EDAMA

ENERGY, WATER & ENVIRONMENT PRODUCTIVITY

Request for Proposal

RFP No. 01/2015

Design, Supply, Delivery, Installation and Commissioning of 107 kWp Grid-Connected Solar Photovoltaic System

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EDAMA – Eco-Villages Phase II Project
Tafila & Ghor Al Mazraa

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Contents

1 Overview 4

1.1 About EDAMA Phase II Project 4
1.2 Project Scope and Purpose 4
1.3 Description of Sites 5

1.3.1 Tafila Sites: 6
1.3.2 Ghor Al- Mazraa Sites 17

2 Qualifications of Bidders 21
3 General Terms and Conditions 23

3.1 Terms of Reference 23
3.2 RFP Time Plan 27
3.3 RFP Bond 27

3.3.1 Bid bond 27
3.3.2 Performance Bond 28
3.3.3 Maintenance Bond 28

4 General Requirements 28

4.1 Technical Requirements 28
4.2 Financial Requirements 31

5 Offer Format 31

5.1 Technical Offer 31
5.2 Financial Offer 33

6 Component Specification 33

6.1 PV Modules 33
6.2 PV Mounting Structures 34
6.3 On- Grid Inverters 34
6.4 PV/ AC Cables and Conduits 35
6.5 AC Distribution Boxes 35

7 Maintenance 36
8 Training 36

8.1 Training Scope 36
8.2 Training Requirements 36

9 Pre-Commissioning 37
10 Commissioning and Testing Plan 37
11 Final Acceptance 38
12 Evaluation Criteria 38

12.1 Evaluation Step 1: Technical Evaluation (out of 70 marks): 38
12.2 Evaluation Step 2: Financial Evaluation (30 points) 39
12.3 Evaluation Step 3: Final Evaluation (100 points) 39

13 Terms of Payment 40
14 Penalties 40
15 Additional Special Conditions 40

16 Annexes 41

List of Tables

Table 1: System size in each site 5
Table 2: RFP Time Plan 27
Table 3: Summary- Technical Evaluation Criteria 39
Table 4: Summary - Financial Evaluation Criteria 39

1 Overview

1.1 About EDAMA Phase II Project

EDAMA Association launched the Eco-Villages initiative to turn marginalized and impoverished areas, such as the Jordan Valley, into model Eco-Villages. The pivotal goals of this initiative are to channel Corporate Social Responsibility (CSR) activities in underprivileged areas and prove the economics and benefits of energy efficiency measures and renewable energy systems.

EDAMA received sponsorship for Phase (I) of the Eco-Villages Initiative from the Arab Potash Company. 30% of Ghor Fefa's electricity consumption was covered by installing PV systems on 9 buildings as well as 3 PV-powered light poles.

EDAMA is embarking on Phase (II) of the Eco-Villages Initiative, in which PV systems will be installed on civil service organisations to produce tangible social and economic impacts. Following consultation with the Arab Potash Company, it was decided that sites in Ghor Al Mazra'a and Tafila will be the beneficiaries of Phase II. The sites are Ghor Al Mazra'a Health Center and Tawahin Al Sokkar Mixed High School. Sites in Tafila are Al-Eiss Health Center, Tafila High School for Girls, Tafila High School for Boys,Tafila Big Mosque and Al-Rowaim Mosque.

1.2 Project Scope and Purpose

EDAMA aims to utilize renewable energy to harness its financial, environmental and social benefits. EDAMA plans to install seven solar on-grid photovoltaic generation systems in different locations throughout Tafila & Ghor Al Mazraa areas.

EDAMA is requesting proposals for the purpose of contracting with a qualified company to develop, permit, engineer, design, procure, construct, interconnect, deliver, test, commission and start-up turnkey grid-connected solar photovoltaic systems with a total capacity of 107 kWp for the different project sites specified in Table 1:

Table 1: System size in each site

No.	Location	Site Name	Nameplate Minimum PV Peak Power (kWp)
1	Tafila	Tafila Boys High School	12
2	Tafila	Tafila Girls High School	5
3	Tafila	Tafila Big Mosque	20
4	Tafila	Al-Eiss Health Center	18
5	Tafila	Al-Rowaim Mosque	8
6	Ghor Al Mazraa	Tawaheen Al Sokkar School	12
7	Ghor Al Mazraa	Ghor Al Mazraa Health Center	32
		Total	**107**

Bidders for this RFP shall propose an ***EPC offer*** of ***107 kWp*** grid-connected solar photovoltaic systems, for the seven locations mentioned in the table above and take into account the facilities' electrical demand, roof conditions, load patterns, available solar resources, costs and other relevant factors. The bidders are allowed to coordinate with international companies and subcontractors upon Joint venture agreements (consortiums specifically for this project are not allowed), under the condition of having the local company as a project leader.

Proposals submitted for this RFP shall have separate technical and financial offers and the proposed system shall comply with the relevant laws and regulations issued by the Ministry of Energy & Mineral Resources (MEMR), Energy & Minerals Regulatory Commission (EMRC) and should be in line with the requirements of the Electricity Distribution Company (EDCO).

1.3 Description of Sites

As mentioned above, EDAMA phase II project consists of seven different sites that will be connected to on- grid solar systems with a total capacity of **107 kWp**. Each location has its own design and characteristics.

1.3.1 Tafila Sites:

1.3.1.1 Tafila Boys High School مدرسة الطفيلة الثانوية للبنين

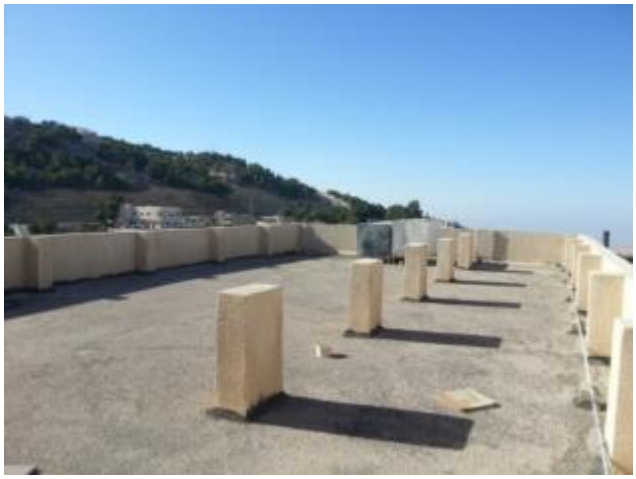
Building Specifications:

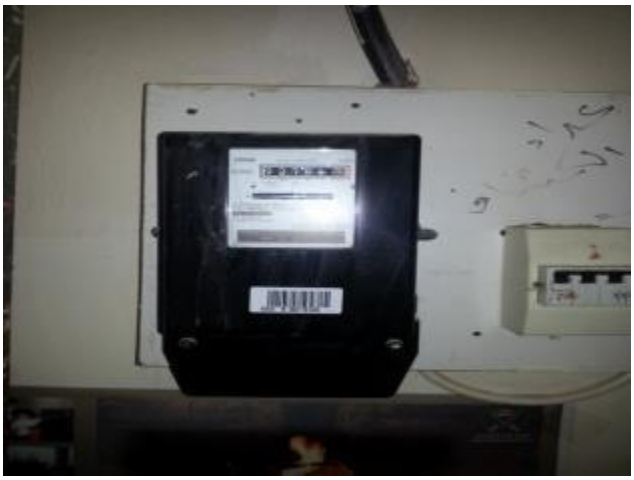
PV system Size (kWp)	PV System Type	No of Floors	Enough Space
12	3-Phase On-grid (net-metering) Roof Top System	3 floors	yes

Site Coordinates:

30°49'59.96" N 35°37'02.31" E

Site Photos:





Remarks:

- The PV system size is 12 kW based on the average monthly electricity consumption of the school.
- The system will achieve 100% savings on the total electricity bill.
- There is enough space on the roof.
- Roof contains some obstacles.
- The main circuit breaker needs maintenance (rewiring).
- It is the responsibility of the contractor to fix the wiring to the circuit breaker.
- In case there is a need to replace the circuit breaker with a new one, it is the responsibility of the contractor to cover this expense.

