Assurance Plan must contain the procedure, schedule and considerations for the realization, review and approval of the design. The considerations must comply with the requirements of the Contract. Considerations may include calculations, tests, or certificates. The Quality Assurance Plan must outline the relevant considerations.
- 3.2.6 In cases where test results or other characteristics of similar components or parts deviate significantly from each other, the Contracting Agency is entitled to reject them.

3.3 Health and Safety Plan

- 3.3.1 The Contractor shall comply with the Occupational Safety and Health Act of the Contracting Agency and Guyana.
- 3.3.2 The Contractor shall submit their own Health and Safety (H&S) plan with mitigation measures in the Bid. During the design stage, the final H&S plan shall be shared with the Contracting Agency together with the final design of the system.
- 3.3.3 All contractors, staff and third party shall be well informed and trained on all H&S issues at the site. All facilities shall be designed to enhance safety planning. All activities shall be executed within the confines of the relevant legislation as well as stakeholders' interests. All project activities shall be properly managed through careful planning and the application of relevant safety policies such as:
 - Environmental Operation Permit
 - H&S meetings before embarking on a job
 - Use of appropriate personal protective equipment (PPE)
 - Prohibition of alcohol in the project area
 - Proper journey management
 - Regular emergency drills
 - Use of appropriate caution signs
 - Control of Atmospheric Emissions

3.4 Environmental and Social Management Plan (ESMP)

3.4.1 The successful bidder/contractor will be responsible for developing a Construction ESMP (C- ESMP) adhering to the conditions of the Government of Guyana Environmental Permit. This C- ESMP must be delivered to GEA for approval prior to beginning construction activities.

The C-ESMP must include a Worker Code of Conduct (In Environmental, Social, Safety and Health,) that establishes: a) the minimum eligible age for work as 15 years (or if Guyanese law establishes older, use that age); b) non- discrimination, gender equality, and c) zero tolerance for gender-based and sexual harassment and violence, and penalties for non-compliance.

3.4.2 The Contractor shall be responsible for ensuring that all areas of the site are left in the same conditions as prior to the commencement of the works.

3.4.3 All site clearance works shall be carried out within defined perimeters and only when necessary. The maximum permissible time lapse between site clearing and initiation of construction operations shall be reduced to the bare minimum. Clearing of vegetation shall be kept to the barest minimum necessary to permit safe operations. Trees felled from the project site shall be made available to the host communities for re-use prior to decision on the disposal of the materials at the authorized landfill.

3.4.4 Dirt roads and exposed construction areas shall be moisturized during the dry season to prevent and minimize dust emissions. Construction equipment shall be well maintained to minimize exhaust emissions into the atmosphere.

3.4.5 Noise levels shall comply with relevant regulations. The personnel, as well as the environment that shall be affected by any established noise source, shall be provided or equipped with an appropriate protective or corrective device to ameliorate noise effect.

3.4.6 Adequate waste management shall be integrated into the implementation of the PV system. The principle of waste reduction, recycling, recovery and re-using shall be practised whenever possible. All wastes, which cannot be reused, will be managed and disposed of in accordance with the regulatory standards. Some of the waste management options and waste disposal systems that will be considered for this project are:

- Segregate components such as wood, plastic and paper shall be recycled or reused whenever possible, with preference for reusing and recycling given to interested stakeholder(s), principally the local community for their benefit.
- Reduce packaging wastes such as paper and plastic using bulk handling systems
- Dispose of all wastes at approved municipal dumps
- Refilling and reusing of containers
- Appropriate mobile septic tanks/sanitary facilities shall be provided during installation/pre-construction and construction phases. Construction of permanent septic tank system shall be included in the facilities design. Septage during the pre-construction, construction and operation phases shall be collected by EPA approved Contractors.

3.4.7 Hazardous waste can be generated during construction due to accidental spills of fuel for the operation of construction equipment. It is recommended that waste from any fuel clean-up activities be stored on site in closed and clearly labelled containers and disposed of through an EPA approved Contractor.

3.4.8 All debris, spoilt materials, rubbish, and other waste, shall be cleared from the site during construction and disposed of accordingly at the Government's designated dump/landfill sites for such wastes. The burning of any type of waste shall be strictly prohibited. Waste disposal records shall be kept and shall include as a minimum the following information:

- Date of dispatch
- Description of waste
- Waste quantity/container type
- Designated disposal site and method
- Consignee /driver name and means of transportation
- Confirmation of actual disposal (time and date)

3.4.9 The Environmental and Social Analysis Report mentioned in *Item 3.4.1*, provides recommended mitigation measures to comply with the environmental and social specifications. The Contractor shall provide his/her own measures and its breakdown cost in the submission of this Bid.

3.5 Site Visit

3.5.1 The Contractor is advised to visit and examine the site where the plant is to be installed, its surroundings and the road/path access and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid. The cost of visiting the site shall be at the Contractor's expense.

3.6 Civil works

3.6.1 All civil works shall be guided by the recommendations of the engineering reports mentioned in item 2.1.11. The contractor is responsible for carrying out these studies.

3.6.2 The Contractor shall design and provide the following civil works in accordance with the recommendations of their Geotechnical Report:

- All necessary work to prepare the road and footpath for delivery of all equipment.
- All site clearance and land preparatory works shall be carried out within defined perimeters and only when necessary. The maximum permissible time lapse between site clearing and initiation of construction operations shall be reduced to the bare minimum. Clearing of vegetation shall be kept to the barest minimum necessary to permit safe operations.
- A suitable drainage system shall be constructed to minimize disturbances to natural drainage patterns and incorporate erosion control and storm water management to ensure no water stagnation occur at the facility. The drainage system should be capable of handling the probable maximum precipitation during a storm event.
- Trenching for conduits and cables
- Foundation for the structure of the solar PV arrays
- Foundation and housing for inverters, battery system, switchgear and transformers
- Foundation and housing for the security shed
- Removal of temporary construction facilities and completion of restoration works.

