



مجلس التعليم العالي

مجلس التعليم العالي، وزارة التعليم العالي والبحث العلمي، دولة فلسطين

الرجوع رقم: (IUL)389/389/2023/10

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نقطة 2 : تحديد وترتيب العروض المقدمة

Price (inc. GST)	70%	Bidder with the lowest price will be awarded highest points and the rest will be determined by fraction matrix basis.
Experience	10%	Bidder with the most installation experience will be determined by calculating the sum of installed kW. The bidder with the highest installed kW will be given the maximum points and the rest will be determined by fraction matrix basis.
Delivery (days)	10%	Bidder with the lowest number of delivery days will be awarded highest points and the rest will be determined by fraction matrix basis.
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بج ترقو 1 : ع لاسراو رستو سوسو سوج



SECRETARIAT OF THE HIRILANDHOO COUNCIL

Technical Information Sheet

**SUPPLY & INSTALLATION OF
SOLAR PV SYSTEMS**

FOR

**MASJIDUL LUBAABEE, AND
MASJIDUL SAVAAB**

INFORMATION SHEET v 1.0

RFP No. (IUL)389/389/2023/10

12th April, 2023

1. ABOUT THIS DOCUMENT

Secretariat of the hirilandhoo Council (hereafter **“The Council”**) is planning to use solar energy to power two mosques. The main objective of this project is to reduce expenditure on electricity bills and rely on solar panels to generate clean energy required for the building.

2. ADDITIONAL INFORMATION

The scope of the contractor is to design, supply, installation and maintenance of the on-grid photovoltaic system. The system should be able to generate enough energy required for the buildings mentioned Section 5.1.

3. GENERAL

The Contractor shall provide a detail Proposal which consists of the following topics:

3.1 TECHNICAL PROPOSAL

The Technical Proposal shall contain at least the following topics:

A. System Design

- i. PV System Design
- ii. Single Line Diagrams (including Grid Interconnection)

B. Datasheets and Certifications

- i. PV Module
- ii. On-Grid Inverters

C. Warranty

- i. PV Modules
- ii. On-Grid Inverter
- iii. Service Warranty

3.2 COMMERCIAL PROPOSAL

The Commercial proposal shall consist of the price of PV Systems for each site separately.

The Commercial proposal shall include subtotal, taxes and grand total of the project value separately.

The validity of the commercial proposal shall be at least 60 calendar days.

The Contractor shall clearly mention the project delivery duration in calendar days.

3.3 PERMISSIONS

The Council is responsible for obtaining necessary permissions from Utility company for grid connection.

The contractor shall provide the necessary technical documents to obtain necessary permissions from the Utility company

4. TECHNICAL REQUIREMENTS

The scope of the contractor is to design, supply, installation and maintenance (during the warranty period) of the on- grid photovoltaic systems. The system design and installation shall comply with the requirements mentioned in this document.

4.1 INTRODUCTION

- A. The Contractor shall provide a complete design for supply and installation of Solar Photovoltaic (PV) power plants, as outlined in the specification below.

PV Plant No.	1
Site Name	Masjidull Lubaabee
Energy production	1650 kWh / month
PV Requirement	13.58 kWp
Roof Dimensions	<i>Attached with ANNEX</i>
Height of the Building	12 ft
PV Plant No.	2
Site Name	Masjidull Savaab
Energy production	700 kWh / month
PV Requirement	5.4 kWp

- B. The solar power plant will be grid-connected via net metering with the local electricity distribution company.
- C. The designs, equipment and installation standards shall comply with the local and international regulations and standards including the laws of the local authorities and the standards of the International Electro-Technical Commission (IEC). The Vendor shall include for all necessary equipment, materials and work practices to comply with the mentioned standards and regulations, even where not precisely specified in this document.

4.2 MATERIAL CHARACTERISTICS AND STANDARDS

The material supplied shall comply with the international standard of PV Systems. All equipment must be in accordance with the latest issues of the following applicable codes, standards and regulatory bodies (or equivalent).