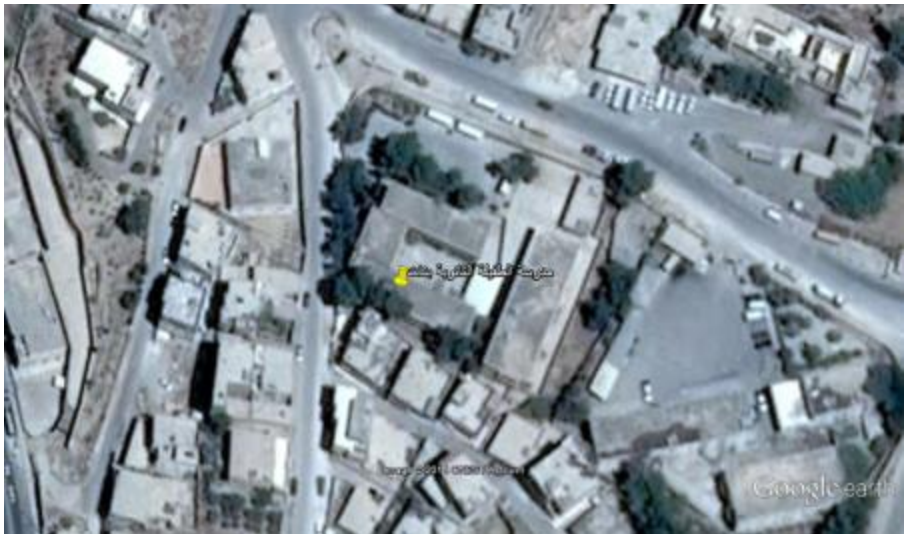
1.3.1.2 Tafila Girls High School مدرسة الطفيلة الثانوية للبنات

Building Specifications:

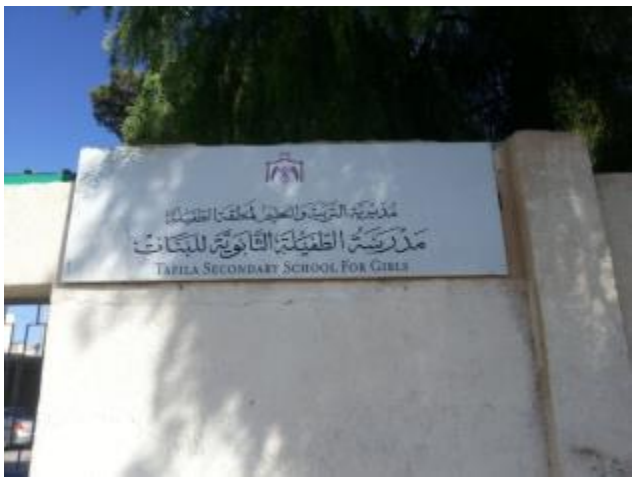
PV system Size (kWp)	PV System Type	No of Floors	Enough Space
5	3-Phase On-grid (net-metering) Roof Top System	2 floors	yes

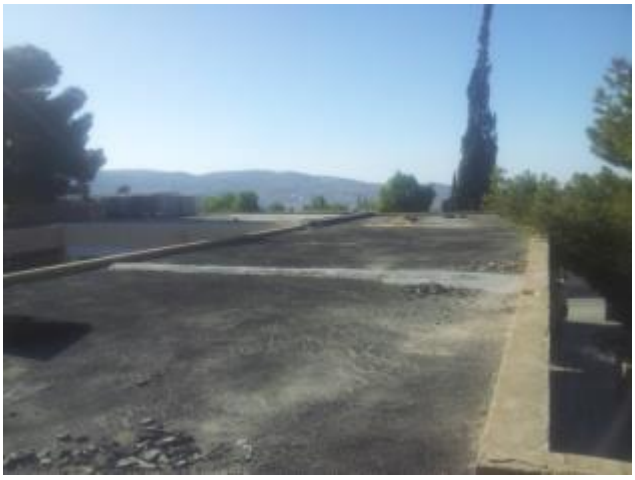
Site Coordinates:

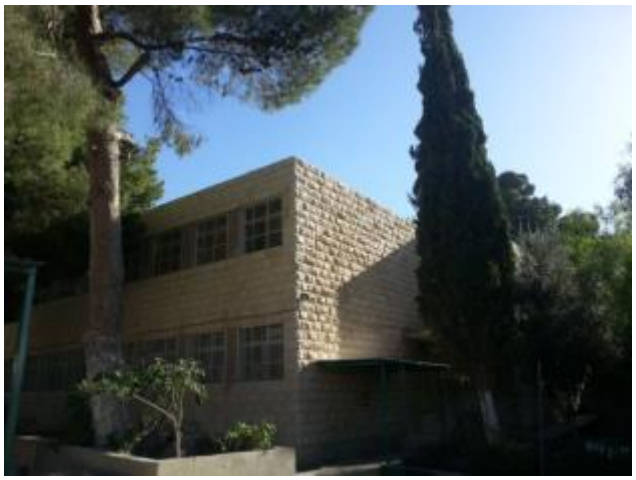
30°50'06.31" N 35°36'21.66" E



Site Photos:







Remarks:

- The PV system size is 5 kW based on the average monthly electricity consumption of the school.
- The system will achieve 100% savings on the total electricity bill.
- There is enough space on the roof.

1.3.1.3 Tafila Big Mosque جامع الطفيلة الكبير

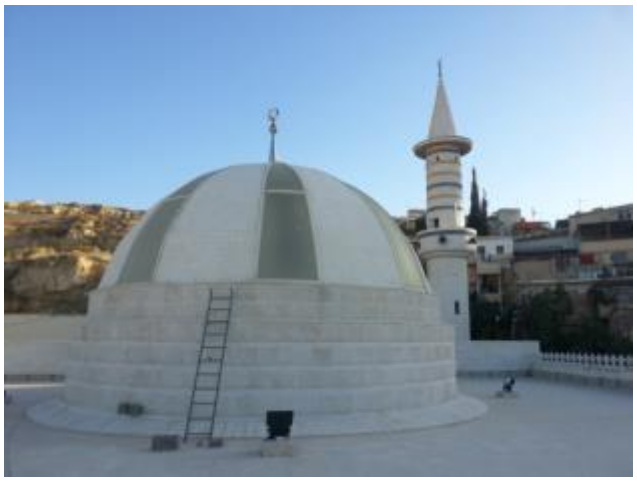
Building Specifications:

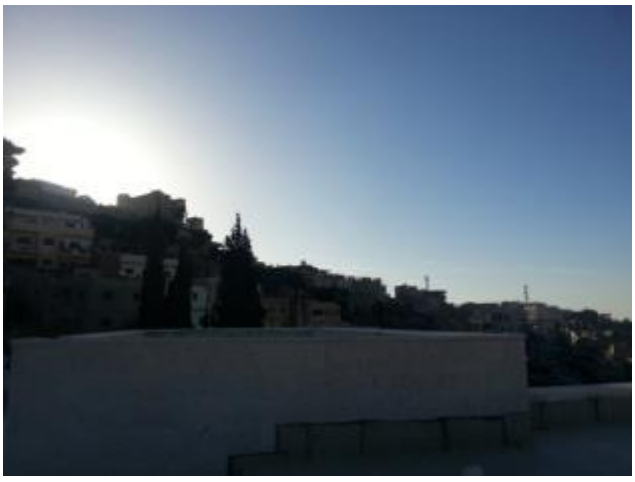
PV system Size (kWp)	PV System Type	No of Floors	Enough Space
20	3-Phase On-grid (net-metering) Roof Top System	2 floors	yes