3.6.3 The Contractor shall prepare the land, including but not limited to cut and disposal of the trees in a designated area by the Contracting Agency.

- 3.6.4 The site must be prepared with the objective of producing a level surface upon final installation of the arrays to eliminate shading of the photovoltaic arrays.
- 3.6.5 The project site shall be filled and levelled based on the recommendations of the flood risk assessment.
- 3.6.6 Installation of trenches will be required for conduits to prevent exposure of cables to the environment.
- 3.6.7 Foundation works for the solar PV structure should be in the form of strips, pads or a combination of both and allow for suitable fixations to secure mounting racks. Regarding the foundation works, reference must be made to Guyana National Building Code. The Contractor must conduct a detailed site investigation to verify the site's soil conditions, and to ensure that the foundation designs (for all structures) can withstand all loads (live & dead) imposed upon it to avoid the risk of failure. The finding of this investigation must be made available to the executing agency.
- 3.6.8 The Contractor shall design and provide for all associated civil and construction works necessary for the complete installation of all equipment, including but not limited to excavations, concrete works, backfilling, earth ramming and foundations.
- 3.6.9 The Contractor shall design, supply and install all structures and housing necessary for the installation of the PV modules, cables, inverters, battery, switchgear, transformers and all other items of equipment necessary to complete the installation.
- 3.6.10 The Contractor shall design, supply and install at least two (2) security guard cabins (one inclusive of a toilet facility). The location of one of those security sheds will be agreed with Mazaruni Prison Officer in Charge during the design stage.
- 3.6.11 The Contractor shall design, supply and install one cabin to house the control center for the solar PV Plant. The control center shall cater for one operator/personnel and shall be outfitted with lighting fixtures and one desk to support a workstation desktop PC.

3.7 Fencing

- 3.7.1 The Contractor shall design, supply and install the perimeter fencing to surround the boundaries of proposed Solar PV Plant only. Fencing of the solar plant is essential for protecting the asset against theft and to provide safety for the individuals involved in the operation and maintenance of the plant. The fence should be grounded to the facility grounded grid as per NEC 110.31.
- 3.7.2 The Contractor shall supply all necessary materials, equipment, tools and labour for the installation of a chain-link fence on the boundaries of the solar farm with rates inclusive of galvanizing poles, runners, RC pad foundation, end caps, non-corrosive paint, transportation, etc. to complete installation.

3.8 Lighting and auxiliary services

- 3.8.1 The Contractor shall design, supply and install a lighting system of the whole fenced area. The provided lamps shall be 80W self-contained solar powered security lights with battery installed in fifteen (15) feet poles at 50 feet apart along the whole perimeter fence of the solar farm.
- 3.8.2 The auxiliary power required by the PV plant should be provided by a dedicated UPS backup capable of supplying power for a minimum of 1 hour.

- 3.8.3 The Contractor shall design, supply and install a water supply network for cleaning of solar modules using industry standard methods and best practices. The water supply shall include trestle, water storage, water pump, adaptors, etc. to make the water supply system complete and functional.
- 3.8.4 The Contractor shall design a rainwater collecting system for all structure that encompasses a roof. The system shall be designed with all necessary water filtering and treatment to ensure the water used for cleaning purposes is as per module manufacture recommendations.
- 3.8.5 The Contractor shall install a Fire Detection and Suppression (FDS) System for all enclosed structures that houses equipment such as, inverters, batteries and switchgears. The FDS shall comply with the recommendations of the NFPA 72, NFPA 850 & 855 or EN15004.
- 3.8.6 The Contractor shall install a weather monitoring station to accurately record and log/store the following meteorological data:
- Precipitation (rainfall)
 - Wind speed and direction
 - Solar irradiation (GHI and POA)
 - Relative humidity
 - Temperature (ambient and cell)
 - Air pressure

The weather station shall be compliant with IEC61724-1 Class A for Utility scale PV system

3.9 Installation

- 3.9.1 Since water and power are not available at the site, the Contractor shall provide such during installation activities.

3.10 Security

- 3.10.1 The Contractor shall be responsible for the security of all materials delivered and installed before official handover.

3.11 Taxes

- 3.11.1 The Contractor shall pay all applicable taxes as it relates to the equipment and services accordingly to the current Laws of Guyana.
- 3.11.2 Solar PV components (including batteries) are duty-free. The Contracting Agency will facilitate instructions regarding duty-free clearance. Tax exemption on solar equipment can be found at <https://www.gra.gov.gy/publications/notices/834-tax-exemptions-on-solar-equipment>

3.12 Work permit

- 3.12.1 Foreign Contractors/employees may need to obtain a visa and arrange all necessary work permits in relation to the PV systems.

3.13 Transport

- 3.13.1 All transportation up to the construction site and shall be included in the Contractor's scope of supply, including, but not limited to, insurance, storage, demurrage, handling and fork-lift truck.
- 3.13.2 Road alone or road and river transport from Georgetown are to be considered. The Contractor should also take into account the transport routes of heavy equipment to the site, which can/will take place on sand roads or paved roads with a limited axle load capacity.
- 3.13.3 The Contractor is fully responsible for organising and guaranteeing timely delivery and transport of the equipment to the installation site.
- 3.13.4 The Contractor is requested to present detailed information on the schedule of delivery and transport modalities of the equipment to the project site. Close coordination with responsible staff from the contracting agency is recommended. The Bidder is requested to consider site conditions having a potential influence on delivery and installation.