- A. Maldives Energy Authority Codes and Regulations.
- B. IEC 61730; IEC 61730-1:2004 Ed. 1.0 and IEC 61730-2:2004 Ed. 1.0 - Photovoltaic module safety qualification.
- C. IEC 61215 & IEC 61646; IEC 61215:1993 Ed. 1.0 and IEC 61215:2005 Ed. 2.0 – Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval.
- D. IEC 60364-7-712; Electrical installations of buildings - Part 7-712: Requirements for special installations or locations - Solar photovoltaic (PV) power supply systems.
- E. IEC 61727 Photovoltaic (PV) systems - Characteristics of the utility interface.
- F. IEC 61683 Photovoltaic systems - Power conditioners - Procedure for measuring efficiency.
- G. IEC 62446 Grid connected photovoltaic systems - Minimum requirements for system documentation, commissioning tests and inspection.

4.3 SUPPLY SCOPE

- A. The solar power plant shall include but is not limited to support structures, foundations and fixings, PV modules, inverters, control systems, circuit combiners, AC distribution boxes, metering equipment, cable trays and cabling.
- B. The Contractor's complete design shall be submitted after commencement of works. This design shall include all drawings, equipment and material specifications.
- C. The contractor shall provide details of the manufacturer and the technical specifications for each major equipment (PV Module, Inverter, Combiner Box etc.) included in the design.
- D. The contractor shall provide technical support/documents which may necessary for obtaining permissions for Net Metering from local power Distribution Company.

4.4 QUALITY ASSURANCE REQUIREMENT

The Contractor must maintain a quality system that conforms to the current requirements of British Standards 5750 Part 1 or to other equivalent National or International Standards.

5.5.1 PHOTOVOLTAIC MODULE

- A. The PV module used must qualify to the latest edition of any of the following IEC PV module qualification test or equivalent to BS Standards.
- B. In addition, PV modules must qualify to IEC 61730 Part I & Part II, for safety qualification testing. For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701.
- C. The total power shall be obtained by streams of PV module.
- D. PV modules shall be either monocrystalline or multi crystalline.
- E. PV modules shall be in 1/3-cut cell layout Mono PERC technology.
- F. PV modules shall be PID resistant.
- G. PV Modules shall be Aluminum framed with hard face covers.

- H. The PV module selection shall be made from state of the art of the PV technology with the best relation space/production as possible.
- I. PV module brands shall be declared with datasheet and justified.
- J. Stream voltages should be average voltage to avoid losses on low voltage transfer which increases the length of wiring and not too high voltage to avoid magnetic field production with relevant thunder shot possibility.
- K. PV module shall come to the site properly tested.
- L. PV module shall come to the site properly packaged to avoid damaging during shipment.
- M. PV module shall comply above, Material characteristics and standards.
- N. PV module guarantees 25 years power performance with not more than 2% first year power degradation and 0.55% annual power attenuation.
- O. PV module guarantees 12 years against any kind of production defect.

5.5.2 ON-GRID INVERTER

- A. The Contractor shall supply necessary on-grid inverters for the correct operation of the system, and which allow for future expansion of the PV power plant in phases.
- B. The Council understands the most critical component of a PV System is the Inverter. Therefore, The Council expects the Contractors to propose robust, reliable and low failure rate proven Inverters which can work efficiently for more than 10 years without any major failure in hot and humid environments.
- C. The Contractor shall provide details of the following characteristics for each inverter:
 - i. Max input power
 - ii. Max output power
 - iii. Efficiency rating
 - iv. Protection features

- v. Voltage, current and power ratings
 - vi. Communication capabilities
 - vii. Operating parameters
 - viii. Controls and displays
 - ix. Standards and certifications
- D. The inverters shall have an efficiency of 97% - 98% or above.
- E. The inverters shall have an inbuilt DC Isolation Switch.
- F. The inverters shall have surge protection.
- G. The inverters shall have capability to remote monitoring of the system performance through internet.
- H. The inverters make/brand must be from one of the brands:
- i. ABB
 - ii. Enphase Energy
 - iii. Huawei
 - iv. Fronius International GmbH
 - v. Ginlong Solis
 - vi. SMA Solar Technology AG
 - vii. Growatt
 - viii. Sungrow

5.5.3 COMBINER / AC DISTRIBUTION BOX

The Contractor shall supply all distribution boards and combiner boxes necessary for the protection of the cabling and equipment within the solar power plant installation in accordance with IEC 62271 and IP65-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and

connecting cabling.

5.5.4 EARTHING

The Contractor shall design and provide installation for a complete earthing & grounding system for the complete solar PV installation. PV Arrays and Inverters must be earthed separately. In addition, the Contractor shall ensure surge protection devices properly installed at both AC and DC ends.