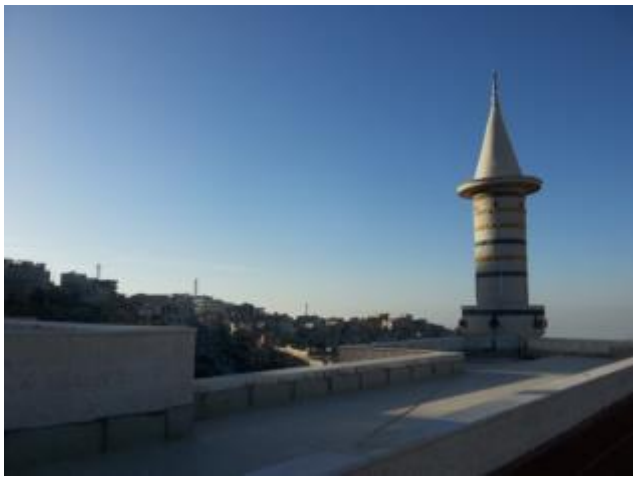
Site Coordinates:

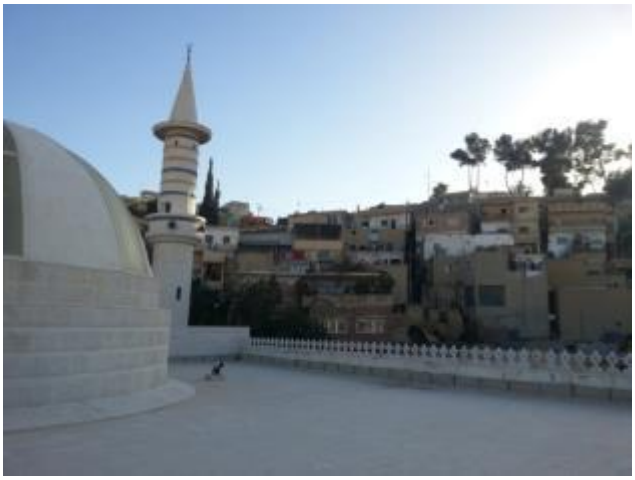
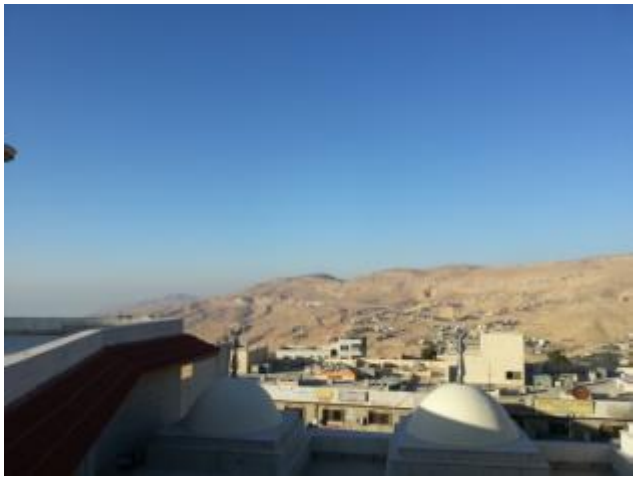
30°50'10.84" N 35°36'30.52" E

Site Photos:







Remarks:

- The PV system size is 20 kW based on the average monthly electricity consumption of the mosque.
- The system will achieve 60% savings on the total electricity bill.
- There is enough space on the roof.
- Due to the high dome in the middle of the roof & the minaret, some shading will happen on the PV modules which will negatively affect energy production.

1.3.1.4 Al-Eiss Health Center مركز صحي العيص

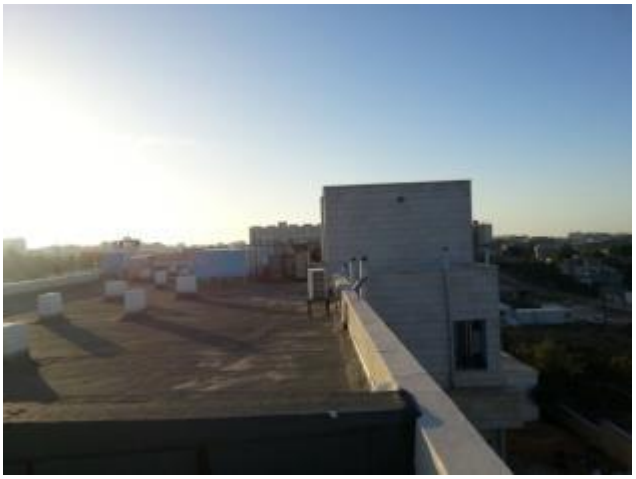
Building Specifications:

PV system Size (kWp)	PV System Type	No of Floors	Enough Space
18	3-Phase On-grid (net-metering) Roof Top System	3 floors	yes

Site Coordinates:

30°50'29.79" N 35°38'44.58" E

Site Photos:



Remarks:

- The PV system size is 18 kW based on the average monthly electricity consumption of the health center.
- The system will achieve 100% savings on the total electricity bill.
- There is enough space on the roof.

1.3.1.5 Al-Rowaim Mosque مسجد الرويم الكبير

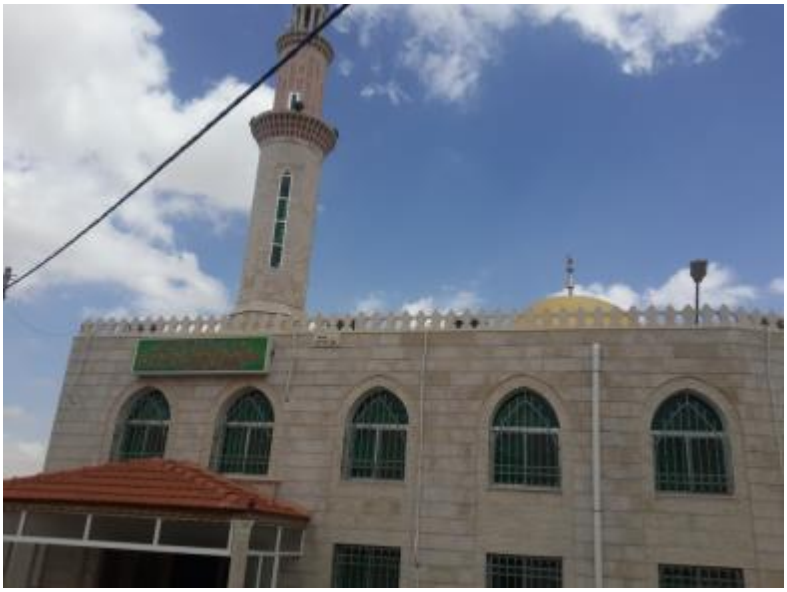
Building Specifications:

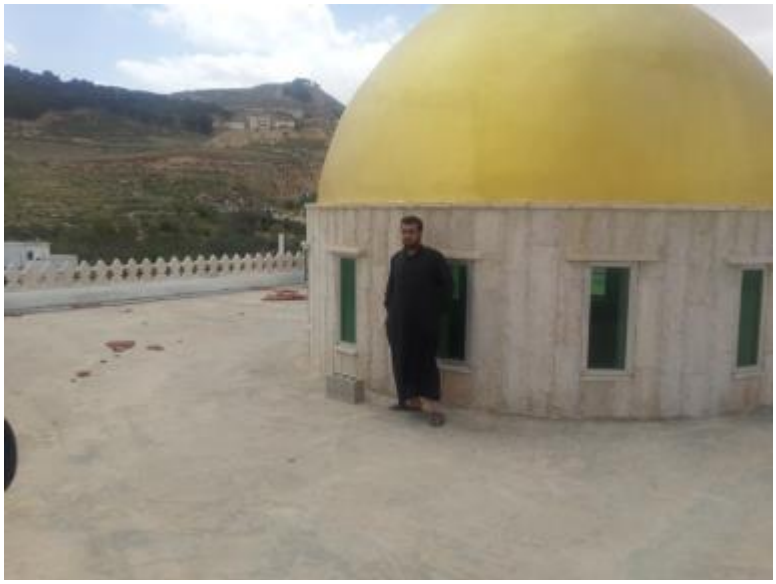
PV system Size (kWp)	PV System Type	No of Floors	Enough Space
8	3-Phase On-grid (net-metering) Roof Top System	2 floors	yes

Site Coordinates:

30°49'11.69"N, 35°34'59.29"E

Site Photos:





Remarks:

- The PV system size is 8 kW based on the average monthly electricity consumption of the mosque.
- The system will achieve 100% savings on the total electricity bill.
- There is enough space on the roof.