3.14 Identification

- 3.14.1 Labels of all systems and components of the PV system and associated equipment shall be in English. All outdoor labelling should be weather resistant.
- 3.14.2 All systems and components shall be provided with unique codes. The Contractor shall determine the assignment of codes in consultation with the executing agency.
- 3.14.3 Nameplates and coding labels must be attached permanently on a clearly visible spot of the apparatus.

3.15 Documentation

- 3.15.1 All engineering documents and drawings shall be sent to GEA for review, prior to the construction of the solar PV system.
- 3.15.2 During the design and engineering phase, the Contractor shall submit a draft Operation and Maintenance manual.
- 3.15.3 After the completion of the installation, the Contractor shall submit the AS-BUILT drawings and any other document that has changed from the design phase.
- 3.15.4 The manual must contain at least the following information:
 - Description of the installation
 - Construction and assembly instructions
 - Design considerations
 - Operational procedures for all possible normal and abnormal conditions, including failure assessment, fault identification/interpretation and fault clearing
 - Maintenance schemes and instructions
 - Data sheet and specifications
 - Design drawings
 - Manufacturer, type, rating, serial number and test reports of each part of the installation
 - Settings of trips and alarms
 - Local and remote-control function and procedures
 - Complete commissioning manual
 - Parts manual
 - Address of components deliverers or manufacturers

- Startup and commissioning spares, critical and operational spares.

3.15.5 All requested information must be in **English**. All manuals and diagrams must be supplied also in digital form in CAD or other standard software formats (Microsoft Project, Microsoft Excel and Microsoft Word), in addition to all documents in PDF.

3.16 Tools and Spare parts

3.16.1 The Contractor shall supply two (2) complete sets of all required tools for the safe and efficient operation and maintenance of the PV system.

3.16.2 The Contractor shall supply under the contract all consumables and spares for operation and maintenance of the whole solar PV system up to and including the first general scheduled maintenance.

3.16.3 All software used to program/ adjust settings of equipment should be provided along with their instruction manuals.

3.16.4 All tools, spare parts and consumable shall be new.

4 Technical Specifications – Particular

4.1 General

- 4.1.1 This scope of work describes the requirements for a photovoltaic (PV) power plant with battery energy storage system (BESS) for the Mazaruni Prison:
- Turnkey Delivery of 1.2MWp solar PV power plant with a 4.0 MWh Battery Energy Storage System, including the engineering, procurement, construction, testing, commissioning, and training of operators.
- 4.1.2 The scope of works under this tender are described in *Chapter 2*.
- 4.1.3 The design, materials, installation, and services shall comply with the codes, standards and regulations mentioned in *Chapter 3.1*.
- 4.1.4 The Contractor shall design, supply and install the whole system in such a way, utilizing only robust components of reputable vendors fit for utilization in tropical high humidity and marine environment conditions as outlined in *Chapter 3.1*.
- 4.1.5 To increase reliability and prevent total loss of capacity due to a single point of failure, the PV system shall be designed in a modular fashion. The PV power plant should be composed of two (2) independent PV sub-systems each of 0.6 MW or above.
- 4.1.6 The Contractor shall design the system shall be modular to facilitate future expansion of the solar PV array and energy storage capacity.
- 4.1.7 The Contractor shall design and engineer the PV components including the battery system and advice on the type of inverter and battery to be utilized, based on the required functionalities and power distribution system requirements.
- 4.1.8 The solar PV Plant shall be designed to maximize the utilization of energy generated from the solar PV system while reducing the amount of energy curtailed. The PV system must be designed as an AC coupled system.
- 4.1.9 The plant layout shall be designed to ensure ease of maintenance.
- 4.1.10 The method of isolation of the sub-systems component shall be by means of over current protection devices (circuit breakers).

4.2 PV modules

- 4.2.1 All PV modules shall be from the same manufacturer and model and all PV modules shall have the same nominal output power.
- 4.2.2 PV modules shall be Crystalline Silicon type with a minimum efficiency of 20%.
- 4.2.3 All electrical parameters shall be provided at Standard Test Conditions STC (Air Mass AM1.5, Irradiance 1000W/m², Cell temperature 25°C).
- 4.2.4 PV modules must be tested and certified by an accredited certified agency according to IEC61701, IEC61215 and IEC61730.
- 4.2.5 Each module shall be labelled, in English, indicating the manufacturer, model, serial number (to be able to identify the date of manufacture for each of the panels), peak power, voltage and current at peak power, open circuit voltage and short circuit current.

