ENERGY OFFICE
eThekwini. The sustainable energy hub.

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Request for Quotation:

Design, supply, delivery and installation of web based photovoltaic monitoring system for solar traffic lights.

1 Background

The Solar powered traffic lights project was initiated and installed prior to the COP 17 conference in Durban. Eskom awarded the project to ZRW Mechanika for supply and installation of the solar system. Three traffic intersections were selected in the Durban CBD (2 of these intersections are controlled by a single traffic controller) and these intersections are Bram Fischer / Stanger, Bram Fischer / Walnut and MasabalalaYengwa / KE Masinga. The solar system is a grid tie photovoltaic (PV) system.

In order to verify that the solar system performs optimally and to specification, the Energy Office wishes to install a power monitoring system which will allow power generation/consumption data to viewed real time over the internet using a web-based software package. The scope of works and details of the monitoring system are provided in Sections 2 and 3 of this RFQ.

Figure 1: Solar Powered Traffic Signal System

2 Scope of Works

The scope of works for this project is as follows:

1) Design, supply, delivery, installation and commissioning of a solar photovoltaic monitoring system.
2) Maintenance, Energy Office staff training and technical support for the system for a period of 24 months

3 Technical Requirements

The Energy Office intends to procure three photovoltaic monitoring systems. The devices will need to include the following technical specifications:

1) The system is required to:
    - Captures AC volts (V), amps (A), power (KW) and energy (KWh) generated on the output side of the inverter.
    - Measure the total grid power (KW) and grid energy (KWh) offset, i.e. measure the solar energy shortfall to meet net load demand.
2) Monitor the instantaneous load demand and net energy consumption.
3) The system shall be equipped with a software interface that allows for multiple meters per computer (one computer will download data for all meters). The system must be GSM/3G enabled with ability to be integrated into a fixed line network. An MTN cell modem must be included with the monitoring system to send the data across the Internet to be viewed using a web-based software program.
4) The system should provide half-hourly, hourly, and daily, weekly and annual generation and consumption data that can be exported to Microsoft EXCEL. The recovered data should be available in the following formats:
    - Charts (pie, column, & bar charts) displaying solar energy generated with respect to grid energy input. Graphs (bar, pie, line graphs), displaying instantaneous & average data.
    - Tables and columns of summarized data displaying total generated power, total power consumption, solar energy offset and total shortfall i.e. how much grid power was needed.
5) The software interface should be expandable to accommodate future installations.
6) Should be able to download data via USB connection.
7) The system should be able to store half-hourly data for up to 12 months.

Note: The service provider needs to note that the site has preexisting solar systems (inverter, charge controller etc) and that it might be a good idea for the PV data acquisition system to have network compatibility with that system.

3.1 Standard Specifications

3.1.1 Accuracy class requirements

The accuracy class requirements for a metering point that consists of a meter(s) and associated instrument transformers are determined by the nominal size of the load, expressed in terms of apparent power, and are as specified in table 1. For this installation, the applicable accuracy class would be <100 kVA.

Table 1: Requirements for meter and instrument accuracy class requirement (NRS 057:2005 page 12)

1	2	3	4	5
Load	**Accuracyclass**			
	Active energy meter	**Reactive energy meter**	**Current transformer**	**Voltage transformer**
>100 MVA	0,2S	1[a]	0,2[b]	0,2
10MVA to < 100 MVA	0,5S	2	0,2[b]	0,2
1MVA to < 10 MVA	1	2	0,5	0,5
100kVA to < 1 MVA	1	3	0,5	0,5
<100 kVA and whole current	2	3	1 (Where applicable)	-
[a] Notype test standard yet available. [b] Class0,5 is acceptable at the lowest ratio of a multiratio current instrument transformer.				

All meters shall comply with the relevant standards as specified in table 2. The applicable standards for accuracy class 2 are most applicable for the monitoring system.

Table 2: Energy meter standards and requirements for meter accuracy class (NRS 057:2005 page 16)

1	2	3
Meteraccuracyclass	**Applicable standard: Active energymeters**	**Applicable standard: Reactive energymeters**
0,2S	SANS62052-11 SANS62053-22	Notavailable
0,5S	SANS62052-11 SANS62053-11 SANS62053-22	Notavailable
1	SANS1799 SANS 62052-11 SANS 62053-11 SANS 62053-21	Notavailable
2	SANS1799 SANS 62052-11 SANS 62053-11 SANS 62053-21	SANS62052-11 SANS62053-23
3	Notapplicable	SANS62052-11 SANS62053-23

3.1.2 Meter panel (enclosure)

1) Metering equipment shall be housed in a suitable enclosure to minimize the ingress of dust, moisture and vermin (IP64/ NEMA 3 type or higher)
2) In both indoor and outdoor situations, unauthorized access to wiring terminals and equipment shall be prevented. Access to the components of the metering equipment shall be suitably restricted by means of locks and seals.
3) The meter panel shall be situated such as to allow safe access to the components of the metering circuit.

3.1.3 Metering installation design

A design report shall be prepared by the metering designer in the case of a new metering installation and in the case where an existing metering installation is modified. (See NRS 057 for details)

It is imperative that all parts of the metering code (NRS 057) and relating national and international (IEC) electrical standards are adhered to in the design, commissioning & installation as well as maintenance of the energy monitoring system. It is expected of all service provides to submit proof/ evidence of compliance with all relevant standards.