1.3.2 Ghor Al- Mazraa Sites

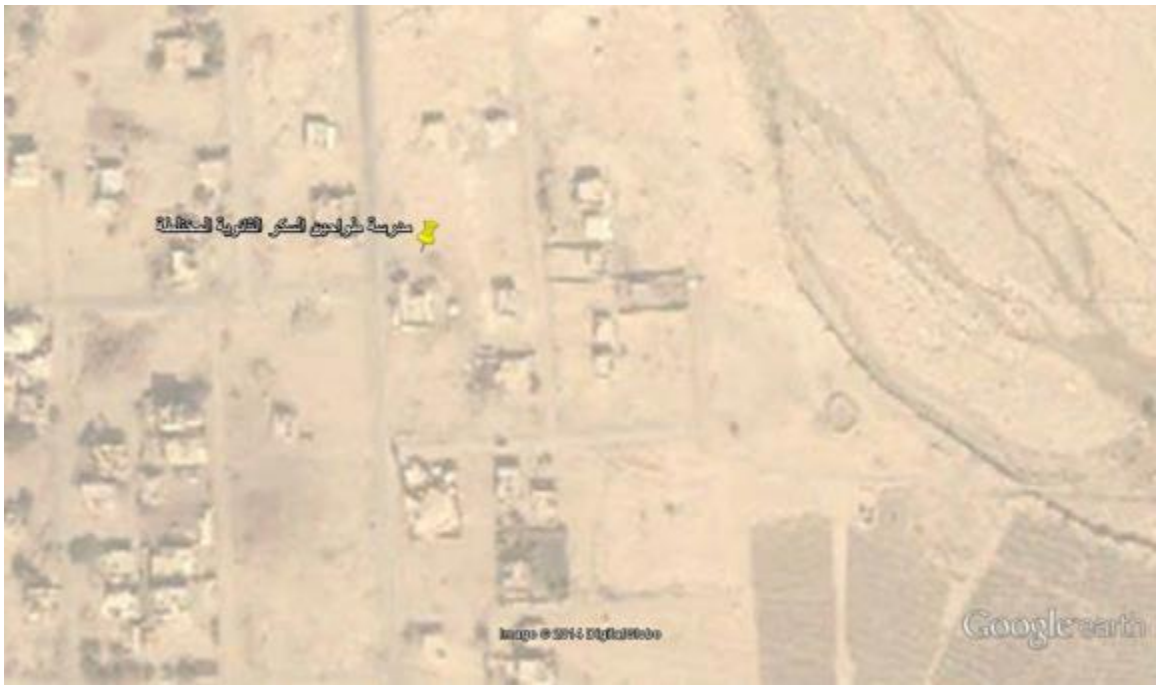
1.3.2.1 Tawaheen Al Sokkar School مدرسة طواحين السكر

Building Specifications:

PV system Size (kWp)	PV System Type	No of Floors	Enough Space
12	3-Phase On-grid (net-metering) Roof Top System	3 floors	yes

Site Coordinates:

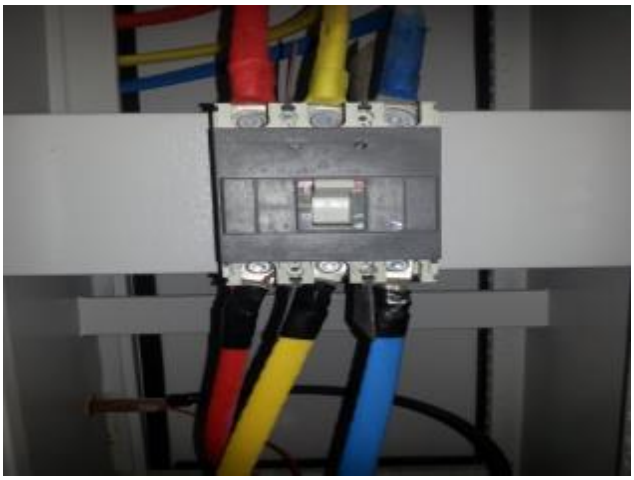
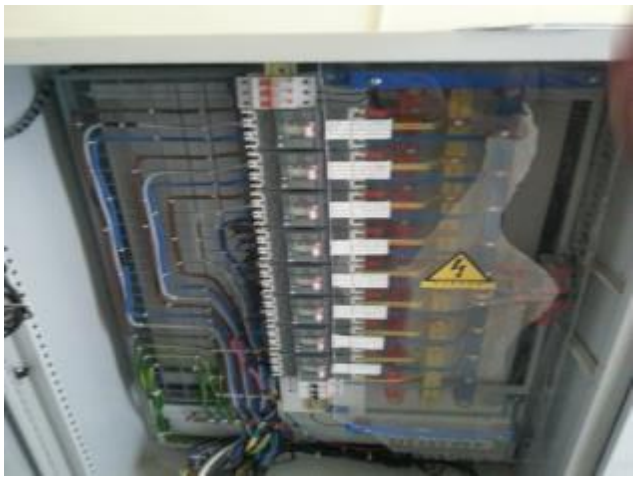
31°15'16.93" N 35°31'22.19" E



Site Photos:





Remarks:

- The PV system size is 12 kW based on the average monthly electricity consumption of the school this year.
- The system will achieve 35% savings on the total electricity bill.
- There is enough space on the roof.

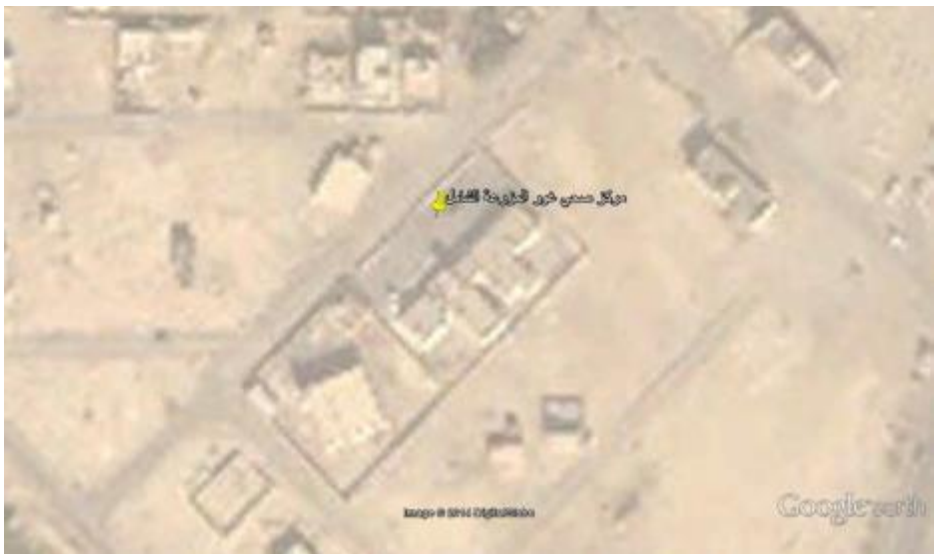
1.3.2.2 Ghor Al Mazraa Health Center مركز صحي غور المزرعة

Building Specifications:

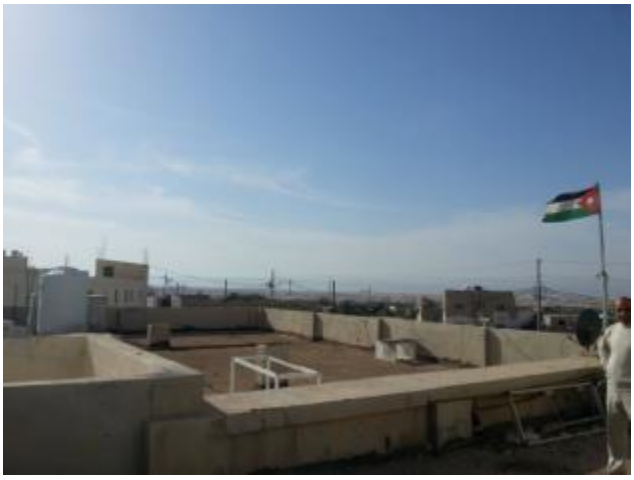
PV system Size (kWp)	PV System Type	No of Floors	Enough Space
32	3-Phase On-grid (net-metering) Roof Top System	1 floor	yes