- 4.2.6 The minimum power output tolerance at Pmax shall be 0%.
- 4.2.7 PV modules shall be framed. The frame shall be aluminium or stainless steel, which shall be electronically compatible with the structural material used for mounting the modules.
- 4.2.8 All material component and claddings should be designed to resist sand and dust deposits, wind, suction and uplift loading at any point without damage.
- 4.2.9 Anti-reflective tempered glass cover shall be used as the protective shield for the active surface area of the module and should be chosen for high impact and thermal shock resistance.
- 4.2.10 The encapsulating material shall fill all spaces inside the module and shall adhere to the front glass and back sheet. The encapsulating material shall be stable at elevated temperature and high UV exposure.
- 4.2.11 The expected service life of PV modules shall be twenty-five (25) years.
- 4.2.12 PV modules shall have a minimum of ten (10) years of the product warranty.
- 4.2.13 PV modules shall have a minimum power output warranty of 90% of nominal peak power in year ten (10) and 80% of nominal peak power in year twenty-five (25).
- 4.2.14 The PV module cables shall have excellent properties and high-water resistance for outdoor installation. They shall have high durability and resistance to external influences, such as UV, Ozone, temperature, and chemicals. They shall be halogen-free, flame resistant, self-extinguishing and with double insulation to prevent short circuit and earth fault.
- 4.2.15 Each PV module shall have a sealed junction box with a minimum Ingress Protection rate IP65.
- 4.2.16 Modules shall have by-pass diodes to avoid damage of the cells and their circuits due to partial shading.
- 4.2.17 PV modules should be in accordance with international standards (IEC 61215, IEC 61730, IEC 61701, UL1703 etc.) and the National Electrical Code 2020.

4.3 PV structure

- 4.3.1 The mounting structure of the solar modules shall be made of corrosion resistant material, which shall be electronically compatible with the PV module's frame material.
- 4.3.2 The solar structure and foundations shall be designed specifically for the existing soil conditions to withstand wind gust up to 60km/h without damage.
- 4.3.3 The mounting structure shall be designed to allow the thermal expansion and contraction of the structure without affecting the integrity of the modules.
- 4.3.4 PV modules must be oriented in a southern direction with an inclination of between 8 to 10 degrees and must be able to absorb and transfer the mechanical loads to the ground properly.
- 4.3.5 The construction of the foundation shall be guided by the Geotechnical and Flood Risk Report to be conducted by the contractor.
- 4.3.6 Elevation of the Array shall be 2 feet from the lower end of the array with reference to ground level.
- 4.3.7 PV structures shall have a minimum of ten (10) years of the product warranty.

4.4 PV arrays

- 4.4.1 The Contractor shall design the PV array to maximize efficiency and reliability.
- 4.4.2 The minimum voltage of a string shall be 1000 Vdc.
- 4.4.3 The Contractor shall provide appropriately sized fuses and surge protection.
- 4.4.4 Each string must have a blocking diode to prevent reverse current flow. Each string must have string protection through fuse and disconnect switch.
- 4.4.5 The positive and negative DC cables shall be laid separately and consisting of adequately sized single core copper cable each.
- 4.4.6 All cables and connectors to be used for installation of solar PV power plant must be of solar grade which can withstand harsh environmental conditions for 25 years and voltages as per the latest IEC standards. All DC cables shall be UV resistant, rodent proof and termite repellent.

4.5 Inverters/Converters

- 4.5.1 This section refers to the PV inverters as well as the battery inverters.
- 4.5.2 Inverters shall provide a pure 3 phase sine wave output with operating frequency of 60Hz with a field selectable adjustment range of ± 3 Hz.
- 4.5.3 Inverters shall have a minimum European or CEC efficiency of 97%.
- 4.5.4 Inverters shall have an adjustable power factor between 0.8 lead to 0.8 lag.
- 4.5.5 Inverters shall have a maximum total harmonic distortion of 3% at nominal power.
- 4.5.6 Operation own consumption of inverter at maximum load shall be lower than 0.5% of the nominal output power. Stand-by consumption of inverter shall be lower than 0.1% of nominal power output.
- 4.5.7 Each of the independent PV systems, as per *Item 4.1.5*, shall have their synchronization provisions for parallel operation with the other inverters as well as synchronization provisions for parallel operation with the diesel gensets.
- 4.5.8 Inverters shall have the capability for remote power off.
- 4.5.9 PV inverters shall have MPPT integrated to maximize the energy output from the PV arrays.
- 4.5.10 PV inverters shall be able to curtail the active power when demanded by energy management system.
- 4.5.11 Inverters shall have a minimum of ten (10) years of product warranty.

4.6 Battery Energy Storage System

- 4.6.1 The battery-based inverter and storage system shall be designed for grid forming to allow maximum power output from the solar PV inverters into the grid. The battery system must be able to provide the load to the grid without the support from any diesel generator.
- 4.6.2 The battery system shall provide a rapid response against the solar power output variations and will enable a smooth transition of the load provided by solar PV to the generators when the SOC meet some predefined critical level. Consideration and adequate time should be giving for the synchronization of gensets from 'cold-start'
- 4.6.3 The Contractor shall select the capacity to comply with the requirement stated in this document.

- 4.6.4 Batteries shall be Li-ion type. The battery must have an expected life over 4000 cycles at 80% depth of discharge.
- 4.6.5 The batteries must have a minimum of eight (8) years warranty.
- 4.6.6 Battery station should, under normal operating conditions, be able to serve for a period of eight (8) years for the batteries or any other main component of the installation.
- 4.6.7 Battery station shall have a minimum nominal power of **1.2 MW.**
- 4.6.8 Battery storage shall be capable of providing a minimum of 150 kW (usable) for a duration of 24 hours whilst retaining a minimum state of charge (SOC) of 15%.
- 4.6.9 The BESS should be placed at a Minimum elevation based on the guidance from the Flood Risk Report for the construction of the base.

