

“Promoting Effective Generation And Sustainable USes of electricity”

WP3 Testing
Gozo Pilot
Terms of Reference
for the
Supply, Installation, Testing and Maintenance of a
108 kWp PV system for the Energy Community of San
Lawrenz

Deliverable 3.3.2



INTERREG MED PROGRAMME 2014-2020
Project part-financed by the European Union
European Regional Development Fund (ERDF)
Co-financing rate: 85% EU Funds; 15% National Funds



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1 Scope

The terms of reference (ToR) presented in this document has been prepared as part of the implementation of activity 3.3: “Cost benefit analyses and Terms of References issuing for the different types of microgrid applications in rural and island areas”.

The scope of this document is to provide guidelines in relation to the invitation to tender (ITT) for the Supply, Installation, Testing and Maintenance of a 108 kWp PV system for the Energy Community of San Lawrenz. The ToR builds up on the results of deliverable 3.3.1 – “1st Cost Benefit Analysis Report and Market Share Report” which has taken into consideration technical and economic aspects in relation to the installation of a PV plant for the proposed micro-grid.

The document provides the necessary terms of reference for issuing a tender in relation to the installation of PV plant which shall enhance the operation of the proposed micro-grid in the community of San Lawrenz. The ToR includes examples of the administrative and technical criteria that should be included in the tender document.

The terms of reference shall act as a set of guidelines to enable the community to issue the request for offers and includes the following main aspects:

- Context (details of the contracting authority, general contract details and administrative details)
- Terms of reference (project description, technical details, evaluation criteria)
- General conditions

2 Instructions to Tenderers

The first section of the invitation to tender shall include instructions to potential tenderers in relation to the submission of the offer, including details of the contracting authority that shall be procuring the service and any general considerations such as timeframes. Examples of the content of the first section are specified below.

2.1 Contracting Authority

A description of the contracting authority procuring the service/equipment shall be included.

E.g. Municipality of San Lawrenz – Energy Community

2.2 Contact Details

Contact details of the person/s in charge of the tender including address, email and telephone number shall be specified.

E.g.

Municipality of San Lawrenz

Address: 22A, Lady of Sorrow Street, San Lawrenz, Gozo, SLZ1261

Email: sanlawrenz.lc@gov.mt

Phone: +356 21563556

Contact Person:

2.3 Clarifications and Addenda

Instructions in relation to requests for clarifications by prospective bidders and any addenda issued by the contracting authority during the tendering periods shall be specified as indicated below.

1. Any tenderer requiring clarification or interpretations of the ITT document should do so in writing by sending an email to sanlawrenz.lc@gov.mt. Such requests should be sent at least seven (7) days prior to the closing date of receipt of the tenders. Any request after this date will not be accepted.

2. Any interpretations, corrections or changes to the ITT document will be published on the respective communication channels. No such changes or clarifications shall be made later than three (3) days prior to the closing date or receipt of the tenders.
3. It is the tenderer's responsibility to ensure that he or she has read all clarifications and addenda issued in relation to this ITT.

2.4 Submission of Offers

Details in relation to submission of offers shall be specified accordingly. An example is provided below which may be adapted according to the preference of the contracting authority.

Submissions will be received by the contracting authority until [to specify the date].

Submissions must be made in the form of one hard copy and must include original signed documents. Submissions must be made in English and are to be clearly labelled as follows:

Supply, Installation, Testing and Maintenance of 108 kWp PV system for the Energy Community of San Lawrenz

The name and address of the bidder should be clearly visible on the outside of an appropriately sealed envelope. Proposals will be received in the Tender Box at the following address:

Municipality of San Lawrenz
22A, Lady of Sorrow Street,
San Lawrenz, Gozo, SLZ1261

3 Terms of Reference – Technical Specifications

3.1 Project Description

A generic description of the project shall be provided, together with any supporting documents required such as drawings, site plans etc of the location where the installation be undertaken.

The project is related to the supply, installation, testing and maintenance of a 108kWp PV plant for the operation of the micro-grid in the community of San Lawrenz. The system shall be roof-mounted in the area indicated in the attached [drawings/site plan].

3.2 Tender Requirements

3.2.1 General Requirements

The general requirements related to the implementation of the project shall be specified.

The contracting authority wishes to engage a subcontractor to procure a PV system of capacity 108 kWp. The scope of this tender includes the following:

- Supply of the system including PV panels, inverters, structure and ancillary equipment;
- Installation of the system;
- Connection of the system to the main grid;
- Commissioning of the system
- Maintenance of the system for a period of 5 years.

The successful contractor will be responsible for all engineering aspects of the project and shall tackle this tender in a holistic approach taking in consideration all elements required for the successful implementation. The PV plant is to be in line with existing guidelines, regulations and specifications.