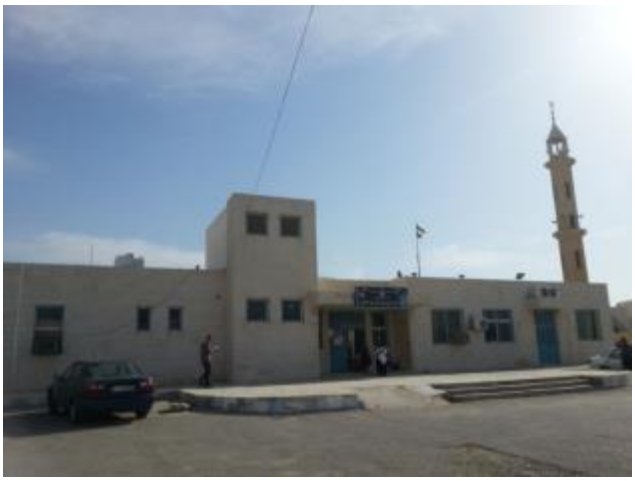
Site Coordinates:

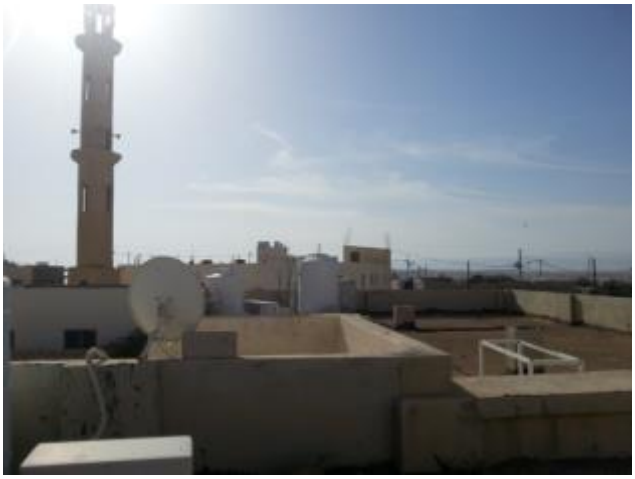
31°15'38.03" N 35°31'11.91" E

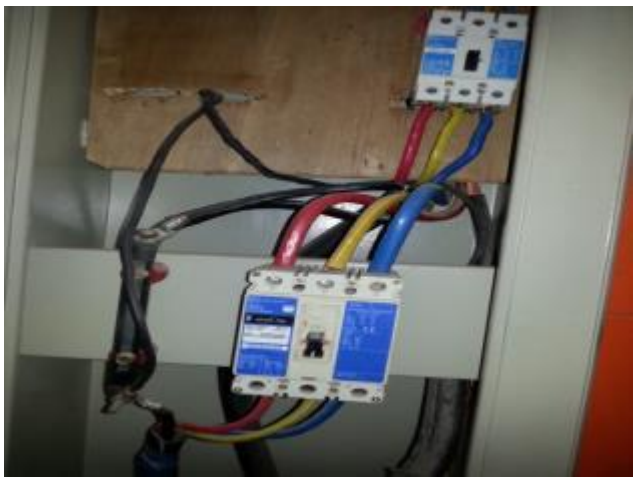


Site Photos:









Remarks:

- The PV system size is 32 kW based on the average monthly electricity consumption of the health center.
- The system will achieve 25% savings on the total electricity bill.
- There is enough space on the roof.
- Roof contains some obstacles.

2 Qualifications of Bidders

Companies wishing to propose shall ensure that they satisfy the following criteria and provide all of the below mentioned documents:

- The bid is open on equal terms to all EDAMA members who have an active membership (fully paid their membership fees). International companies who wish to be considered for evaluation for the purposes of this RFP must have a joint venture with an active EDAMA member. The Jordanian company should be appointed Lead Partner.

- The Jordanian company must be a registered company, firm or corporation in Jordan Ministry of Industry and Trade in the field of renewable energy projects, solar system integration, solar system electronics or any PV related technologies.

- Offers submitted by companies that have a joint venture agreement shall fulfil the following requirements.

- The Jordanian partner must be appointed as the Lead partner, and this appointment must be confirmed by submission of powers of attorney signed by legally empowered signatories representing all the individual partners.

- The offer must include a sealed and stamped joint venture agreement registered at the Ministry of Industry and Trade (MIT) and several liability for the execution of the contract, the lead partner is authorized to bind, and receive instructions for and on behalf of all partners, individually and collectively.

- All partners in the joint venture are bound to remain in the joint venture. The joint venture winning this contract must include the same partners for the whole performance period of the contract other than as may be permitted or required by law.

- In case of termination of the joint venture agreement during the project implementation period, the lead partner will incur the penalties of liquidating the timely available bond in addition to the loss value estimated by EDAMA legal parties.

- The bidder shall nominate a technical team to perform the design, installation and all supporting tasks. The team shall include at least:

  - A qualified **project manager** and a **site engineer**, who should have at least a B.Sc. in electrical engineering, mechanical engineering, or any related specialty with a minimum experience of 2 years in similar PV system projects.

  - A **civil engineer** held responsible for managing all structural and civil works on-site with at least a B.Sc. in civil engineering.

  - An experienced **trainer**.

- The bidder shall provide a description of the capabilities and experience of the proposed team and resumes of all key project personnel. Resumes shall include years with the firm, years in the solar industry, project experience not less than two projects similar to that proposed.

- The bidder shall provide a list of similar executed PV projects (design, installation and maintenance) including brief descriptions.

- The bidder must inform EDAMA of any subcontractor in advance, and EDAMA has the right to accept or reject the subcontractor.

- A bidder who has been convicted of legal misconduct may be excluded from the awarding of contracts.

- A bidder who is found guilty of making false declarations will be subject to the liquidation of the bid bond and shall be excluded from the process, and if this happens after awarding the contract, the contractor will be subject to financial penalties representing 10% of the total value of the contract being awarded in addition to the liquidation of the performance bond.

3 General Terms and Conditions

3.1 Terms of Reference

- All proposed documents are considered confidential and can only be shared with EDAMA and its third party consultant team.

- The bid is open on equal terms to all active EDAMA members (who fully paid their membership fees).

- Bidders are allowed to coordinate with international companies upon Joint venture agreements (consortiums specifically for this project are not allowed), knowing that the local company must be the project leader.

- The Bidder shall submit one original hard copy and one soft copy (CD) of the offer in two separate envelopes (one envelope for the technical offer and the other for the financial offer) sealed and stamped. Any bidder who submits the technical and financial offers in one/the same envelope or CD will be directly disqualified. The offers shall be delivered to EDAMA's physical address by hand.

- The bidder must fill the **technical compliance sheet** and submit it in the technical offer, knowing that not completing and submitting the technical compliance sheet **will directly disqualify the offer**. [Annex 1: Technical compliance sheet]

- EDAMA is exempted from VAT and their exemption letter will be available upon request for the winning bidder.

- The bidder shall propose an EPC offer of a **107 kWp** grid-connected Solar Photovoltaic System distributed at seven locations; five sites in Tafila & two sites in Ghor Al Mazraa, on the available rooftop spaces of the selected sites taking into

account the facilities' electrical demand, roof conditions, load patterns, and the monthly solar radiation and temperature for each site, costs and other relevant factors.

- The bidder shall respect the safety, security and general regulations.
- All bidders must use the latest version of ***PVsyst*** for all design simulations.
- The bidder shall apply Jordanian "labour law" that forbids the use of underage labour, non-resident or unlicensed labourers.
- The validity of the offer shall be 90 days.
- All prices shall be clear and in Jordanian Dinar (JOD) currency, including any additional VAT, if applicable.
- The bidder is open to any requested clarifications during the offers evaluation phase, considering that the offer price shall not be changed.
- EDAMA is not committed to award to the lowest price.
- The proposed Photovoltaic system shall comply with the laws and regulations of the Ministry of Energy and Mineral resources (MEMR), Energy and Minerals Regulatory Commission (EMRC), Electricity Distribution Company (EDCO)as well as the National building and National electrical wiring codes.
- The bidders shall consider in their electrical design the Industry Standards, the National Electric Code, IEEE 1547-2003 "IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems" and other applicable codes and standards.
- It is the bidder's responsibility to understand the site conditions, environment and all requirements related to the RFP that may affect the offer price. The bidder will be fully responsible for verifying any information, drawings and measurements provided in the offer.
- A site visit will be performed for all Bidders and assigned in the time plan (Table 2). The site visit will include an explanatory presentation that aims to provide the bidder with a full picture of all site characteristics, and in order to identify the AC connection points for the sites and estimate accurately the cabling and conduits requirements.