4.7 AC Balance of plant

- 4.7.1 The Contractor shall design, supply and install all distribution boards and switchgear necessary for the correct and safe operation of the system in accordance with the relevant IEEE, IEE and NEC 2020 standards and where applicable the NESC as it relates to 15kV class equipment.
- 4.7.2 The Contractor shall deliver and install copper conductor power cables with insulation rating for 1 kV, secondary cables and accessories for the interconnection of the PV power plant to the 1.5 MVA Step-up transformer. All power and secondary cables to be delivered and installed shall be in accordance with the International Electrotechnical Commission (IEC) standards and the National Electrical Code (NEC) 2020.
- 4.7.3 Supply and install 150 metres of three core 35 mm square, 15 kV Class, 133% insulation level, Copper conductor with Cross-linked Polyethylene (XLPE) type insulation, Medium Voltage power cable between the Solar PV Plant and the 13.8 kV take-off structure. All associated civil works to install cables must be included. All ends of cables shall be properly terminated, insulated and installed using cable termination kits, stand-off insulator kits and other relevant materials.
- 4.7.4 The Contractor shall design, supply and install the adequate protection system for the solar power system against possible damage due to the abnormal operation or fault conditions, resulting either from internal equipment failure or wiring issues or from external natural causes, such as lightning.
- 4.7.5 The protection system shall provide for fast and safe clearing of the fault on the system to minimize any damages to the system as well as to prevent hazard to personnel.
- 4.7.6 The protection system shall be designed with, but not limited to, all the necessary protections against short-circuits, overloads, overvoltage, reverse power, and lightning. The protection system shall comply with relevant IEC standards on solar system protection.
- 4.7.7 Lighting protection system shall encompass the use of air termination devices and be guided by IEC/ EN 62305-3/ VDE 0185-305-3. Surge protection devices (SPD) shall be installed both on the DC and AC side of the inverter. Additionally SPD shall also be installed on the LV side of the pad mounted transformer on the main distribution bus.
- 4.7.8 The Contractor shall design, supply and install a copper grounding system for all elements installed under this tender with a voltage over 48V. All electrical components and structures shall also be grounded in accordance with the NEC 2020 standards.
- 4.7.9 The Contractor shall perform a soil resistivity measurement on-site, which shall serve as input for the final design of the grounding system.

4.7.10 The Contractor shall design, supply and install the lightning arrester system.

4.8 Transformer

4.8.1 The Contractor shall supply and install a Pad Mounted Step Up Transformer.

The transformer shall be rated for inverter source operation and the environment in which it will operate.

4.8.2 The transformer must have a power rating of one (1.5) MVA or above with a step-up voltage of 13.8kV and low voltage input to match the output of the inverter along with all protection switchgear, circuit breakers, cables, etc.

4.8.3 The transformer should be the oil filled type and constructed of ventilated metal enclosure. Removal type, and outdoor duty operating under direct sunlight as per IS2026.

4.8.4 The winding material should be of electrolytic grade copper for both HV and LV windings.

4.8.5 Transformers should have all necessary protection features like silica gel breather, Buchholz relay, pressure relief device, magnetic oil level gauge, oil temperature indicator and winding temperature indicator.

4.8.6 Meet the following standards -: IEEE® C57.12.00, IEEE C57.12.34, IEEE C57.12.28, IEEE C57.12.29, IEEE C57.12.70, IEEE C57.12.80, IEEE C57.12.90, IEEE C57.91, DOE 10 CFR Part 431 and NEMA®.

4.8.7 The three (3) phase 60 Hz transformer shall be installed.

4.8.8 Transformer shall be supplied with a no-load tap changer with high voltage taps capable of operating at 2.5% above and below the nominal voltage at full rating.

4.8.9 Transformer shall be supplied with a fused disconnect switch on the transformer high voltage side to isolate the transformer in case of an internal fault.

4.8.10 Grounding system must be in accordance with the 2020 National Electrical Code.

4.9 Interconnection

4.9.1 The Contractor shall design, supply and install the interconnection of medium voltage power, control and monitoring between the PV system and the existing GPL grid and gensets.

4.9.2 Each independent 0.600 MWp PV sub-system must also be equipped with synchronization provisions, to provide for parallel operation with the other 0.600 MWp PV sub-system and/or battery inverter and/or the gensets.

4.9.3 Similarly, each genset shall be capable of synchronization with the PV plant and its sub-systems.

4.9.4 Parallel operation of the new PV power plant with the existing generator sets must not result in abnormal operating conditions.

4.10 Control

4.10.1 The Contractor shall supply and provide the installation and complete configuration of the Plant Energy Management System software for the supply management of the power generation including the integration with the existing diesel gensets.

4.10.2 The controls must be capable of communicating with all devices/sub-systems connected to it and shall provide all necessary real-time management and control functions.

- 4.10.3 Communication protocol shall adhere to the IEC60870-5-104
- 4.10.4 The solar PV system control shall be integrated with the current gensets control. The Contractor shall bear the cost of necessary modification(s) or upgrade(s) to the gensets control system to allow remote on/off control of the gensets.
- 4.10.5 When the solar PV output and the battery SOC reach a pre-set level that will allow the solar PV system (including the battery storage) to provide the whole power of the Leguan grid, the control system must be able to switch off the diesel genset/s.
- 4.10.6 The Contractor shall design, supply and install the SCADA system including the hardware and software and provide training and technical support on its operation.
- 4.10.7 Each independent 0.6 MWp PV sub-system shall be controlled from the local control panel, the hardware shall be installed in the BESS building/container and in the control room referred to in Item 3.6.11 which is to be erected/installed in the boundary of the PV Plant by the. Visualization and control shall be possible from the control room. Disconnection and connecting of the PV sub-systems shall also be possible from the Control Room, both manually and automatically.
- 4.10.8 The electrical parameters of each PV sub-system (inverter AC output voltage, current, power, frequency, etc.) must be displayed on the local control panels. Additionally, a local SCADA system must be provided with the possibility for real-time monitoring of all required PV sub-system parameters.
- 4.10.9 The PV power plant shall be remotely controlled from the Control Room and all required information with regard to the configuration of the system shall be made available (circuit breaker positions, parameter value monitoring etc.) and presented on a display.