5.5.5 CABLING

The contractor shall use aluminum cable trays for DC cable laying over the roof. Cable in the cable trays shall occupy less than half of the total cable tray diameter to avoid heat buildup inside the cable trays.

5.5.6 WARRANTY

- A. PV modules used in solar power plants must be warranted by the manufacturer for output wattage, which should not be less than 90% within the first 10 years and 80% at the end of 25 years.
- B. Inverter must have at least 5-year manufacturer backed warranty.
- C. Contractor must be responsible for Service Warranty at least 2 years from the date of PV Plant commissioning date.

5.5.7 MONITORING SYSTEM

The Solar Power Plants must have the functionality to monitor over internet.

5. PROJECT EVALUATION CRITERIA

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6. ANNEX

6.1 ROOF PICTURES (MASJIDULL LUBAABEE)



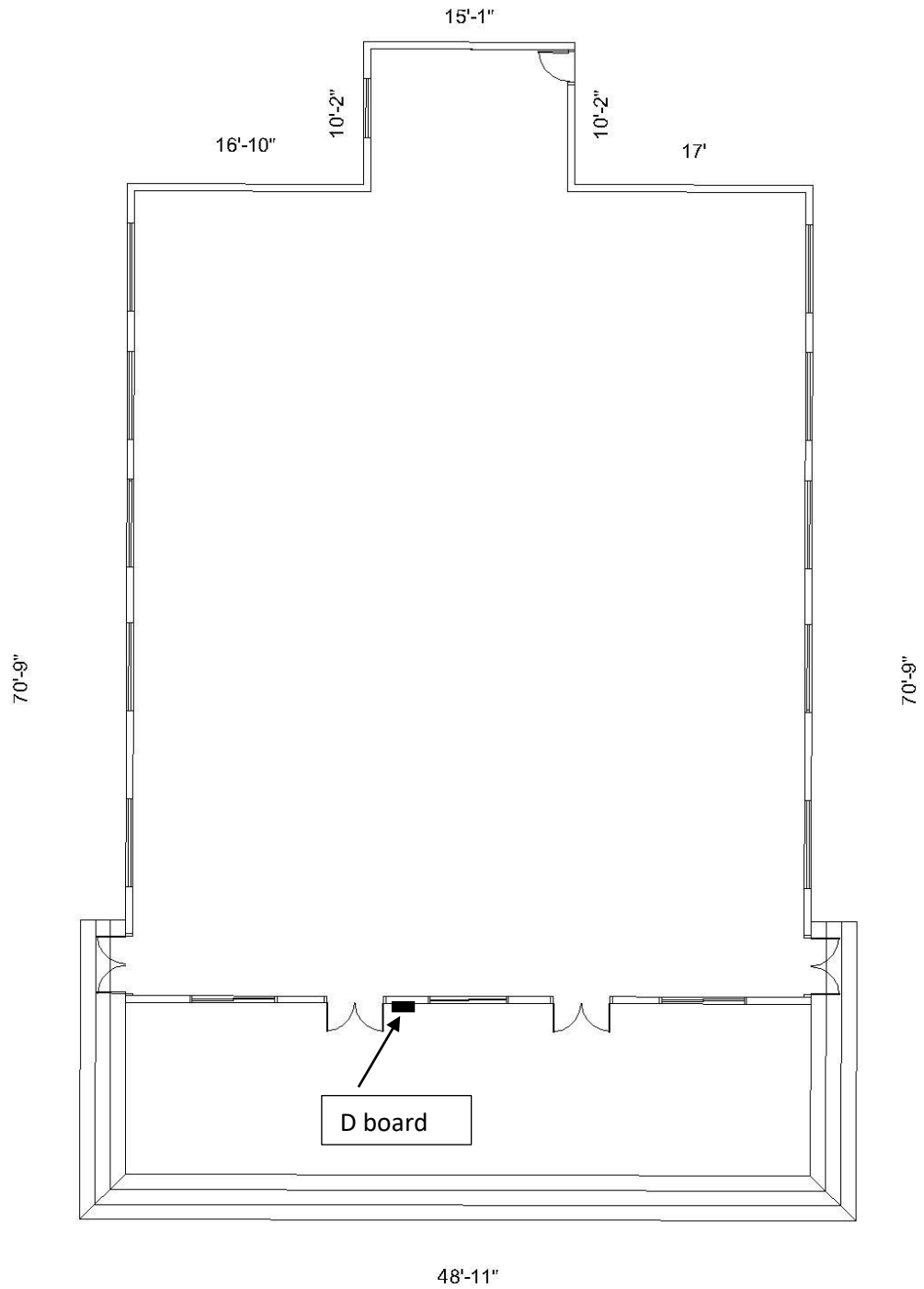
6.2 ROOF PICTURES (MASJIDULL SAVAAB)