The site plans identifying the area where the PV system can be installed are included in drawings. The Contractor is expected to verify the actual measurements of the dedicated roof area during a site visit. It is the responsibility of the bidder to ensure that the measurements on the drawings are accurate.

The designs and complete installation shall be certified by the following professionals:

- All electrical design, drawings and installations shall be certified/approved by a warranted Electrical Engineer.
- All designs, drawings and installations in relation to metal structural elements shall be certified/ approved by a warranted Architect and Civil Engineer /Structural Engineer.
- All designs, drawings and installations in relation to civil engineering aspects shall be certified/ approved by a warranted Architect and Civil Engineer.

3.2.2 Technical Specifications

Technical specifications with respect to the different system components must be clearly defined. Tenderers must submit all the necessary supporting documentation that will enable the evaluation committee to determine the compliance of the different components proposed by the bidders. Examples of the technical specifications for the PV plant are included below.

PV Capacity:

The Photovoltaic Systems capacities specified in this tender are measured at Standard Test Conditions (STC) as defined under IEC 60904/DIN EN 60904 standards i.e. at 25 degrees Celsius, at 1000 W/m², and delivered, after inverter/s, in accordance to Enemalta regulations.

Photovoltaic Modules:

The PV modules to be installed shall have a minimum of 13 % module efficiency at Standard Test Conditions (STC).

The glass cover shall be tempered and shall be all weatherproof including hail resistance which shall be specified by the manufacturer.

Photovoltaic panels shall be compliant with 'Design qualification and type approval' IEC 61215 latest edition. Photovoltaic modules shall also be approved as per IEC 61730 for product safety Part 1 and 2. Protection Class II modules must be used.

PV modules shall conform to IEC 61701 latest edition (Salt mist corrosion testing of photovoltaic modules) or ISO9227 (Corrosion tests in artificial atmospheres - Salt spray tests).

PV modules shall be design qualified and type approved to the latest edition of EN 61215 or EN 61646 and shall carry the European CE mark.

The manufacturer of the Photovoltaic modules shall hold ISO9001 & ISO14001 certification.

Modules are to be factory fitted with touch proof plug connectors. Plug connectors shall be rated at IP65 or better. The plug connectors shall be built-in and shall be positioned under the panels for protection against the elements.

The PV panels shall be warranted by the manufacturer to have over 90% of the original

output power conversion efficiency for the first ten years after commissioning, and to have over 80% original output power conversion efficiency for the subsequent ten years.

The warranty period for the panels shall be ten years minimum covering both parts and labour.

The Tenderer shall submit original documentation proving all the above requirements and certifications.

PV mounting and Angle of Elevation:

The PV panels are to be mounted in single tier with an angle of elevation for all panels to be of maximum inclination being ten (10) degrees to the horizontal and in landscape configuration. All the PV panels/modules installed shall have the same angle of inclination and be of the same type (in terms of rating, material and finish and configuration to assure uniform aesthetic appearance and finish).

Inverters:

Bidders shall supply all DC to AC inverters required for the system. Inverters should be installed within close proximity to the solar panels as possible. The inverters shall be able to convert the DC power produced by the arrays all the time. The inverters shall be transformer-less, IP65 enclosed suitable for outside installation, and shall operate at a Euro-ETA efficiency of at least 94%. All inverters shall have all safety features and other protections including:

- All weather protection.
- Phase Sequence monitoring and control.
- Auto-shutdown on mains supply-fail and delayed auto-start on mains supply return.
- Overload protection.
- Surge protection.
- DC over-voltage protection.

The warranty period for the inverters shall be ten years minimum covering both parts and labour. The Inverters' manufacturer shall be ISO 9001 certified. The inverters shall be programmed to have output AC voltage in accordance with local (Enemalta) standards.

Cables:

DC cables shall be waterproof and UV stabilized and should be sized in accordance with BS 7671: latest edition such that the overall voltage drop, at array maximum operating power (STC), between the array and the inverter is <3%. Cables current carrying capacity for string and main d.c. cables must be calculated according to BS 7671: latest edition. The cables used for wiring the d.c. section of a grid-connected PV system need to be selected to ensure that they can withstand the extremes of the environmental, voltage and current conditions, under which they may be expected to operate. This will include heating effects both the current and solar gain, especially where installed in close proximity to the PV modules.

AC cables shall be rated according to BS7671: latest edition and cable colour codes shall

conform to BS 7671: latest edition “Identification of Conductors”. Terminations are to be in accordance with BS 6121 or equivalent. Cables shall be correspondingly marked at intervals showing the distribution board they are connected to. All cable/wires shall be marked with good quality letter and number ferrules of proper sizes so that the cables can be identified easily.

Structure:

Structural support for the PV panels shall be manufactured of an anodized aluminium frame work system. The PV modules shall be fixed to the supporting structure using corrosion resistant screws. It shall be the responsibility of the tenderer/contractor to ensure that the PV mounting structure will support both the static and dynamic loading of the photovoltaic panels being proposed when applied to the Maltese climate.