4.11 Monitoring

- 4.11.1 The electrical meters must be class 0.5 as per ANSI 12.20.
- 4.11.2 The monitoring unit shall be equipped with a suitable communication interface for remote monitoring. The relays, control units and communication interface should be compatible with IEC 61850.
- 4.11.3 The monitoring unit must be able to display the following data:
- Solar irradiation on the inclined plane of the panels
 - Atmospheric temperature and module temperature
 - In each DC string: voltage, current and power
 - In each inverter AC output (PV inverter and Battery inverter): voltage, current, power for each phase and frequency
 - For battery inverters AC input (battery charging): voltage, current and power
 - Point of Interconnection at the solar PV farm: voltage, current and power. This meter will be used for calculating the performance guarantee energy.
 - Point of Interconnection at the diesel power plant: voltage, current and power. This meter will be used for calculating the losses in the transmission lines.
- 4.11.4 All parameters listed in the *Item 4.11.3* must be available in monitoring displays in the battery inverter station as well as in the Control Room.

4.11.5 All the parameters listed in the *Item 4.11.3* must be logged on an hourly basis (average values), more frequent loggings will also be accepted. The system shall be able to store all data for a period of one (1) year.

4.12 Commissioning

4.12.1 Commissioning refers to inspection and testing the solar PV power plant after installation and certifying that it operates as expected and is installed in accordance with the engineering and design plans and complies with all the regulations and standards specified.

4.12.2 The Contractor shall submit to the Contracting Agency the test procedures and protocols eight (8) weeks before testing.

4.12.3 The commissioning shall include at a minimum:

- Complete integrity test of all equipment
- Test and commissioning of the laid cables, according to IEC standards
- Electrical protection system commissioning, according to IEC standards
- Perform V_{oc} , I_{mp} string testing
- Perform IV curve tracing
- Perform thermal hotspot check with infrared images

4.13 Surveillance System

The contractor shall provide the following services:

4.13.1 Assessment of security requirements and identification of critical surveillance areas within the solar plant.

4.13.2 Procurement and installation of high-resolution cameras with wide dynamic range (WDR) and low-light capabilities.

4.13.3 Deployment of network video recorders (NVRs) or digital video recorders (DVRs) with at least 7 days storage capacity and redundancy.

4.13.4 Configuration of network infrastructure to support high-bandwidth video streaming and remote access.

4.13.5 Integration of video analytics software for threat detection and monitoring.

4.13.6 Implementation of cybersecurity measures including encryption, secure authentication, and regular updates.

4.13.7 Physical installation of surveillance equipment with appropriate tamper-proofing and security measures.

4.13.8 Testing, commissioning, and training of personnel on system operation and maintenance.

4.14 Training

- 4.14.1 The Contractor shall provide as part of the EPC, training on safety and best practice operation and maintenance of the PV power plant.
- 4.14.2 The training shall be provided on-site by a certified engineer after commissioning of the installation

4.15 Technical Support

- 4.15.1 The Contractor shall provide technical support of the whole solar PV system for a period of one (1) year.
- 4.15.2 Technical support shall include (but not limited to): on-demand troubleshooting (when required), system performance monitoring; guidance on operation and maintenance procedures, and a follow-up visit by the Contractor’s technical personnel at the end of the one (1) year period.
- 4.15.3 All Contractor’s personnel involved in any of the technical support activities shall be qualified individuals. A qualified person, as defined in the National Electrical Code (NEC) is, “One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved”.
- 4.15.4 The contractor is required to provide a detailed operation and maintenance manual for the entire Solar PV Plant

4.16 Economic Analysis

- 4.16.1 The EPC cost submitted by the Bidder will be converted to a “Simple Levelized Cost of Energy” (Simple LCOE) with the intention to favour the good quality and high efficiency equipment in the economic comparison of Bids.
- 4.16.2 The inputs for the calculation of the energy generated over twenty (20) years are:
 - Nominal power output of the solar farm, in kWp
 - Nominal efficiency of inverters (will be calculated as a weighted arithmetic mean of the efficiency weighted with the nominal output power
 - Minimum tolerance of the output power for the panels, in % of the nominal power)
 - Power output warranty of the PV panel. This information will be extracted from the PV panel power output warranty certificate.
- 4.16.3 The inputs for the Total Expenditure are:
 - EPC cost
 - Battery bank replacement cost over 20 years
 - PV inverters cost replacement over 20 years
 - Battery inverters cost over 20 years