- All questions regarding the RFP by the bidder shall be submitted by e-mail to the following address: (RFP@EDAMA.jo).

- Once answered, all answers will be circulated among all contractors who have submitted their proposals. The deadline for questions and answers is shown in Table 2. No question will be considered after the mentioned date.

- The RFP will be awarded as one lot for the most suitable technical and financial offer to EDAMA and based on the evaluation criteria explained in section 12.

- It is the Bidder's responsibility to provide at no additional costs all additional items required during the installation period that were not previously stated in the offer. However, any omission of any part of the bill of quantity (BOQ) shall be deducted from the price.

- All permits required to execute the work are the responsibility of the contractor (winning bidder). The contractor shall identify known permit requirements. The cost of preparing, filing and obtaining the permits shall be included in the contract price. The contractor shall provide EDAMA copies of all approved permits and applications for permits still in process on the effective date of the contract.

- The financial offer should include the cost of the grid impact study where required. Furthermore, it is the responsibility of the bidder to submit all the data required from EDCO.

- The bidder shall provide evidence that the photovoltaic modules manufacturer has been operating in the business of solar panels market for the past five (5) years. The bidder shall provide third party bankruptcy insurance of the PV modules manufacturer.

- The contractor shall provide a free maintenance period for **two (2)** years from the date of the installed systems' final acceptance.

- An inspection report of the system performance and check-up shall be provided every two months during the free maintenance period relevant to maintenance (bond section 3.3.3).

- The bidder shall include a site plan indicating all civil requirements and permits required by the applicable national laws and regulations.

- The electrical design shall include the appropriate sizing of all cabling works and all protection equipment (above and below ground) that will connect the modules, arrays, inverters, and the point of interconnection.

- It is the contractor's responsibility to execute the work and identify the required permits at his own expenses. The expenses shall be included in the contract Price. All permits shall be provided as hard and soft copies to EDAMA.

- The contractor shall provide a bi-weekly report covering the progress achieved in the previous two weeks and the planned activities for the up-coming weeks. The report shall cover Engineering, Permitting, Procurement, Safety and Implementation activities. The contractor shall also provide a progress versus planned report, the reports shall outline areas of concern and plans for corrective action (if needed) to maintain the project schedule.

- It is the contractor's responsibility to procure all equipment and materials and it shall be known that the cost of the equipment and materials, including the risk of any variation in the price, is included in the final contract price.

- The contractor or its hired subcontractor shall provide all temporary equipment and materials needed for project execution and shall respect the national labour law.

- The contractor shall keep the site clean; all trash and rubbish shall be disposed of off-site by a specialized waste disposal company in accordance with the applicable laws. Any location of works shall be returned to its original state after work is done.

- The contractor shall be responsible for storing all system equipment. The contractor shall provide permanent equipment marking, labelling and signage for the project. Warning signs shall be placed at key areas near equipment, at project entrances and any other relevant place selected by EDAMA.

- The contractor shall provide all as-built drawings prior the final acceptance of the system.

- The contractor shall submit one original hard copy and one soft copy of the final project report including but not limited to all permits, as-built engineering and 3D drawings, certification, Instruction Manual, Installation, Operation and Maintenance Manuals, and a safety plan. The report shall be provided after EDCO commissioning, and shall be approved by EDAMA and its third party consultant.

3.2 RFP Time Plan

A full response to this RFP is required by bidder. The following timescales are anticipated:

Table 2: RFP Time Plan

Milestone	Date	Time
Release of RFP on EDAMA Website	April 9, 2015	09:00 AM
Site Visits	April 21, 2015 - *Tafila* April 22, 2015 – *Ghor Al Mazra'a*	11:00 AM at *Al-Eiss Health Center* 11:00 AM at *Ghor Al Mazra'a Health Center*
Deadline for questions	April 29, 2015	02:00 PM
Release of answers to questions	May 6, 2015	02:00 PM
Deadline for offers	May 17, 2015	02:00 PM

3.3 RFP Bond

3.3.1 Bid bond

- An irrevocable bid bond of 10,000 JOD *shall be enclosed in a **separate envelope** included in the technical offer and shall not be included in the financial offer*.
- The bid bond shall be issued by a bank operating in Jordan.
- The bid bond shall be issued for the benefit of EDAMA and shall be liquidated upon the first demand if the bidder withdraws his offer during the validity date.
- All bidders shall consider that this amount will be paid on first demand if it becomes evident that information given contains false statements.
- The validity of the bid bond is 90 days from date of offers submission with the ability to be automatically renewed unless released by EDAMA.

  The winning bidder shall replace the bid bond with a performance bond of 10% of the contract price within 14 days from receiving the contract awarding notice
- If the winning bidder fails to provide a performance bond within the 14 days, the bid bond shall become payable and may be liquidated by EDAMA as compensation for such failure and EDAMA might award the contract to the second ranked bidder.

3.3.2 Performance Bond

- The contract shall be signed after the performance bond is delivered to EDAMA with a value of 10% of the contract price.
- The performance bond shall be issued from a bank operating in Jordan in respect of performance of the contract and will be released upon receiving the maintenance bond.
- The bid bonds of the non-winning bidders shall be returned after the signing of the contract.

3.3.3 Maintenance Bond

- A maintenance bond of 10% of the contract shall be submitted by the contractor to EDAMA prior the final commissioning and system acceptance; it shall be issued from a bank operating in Jordan.
- The maintenance bond guarantees the **two (2)** years of free maintenance and will be released after submitting the final inspection report of the PV.
- The contractor shall, at his own expense, repair or modify the installed PV system upon failure of achieving the proposed values within the bond period.
- In case of not repairing the failure, the maintenance bond will be liquidated by EDAMA.

4 General Requirements

4.1 Technical Requirements

- The bidder must fill the **technical compliance sheet** and submit it in the technical offer, knowing that not completing and submitting the technical compliance sheet will directly disqualify the offer. [Annex 1: Technical compliance sheet]
- All bidders must use the latest version of ***PVsyst*** for all design simulations.
- The proposal documents shall include at minimum the followings:
  - General specifications.
  - Special specifications.

- Bill of quantities.
- Drawings including PV modules layout and single line diagram.
- Design calculations.
- List of codes and standards concerning the equipment.
- Equipment manufacturers and country of origin.

- The bidder shall include at minimum but not limited to the specifications of the following equipment and materials:
  - PV modules
  - Inverters
  - PV cable
  - AC cable
  - Circuit breakers, Residual Current Devices (RCD) and Surging devices.
  - IP65 Junction Boxes (if applicable)
  - Mounting Structure

- The Bidder shall consider in the PV system layout service passages to enable the ease of maintenance and system cleaning.

- The bidder shall submit a detailed design for the PV system on each site

- The proposed PV system components shall have manufacturer warranties as follows:
  - 10 years for metallic part of PV module
  - 10 years at least for the inverters
  - 10 Years for the DC and AC cables
  - 10 years for mounting structure

- The Contractor's design shall be in full compliance with the requirements of Ministry of Public Work and Housing, Civil Defence Directorate and Energy and Minerals Regulatory Commission (EMRC).

- The Bidder shall provide an estimate of the yearly generated electricity and the expected performance ratio (PR) for the first, second years.

- The PV system design shall guarantee that the proposed Performance Ratio (PR) shall not be less than the proposed values for the first, second years of system operation.

- The inverter(s) shall comply with the EMRC and EDCO regulations and standards.

- The mounting structure of PV shall withstand a wind speed of 140km/hour as well as other weather conditions.