6.3 DIMENSION

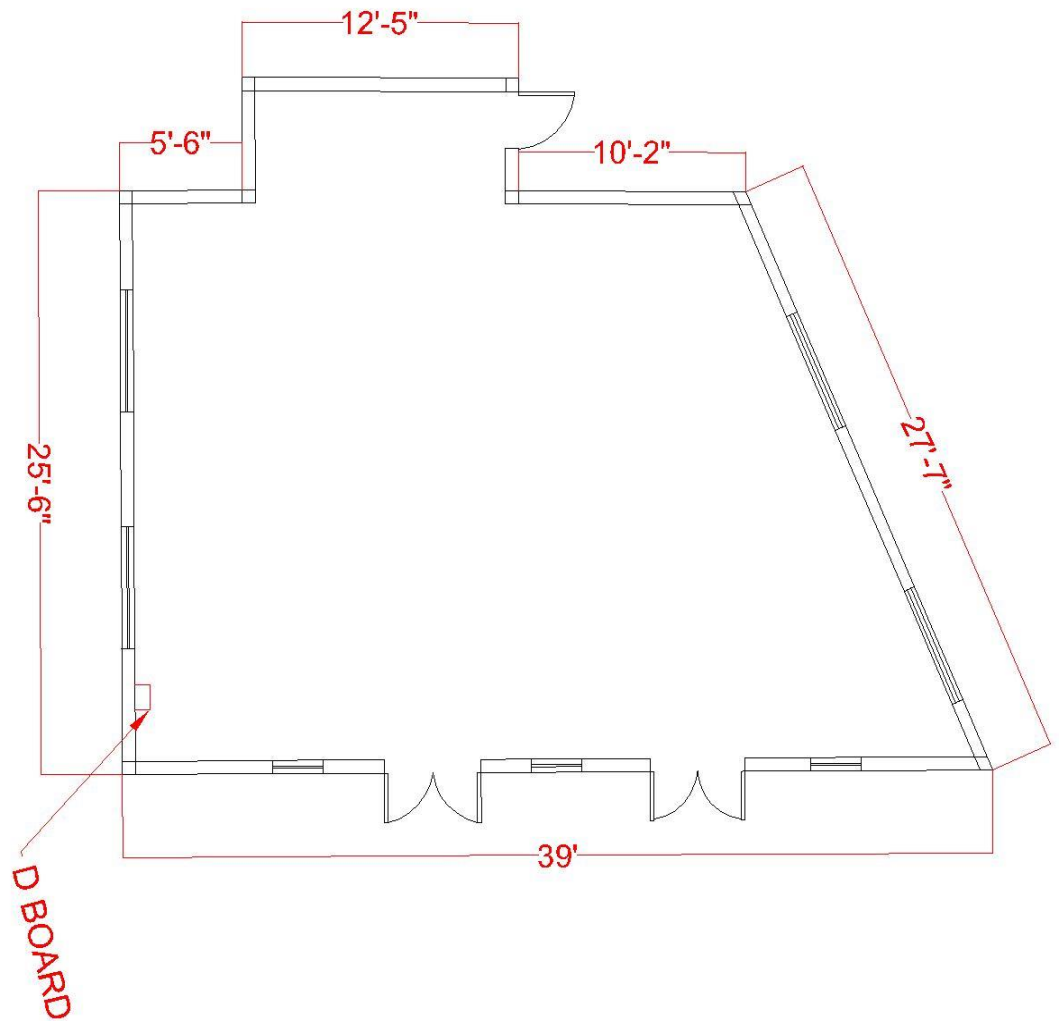
A. Masjidul lubaabee

MASJIDULL LUBAABEE



B. Masjidull Savaab

MASJIDULL SAVAAB



6.4 ADITIONAL INFORMATION

سولہ ماہی : 2



دولة فلسطين
السلطة الوطنية
وزارة التربية والتعليم
الجامعة الفلسطينية

مذكرة إدارية

مذكرة إدارية

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