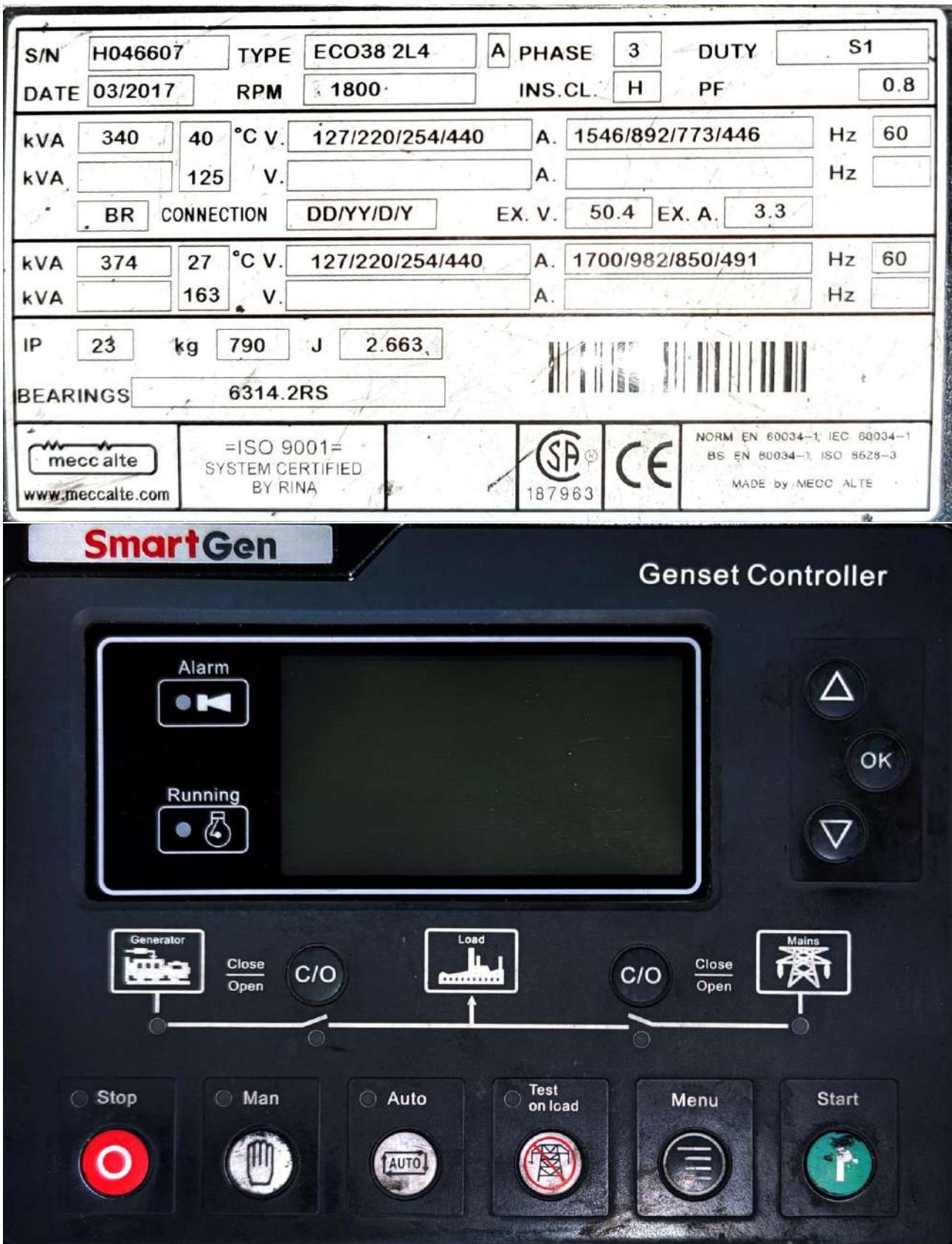
Appendix 1A: Genset and Electrical Details