- The contractor is not permitted to punch roof surfaces for fixing the PV mounting structure.

- The engineering and design shall include the appropriate sizing of all cabling (above and below ground), that will connect the modules, arrays and inverters to the point of interconnection.

- The above ground portion of the electrical systems shall be neatly routed to facilitate access, troubleshooting, maintenance …etc.

- The electrical design shall include the appropriate sizing of all cabling works and all protection equipment (above and below ground) that will connect the modules, arrays, inverters, and to the point of interconnection.

- All protection equipment throughout the system shall be sized and specified to reduce damage on all components and the interconnection point in case of an electrical failure (e.g. Surge current, over voltage and intermittency protections).

- The location of the PV modules, inverters and cable routes should be included in the site layout drawing provided in the offer by the bidder for each site.

- The contractor shall provide as built and site layout drawings before commissioning.

- All works carried-out by the contractor shall be maintained for free for 2 years starting from the date of final acceptance.

- The contractor shall provide set of installation manual/user manual for each site. The manual includes complete system details such as array layout, schematic of the system, inverters details, working principles, etc. step by step maintenance and troubleshooting.

- The awarded bidder must develop reports for all serial numbers, manufacturer, and country of origin in addition to technical data including but not limited to SN, V_{oc}, I_{pmax}, V_{pmax},…etc, of all awarded and delivered equipment, materials, … etc. These reports must be submitted before the installation process and before the final acceptance of the project.

- The Bidder shall include in the offer all the required sizing, cross-sectional areas and lengths of the DC and AC cables along with required conduits.

- The Bidder shall provide voltage drop calculations for all PV and AC circuits to meet the allowed voltage drop percentages from the nominal voltages as follows:

- For PV circuits: 2% voltage drop from the nominal voltages for all DC circuits.
- For AC circuits: 2% voltage drop from the nominal voltages for all AC circuits.

- All excavation works required for laying the cables shall comply with all applicable codes and approved by the EDAMA third party consultant.

4.2 Financial Requirements

- The Bidder shall submit their financial proposal as an EPC offer along with their solution.
- The Bidder must fill a detailed bill of quantities with the cost of each item separately.
- The bidder shall price all proposed items and if any key item is not priced; then it will be implicitly considered.
- The offer shall be in Jordanian Dinar (JOD), including any additional VAT if applicable.
- The financial offer shall include the training and maintenance cost as well as the grid impact studies' cost where required.

5 Offer Format

5.1 Technical Offer

The response to this RFP must be in the English language, structured (and presented in the same sequence) as follows:

Cover letter
The cover letter must be signed by the person(s) authorized to submit the proposal and must delineate the company's ability to fulfil the project.

Chapter 1: Company Profile
The company profile must include registration certificates, JV if applicable, reference projects and CVs of the employees.

Chapter 2: Technical description:
Including:

2.1 Technical site description:
This section includes the solar radiation on the site, site and installation criteria, boundaries, shade analysis, structural, civil and electrical assessment, and any relevant information.

2.2 Technical design description:
This section shall include but is not limited to the following:

- The software design and results `based on the monthly solar radiation and temperature data and using the latest version of PVsyst, detailed site layout, including the utilized space area and design drawings.
- Electrical calculations including voltage drop calculations for all DC and AC circuits in addition to mechanical mounting system calculations.
- The design description shall also include all the required sizing, cross-sectional areas and lengths of the DC and AC cables along with required conduits.

2.3 Components and equipment selection:
This section shall include all selected materials and components with their data sheets attached in the Annex section, in addition to a list of manufacturers and country of origin for all equipment and materials.

2.4 Bill of quantity:
This section includes a bill of quantity for all materials and equipment proposed in the offer.

Chapter 3: Approach and Methodology (Scope of work)
The Bidder shall explain the proposed PV system work plan, including:

3.1 Procurement, installation and operation

3.2 Testing and commissioning
Includes a commissioning and testing plan according to IEC 62446 standard, listing all equipment and instruments that will be used in the commissioning.

3.3 Maintenance
Includes:

- A detailed maintenance plan including a maintenance checklist and technical support.

Chapter 4: Time plan
The chapter shall include a time plan of the project implementation phases excluding the time needed for EDCO approval.

Chapter 5: Training plan
The bidder shall propose a training plan in line with section 8.

Annexes: The bidder shall attach the following items in the annex section.

Annex: Technical Compliance Sheet
Annex: Bid bond
Annex: Data sheets, Warrantees and Guarantees of the equipment
Annex: other

5.2 Financial Offer

Chapter 1: Terms of Payment
The Bidder shall submit the schedule of payments as per the terms of payment identified in this RFP (section 13), as an EPC offer, including VAT, if applicable.

Chapter 2: PV system cost break down

- The Bidder shall submit the cost break down of the proposed PV system presented above
- The Bidder must fill a detailed bill of quantities with the cost of each item separately.

6 Component Specification

The bidder must fill the technical compliance sheets [Annex 1] for all offered PV modules, inverters, charge controllers, cables, and PV mounting structures, etc.
It should be known that not filling the technical compliance sheet will directly disqualify the offer.

6.1 PV Modules

The bidder shall select the suitable inclination and orientation angles of the PV system at each site, so as to achieve the ultimate electricity production taking into consideration the aesthetic aspects. The following are the minimum specifications of the selected PV module:

- Cell Type: mono-crystalline or poly-crystalline; most effective technology is preferred.
- The output power of the crystalline module should not be less than 250Wp at standard test condition. (STC) (Solar irradiance = 1000 W/m^2, module Temperature= 25^{0}C and Air mass = 1.5)
- Module Efficiency shall be at least 15 %.
- Operating PV temperature ranges between -10 °C & + 85 °C.
- Module's weight should not exceed 25 kg.
- Electrical connection shall be on a robust terminal bloc in an IP65 junction box or higher.
- The warranty for module defects after installation should be at least 10 years.

- The winning bidder shall provide an insurance letter for all PV modules that will be installed with their serial numbers that guarantees that the loss of the output is not more than 10% during the first 10 years and up to 20% in total after 25years.
- PV modules shall comply with the Design qualification and type approval international standard IEC 61215.
- PV module safety qualification standard: IEC/EN 61730 for safety class II.
- Along with TUV, CE compliant and UL certification, salt mist/ammonia resistance should be provided.
- Mechanical load test up to 5400 Pa, Damp Heat, Thermo Cycle and Humidity and Freeze tests.
- Flash reports of PV modules (SN, V_{oc}, I_{pmax},…) shall be provided.
- Third party bankruptcy insurance shall be provided.

6.2 PV Mounting Structures

The PV mounting structures specifications shall be made of aluminium taking into consideration that the manufacture warranty shall be 10 years. Minimum specifications of the mounting structure are:

- The minimum wind speed of 140 km/h shall be considered.
- Made of aluminium.
- Manufacturer's warranty should be at least 10 years.

6.3 On- Grid Inverters

The on-grid inverters should meet the following specifications:

- The AC power of the inverter must synchronize automatically with the AC voltage and frequency of the grid (3-phase or 1-phase depending on each PV system requirements) within the tolerance range specified according to the British Energy Networks Association (ENA) engineering recommendations (G59/2 or G83/1) depending on inverter's maximum rated current (less or greater than 16A per line).
- The Inverter should be designed to operate the PV array near its Maximum Power Point (MPP).
- The Inverter should be transformer less-based for 3-phase PV systems to be offered with efficiency at max power no less than 97%.
- The Inverter shall be provided with integrated fuses and AC & DC switches.
- The Inverter shall be provided with an LCD display to provide instantaneous information about the system performance.

- The Inverter shall have the following protections: reverse current, input over voltage & over current via fuses.
- Temperature operating range: -20 ºC to 60 ºC
- Harmonic distortion is less than 3%.
- Protection degree is IP65 or higher (outdoor).
- TUV and CE compliant.
- One unit for each subsystem can be installed.
- Warranty after installation should be at least 10 years.