All the PV structures are to be designed and certified/approved by a warranted Architect and civil Engineer.

3.2.3 Installation

The following are to be included in the price of the bid:

Transport: The contractor will be responsible for delivering the system to the site roof at a maximum height of *[number of floors]* from ground level, and contractor may assume that the delivery point will be accessible using a high-up or lifter.

The Supporting Structures: The contractor will be responsible for providing supporting structures for the panels including any clamps and accessories. These shall be manufactured of anodized aluminium sections, galvanised steel or other non-corrosive material suitable for PV panels.

3.2.4 Maintenance

The maintenance period for this Contract shall have a duration of five (5) years from the date upon works are concluded and certified.

3.2.5 Other

The successful bidder will be required to perform the following tasks, which are to be included in the price of the bid:

Grid Integration: Connection of the system into the existing distribution boards of the site including provision and installation of all cables, conduit, trunking, metering, safety and switching devices (Miniature Circuit Breakers and Earth Leakage Circuit Breakers) and isolation for complete and tested installation.

Energy Metering: Installation of all equipment and connections required for connecting to the consumption meter that would be supplied by Enemalta.

Certification: submission of an engineer's certificate that the installation is according to Enemalta regulations and IEE regulations, Enemalta 'Application for connecting a Photovoltaic to the grid' complete with electrical layouts, schematic diagrams of installations and physical layouts, all signed by a warranted Electrical Engineer.

3.3 Response Format

Interested bidders are requested to submit their responses using the form in Appendix A together with relevant technical documentation and warranty (where applicable) on the following:

- PV panels
- Inverter
- Cabling and Accessories
- Supporting structure
- Electrical schematic of proposed system

Incomplete or incorrectly filled in forms will be disqualified.

3.4 Timeframes

It is expected that the award contract will be signed in *[to specify date]*. The successful bidder will be expected to begin installation not later than *[to specify number]* weeks after signature.

3.5 Supplier Capabilities

Bidders are required to have the skills and capacity to deliver the required products and services within the stipulated timeframe.

3.6 Evaluation Criteria

The winning bid will be the least expensive technically compliant submission.

3.7 Terms of Payment

Contract authority to define the payment terms.

4 General Conditions

4.1 Confidentiality Treatment of Information

- All information submitted as part of the offer will be treated in strictest confidence.
- Any attempt by a bidder to obtain confidential information or influence the contracting authority during the process of examining, clarifying, evaluating and comparing the ITT documents will lead to the automatic rejection of the relevant proposal.

4.2 Treatment of Proposals

The contracting authority:

- reserves the right to cancel this process without it incurring any penalty or cost or any liability however so described;
- may, at its own discretion, decide not to select any proposal even the most advantageous offer;
- may, at its own discretion, decide to select a subset of the proposal or conduct the implementation of the proposal in stages over a period of time.
- reserves the right not to consider offers that have missing mandatory information;
- will consider joint bids as long as these are presented in the form of a consortium for the delivery of all services;
- may disqualify the bidder completely if it does not abide by the above instructions.

4.3 Selection of Supplier

Only offers that meet the following eligibility criteria will be considered for evaluation. Offers that fail to satisfy any of the eligibility criteria will not be processed any further.

1. The submission follows the requested response format and all sections are complete.
2. The financial schedule follows the requested format and is inclusive of all charges foreseen.
3. The offer is received by the specified closing date and time.

4.4 Data Protection Clause

The information collected shall be processed in accordance to the Data Protection Act (Chapter 440 of the Laws of Malta). The submissions to this ITT are confidential and intended solely for the use of this ITT process, and will not be disclosed or copied without the consent of the applicant to anyone outside the contracting authority unless the law permits us to.

5 Appendix A –Sample Tender Response Form

Supply, Installation, Testing and Maintenance of a 108 kWp PV system for the Energy Community of San Lawrenz

Notice Number
Publication Date
Closing Date

Section 1 - Organisation Details

Tender's Name	
Registered Address	
Local Address (if different from above)	
Year organisation was founded	
Website url	
Name of contact person	
Position of contact person	
Email address of contact person	
Telephone Number(s)	
Brief Organisation Profile and CVs of Keys Experts	

Section 2 – Financial Offer

System: Supply and installation of a 108 kWp Photovoltaic System according to specifications in Section 3.2
Brief description of system including PV panels, inverters, cabling and structure and references to supporting documentation where applicable
Cost of system (including VAT): Euro

Warranty
System warranty
Exclusions

Section 3 – Bidder Declaration

I certify that the information provided above is accurate and complete to the best of my knowledge and belief. I understand that the provision of inaccurate or misleading information in this declaration may lead to my organisation being excluded from participation in future tenders.

Name of Bidder's representative	
Position	
Stamp	
Signature	
Date	