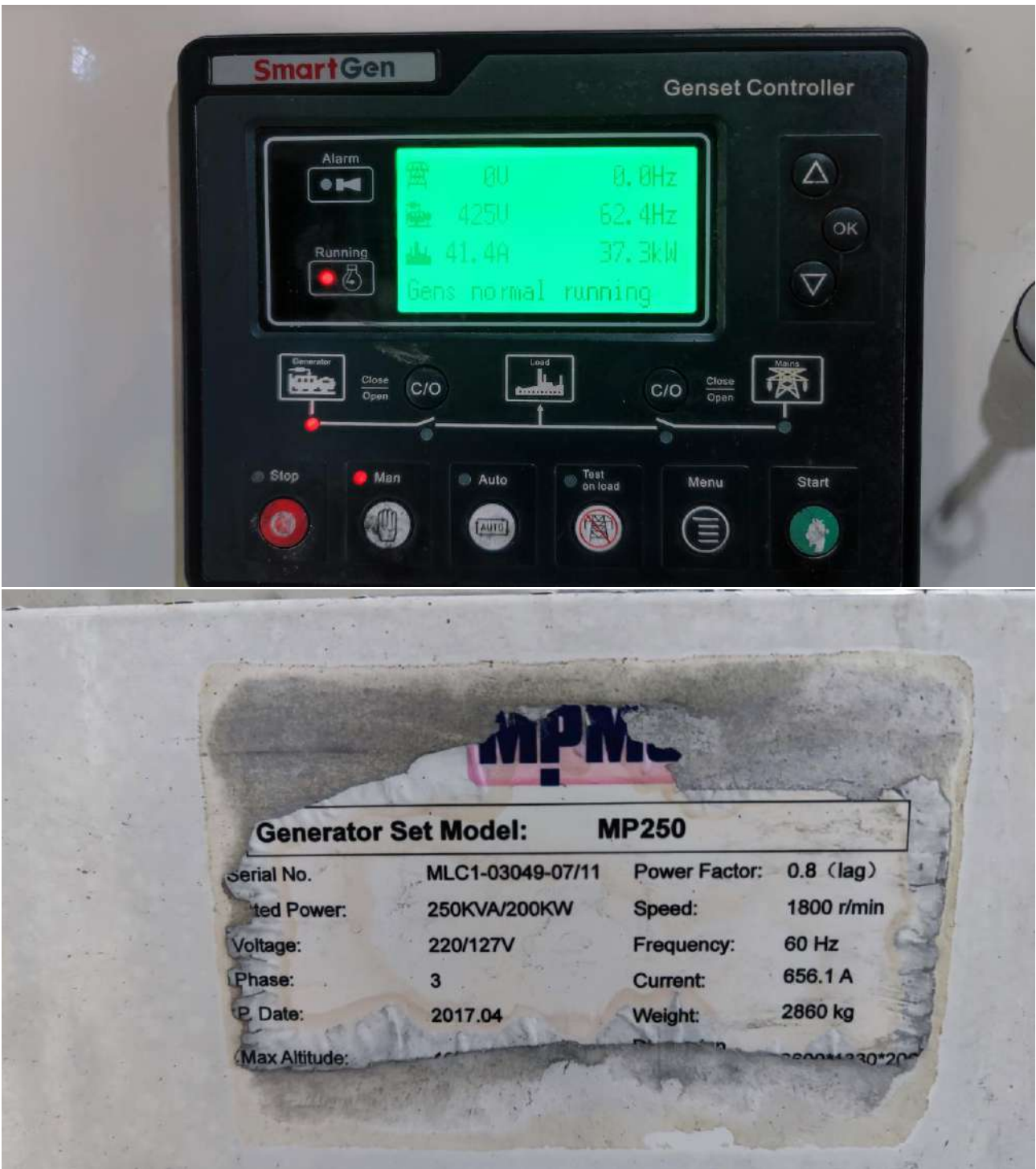
Existing Step-Up Transformers



Automatic Transfer Switch

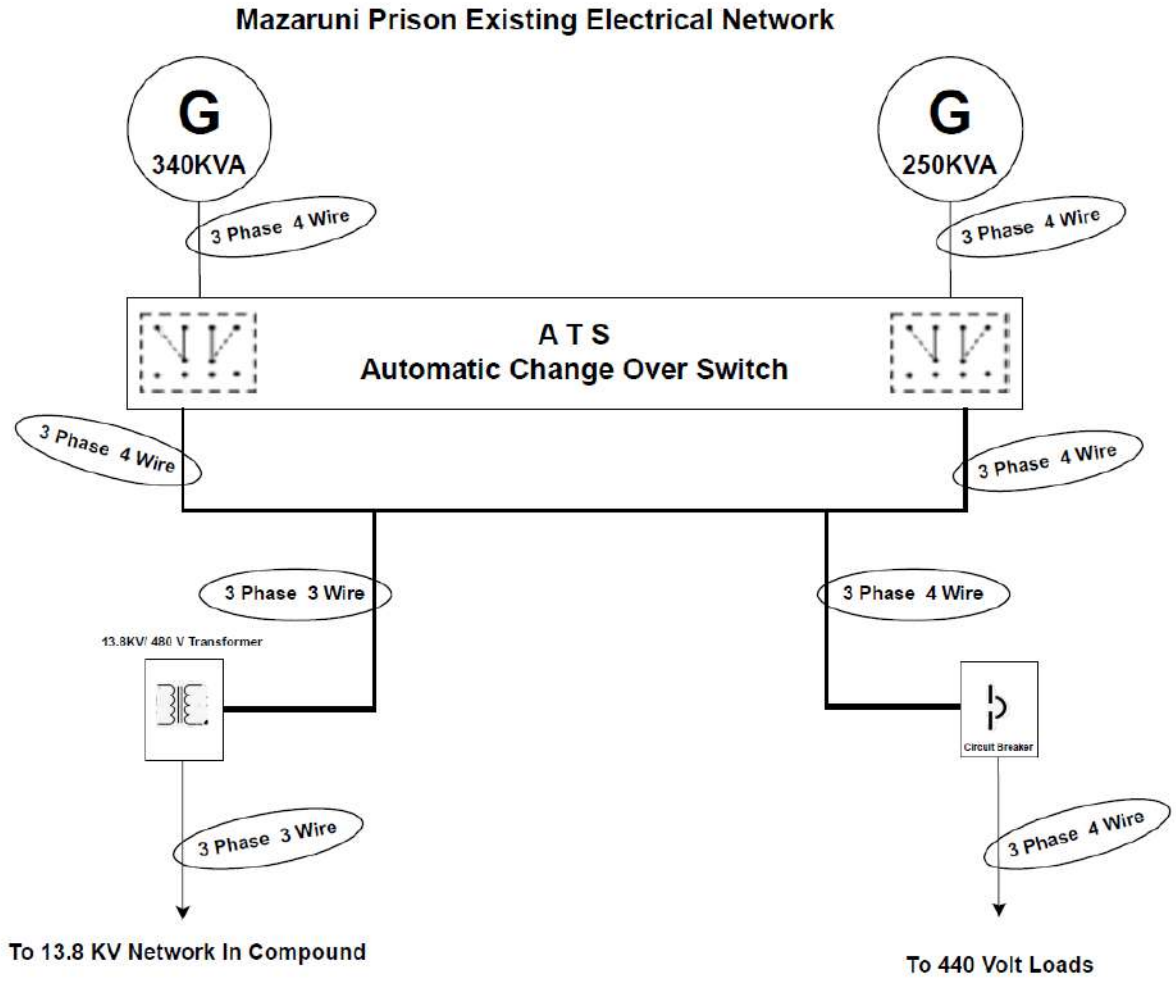


Genset # 1 and Controller



Genset # 2 and Controller

Appendix 1B: Mazaruni Prison Existing Switchgear Layout



Appendix 1C: Proposed General Layout