6.4 PV / AC Cables and Conduits

The minimum specifications of the PV and AC cables are:

- PV cables shall comply with TUV and UL 4703 standards.
- Operation temperature for PV cables should be up to +80ºC
- PV cables shall be UV resistant, flame retardant, and with low smoke characteristics.
- PV and AC cables shall comply with local and international standards and JEPCO requirement.
- AC cables shall be insulated, armoured (is a plus), sheathed copper cables drawn from the PV yard up to the connection points and shall be rated at minimum of 600Vac.
- All external cables must be installed inside an external use, PVC pipe with UV resistance or galvanized cable tray.
- All cables shall be marked properly by means of good quality labels or by other means so that cable can be easily identified.
- Factory warranty shall be not less than 10 years

6.5 AC Distribution Boxes

- The Distribution Boxes shall be made of hot coated or galvanized steel; dust and vermin proof with a protection degree IP65 at least.
- The terminals and bus bars shall be appropriately size; the boxes shall have suitable cable entry with suitable glands arrangement for both input and output cables.
- Suitable markings on the bus bars shall be provided to identify the bus bars.
- The distribution box shall be grounded and for this purpose a suitable ground terminal is to be arranged.
- The distribution box shall be wall-mounted and of the front door opening type.

7 Maintenance

- The bidder shall include clear trouble shooting methodology and contact information.

- The bidder shall include a detailed maintenance plan including a maintenance checklist and technical support.

- The contractor must show his commitment to the following times response periods that shall be pre-assigned by the contractor:
  - Response time for problem solving.
  - Response time for support.
  - Response time for (hardware/software) failure of the system components or any other related components.
  - Response time for failed equipment or any other component replacements.

8 Training

8.1 Training Scope

The offer should include on-site and off-site training for selected employees at each site. Training must focus on but not limited to the following:

- Photovoltaic theory
- System operation
- Trouble shooting
- System configuration
- Data acquisition and monitoring system management
- Relevant software
- Preventive and routine maintenance
- Performing the washing and cleaning tasks of the PV modules and structures

8.2 Training Requirements

- Training shall be conducted theoretically and practically.
- Training shall be offered by an experienced instructor.
- Training dates must be listed in the offer.
- Training must be completed before the final acceptance of the project.

9 Pre-Commissioning

The contractor shall develop, permit, construct and commission the project.

10 Commissioning and Testing Plan

- All commissioning procedures will be carried out according to the standard protocol mentioned in IEC 62446 standard.
- The Contractor shall clean up the project site and remove any temporary structures, equipment or dirt, and construction debris before the final system acceptance.

- The contractor shall submit one original hard copy and one soft copy including but not limited to permits, as built engineering and 3D drawings, certification, instruction manual, installation, operation and maintenance manuals and checklists, QA/QC, safety plan and monitoring and software system.

- The Contractor shall prepare the "commissioning and testing plan" according to IEC 62446 including all equipment and instruments that will be used in the commissioning and provide it to EDAMA prior to the final commissioning.

- The final commissioning will be performed after the following:
    - Completion of all the above mentioned work.
    - Completion of all project documentation.
    - Approval of the "commissioning and testing plan" report by EDAMA and its third party consultant as well as EDCO approval.
    - Approval of the proposed testing equipment and instruments by EDAMA and its third party consultant as well as EDCO approval.

- The final commissioning will be performed by the contractor on his own expenses and will be witnessed and approved by the EDAMA project consultant and EDCO.

- If there is a need of any additional tests or testing equipment asked by EDAMA, third party consultant or EDCO, the Contractor must accept and provide the inquiries on his own expenses.

11 Final Acceptance

- Final Acceptance will be issued once all of the above works and required items have been completed.
- Final Acceptance will be issued by the contractor to EDAMA at that time in accordance with the contract.
- Once the Final Acceptance is approved. EDAMA will release the 10% Performance Guarantee bond within 10 working days.

12 Evaluation Criteria

The evaluation for the offers will go through the following three steps:

12.1 Evaluation Step 1: Technical Evaluation (out of 70 marks):

The evaluation for the offers will go through the following three steps:

Evaluation Step 1: Technical Evaluation (70 points)

The offer must achieve **50 points at least** to be considered as a technically qualified offer, based on the following breakdown:

- Design compliance: (**25 points**)
  - Completion of Annex 1 is a perquisite. Offers without this Annex will be disqualified
  - Adherence to all submission requirements

- Company and Team qualifications and general compliance with RFP requirements as detailed below. (**20 points**)

  The key criteria, which will be used to evaluate compliance with the RFP include:
  1. Experience in designing similar Solar Photovoltaic roof systems;
  2. Available resources to undertake the project;
  3. Team qualification/ project manager experience (including CVs;
  4. Quality of proposal documentation received and demonstrated understanding by the firm of project's requirements;
  5. Availability of support for the systems / company technical & financial strength.

- Quality of proposed products: (**7 points**)
- Mounting structures that comply with the technical specifications: (**3 points**)
- Warranties(**3 points**), O&M and technical support (**3 points**): Total: (**6 points**)
- Training: (**3 points**)
- Installation, commissioning and testing plans: (**6 points**)

Table 3: Summary- Technical Evaluation Criteria

Design compliance	25 points
Company and Team qualification	20 points
Quality of proposed products	7 points
Mounting structures	3 points
Warranties, maintenance and technical support	6 points
Training	3 points
Installation, commissioning, and testing plans	6 points
Technical Evaluation Result / Sum	**70 points**

12.2 Evaluation Step 2: Financial Evaluation (30 points)

Financial evaluation will be conducted as follows (30 points):

Table 4: Summary - Financial Evaluation Criteria

Levelised cost (JD/kWp) and total cost(JD)	30 points
Financial Evaluation Result / Sum	**30 points**

Evaluation of the cost proposal will take into account the following:

- Completeness (all costs to perform the requested services are provided)
- Checking that the costs in the bidder's proposal are realistic for the work to be performed; reflect a clear understanding of the requirements; and are consistent with the various elements of the bidder's technical proposal.

12.3 Evaluation Step 3: Final Evaluation (100 points)

If the bidder passed the technical and financial evaluation steps, the final evaluation result will be determined according to the following equation:

Final Evaluation Result (100 points) = **Technical Evaluation Result (70 points)** + **Financial Evaluation Result (30 points)**

13 Terms of Payment

The Bidder shall adhere to the following payment terms:

- First Payment (10%) of contract value upon award and signing the contract.
- Second Payment (20%) of contact value upon EDCO approval of the seven sites.
- Third Payment (60%) of contract value upon the completion of installation phase.
- Fourth and Final Payment (10%) of contract value upon project acceptance by EDAMA and its third party consultant after the final testing and commissioning.

14 Penalties

- The contractor shall be liable to repair any damage or water leakage occurred by his personnel or subcontractors in the selected sites during the installation and maintenance period. In the case of not repairing the damage, EDAMA has the right to put a suitable penalty on the Contractor.

- EDAMA has the right to put a suitable penalty on the contractor in case of abusing or not respecting EDAMA's rules and regulations.

15 Additional Special Conditions

- EDAMA has the right to terminate this RFP upon its perspective without declaring and without any legal consequences, and the bidders have no right to object.

- The bidder has no right to object to the technical and financial evaluation criteria mentioned in the RFP.

- The JV parties must submit their JV agreement with the RFP documents showing the leader party, the JV agreement signed and sealed by both parties and duly legalized by a notary public prior to the award of the contract.

- The Evaluation criteria provided in this RFP is only for the purposes of this RFP.

- The technical offer should not contain any hint to the financial offer. In the case of showing any hint the offer will be directly disqualified.

- The proposed PV system design shall be in full compliance with the regulations of the following Jordanian authorities:

- Ministry of Public Work and Housing.
- Energy and Minerals Regulatory Commission.
- Electricity Distribution Company (EDCO)
- Civil Defence Directorate.

- The winning Bidder shall submit within 14 days of official awarding date a performance guarantee bond and working program showing the planned duration for project implementation phases.

- No offer will be accepted after closing date and time of offer submission and no email submissions will be accepted.

- The bidder or contractor who attempts to illegally get any information from EDAMA staff or/and the third party consultant or/and misconduct ethical behaviour, will be immediately disqualified without any notice, and EDAMA has the right to proceed with further legal actions.

16 Annexes

Annex 1: Technical Compliance Sheet