4 Deliverables

The expected deliverables from the project will be as follows:

1) Supply and delivery of 3 PV monitoring systems for solar traffic lights.
2) Design report and supporting technical documentation.
3) Installation/ commissioning of the PV monitoring systems as per manufacturers specifications.
4) Staff training on operation, modification and management of the installed system.
5) Training of 5 EO staff members on the system operation.
6) Maintenance of the complete PV monitoring system for 24 months.

5 Adjudication Criteria

The quotations will be assessed according to a two step process. The first step is a functionality assessment and bidders must score a minimum of 90 points (out of 100) in order to be assessed any further. The second is adjudicated according to price and preferential procurements.

Step 1: Functionality (100 points)

1) Experience in supplying and installing solar PV web based monitoring systems (60 points)
2) The quality and duration of warranties and guarantees on equipment and system (20 points)
3) Local representation (20 points)

Companies/Individuals must score a minimum of 90 points for “Step 1: Functionality” in order to be evaluated for “Step 2: Price and Preferential Procurement”.

Step 2: Price and Preferential Procurement (100 points)

- Price (80 points)
- Preferential Procurement (20 Points)

CRITERIA	MAX. POINTS SCORING
Phase1: Functionality	**100 Points**
Functionality	
Experience in supplying and installing solar PV web based monitoring systems	**60 points**
Installed and commissioned 4 web based electrical/solar energy monitoring systems.	20
Installed and commissioned 2 web based electrical/solar energy monitoring systems.	20
Installed and commissioned 1 web based electrical/solar energy monitoring system.	20
The quality and duration of warranties and guarantees on equipment and system	**20 points**
Local representation	**20 points**
Head office in eThekwini	10
Satellite office in eThekwini	10
TOTAL Phase 1:	**100**
Phase 2: Price and Preferential Procurement	**100 Points**
Price	
Price	80
Preferential Procurement	
FPLITE Score	20
TOTAL Phase 2:	**100**

6 Submission Requirements

Quotations should include the following:

1) Annexure 1: Technical Specifications
2) Annexure 2: Detailed budget breakdown (Bill of Quantities)
3) Annexure 3: Signed Declaration
4) Supporting Documents
    a. Technical Brochure for meters software (screen shots) and all relevant hardware
    b. Summary of related projects completed (not more than 2 pages)
    c. Brief CV of main project leader (include all relevant certificates of accreditation)
    d. Copy of Valid Tax Clearance Certificate.
    e. Copy of latest utility bill.
    f. Focussed Procurement Lite registration details (http://fplite.durban.gov.za/)

Before a final decision is taken, the eThekwini Municipality may call bidders in for presentation of their proposals. The eThekwini Energy Office does not bind itself to accept the lowest or any quotation, and reserves the right to accept a portion of any quotation, unless the supplier expressly stipulates otherwise in their quotation. The eThekwini Energy Office does not undertake to consider quotations received after the due date and time unless clear evidence of dispatch is available (e.g. postage stamp with date).

A compulsory site meeting will be held on the 3rd October, 2013 at 10am at KE Masinga and Masabalala Yengwa Ave Solar traffic lights (GPS coordinate: 29°51'4.83"S, 31° 1'38.03"E).

Quotations must be submitted electronically (preferably) or by post to:

Lindani Buthelezi
E-mail: Lindani.Buthelezi@durban.gov.za
Suite 1, 19th Floor, 75 Dr Langalibalele Dube Street (Winder Street), Durban
Tel: 031 311 4415

By 11:00am on Friday, the 11th of October 2013, to whom all enquiries concerning this invitation to quote should be addressed.

Annexure 1 Technical Information

Item	Please Provide Details Here
Company Name (as per FPLite registration)	
Name and description of proposed monitoring device. State the different operating points and other relevant capabilities.	
Description on the web based monitoring configuration and operation. Also state how the system is expandable for future PV installations requiring monitoring.	
Computer connection (e.g. Standard USB connection provided per meter or wireless connection)	

Software interface summary. (include screen shots)	
Data storage capability of meter (e.g. 5 MB which is equivalent to 12 months date)	
Meter connection to the solar system (e.g. CT's, direct connection etc)	
Stock availability (e.g 3 meters available 1 week after award of request for quotation)	

Annexure 2: Detailed Budget Breakdown (BOQ)

Item No.	Description	Unit	Rate	Quantity	Amount
A	**CAPITAL COST**				
A.1	**Equipment Costs (Supply and Delivery)**				
A.1.1	Solar Monitoring System				
A.2	**Design and Installation Costs**				
A.3	**Staff Training**				
	Totalfor Section A				
Item No.	**Description**	**Unit**	**Rate**	**Quantity**	**Amount**
B	**Maintenance Costs**				
B.1	**Maintenance**				
B.1.1	Maintenance & technical support cost for first year			1 yr	
B.1.2	Maintenance & technical support cost for second year			1 yr	

	Total for Section B				
	Summary of Cost				
	Total for Section A				
	Total for Section B				
	Subtotal				
	Add 14% VAT				
	Total				

Annexure 3: Declaration

_____ (Name of Service Provider) hereby state:

1) Is the service provider is a natural person (Yes/No)
    a. If the service provider is a natural person, has the service provider been is in the service of the state, or has been in the service of the state in the previous twelve months; (Yes/No)
    b. If Yes, please provide details

_____

_____

_____

2) If the service provider is not a natural person, are any of its directors, managers, principal shareholders or stakeholder is in the service of the state, or has been in the service of the state in the previous twelve months; (Yes/No)
    a. If Yes, please provide details

_____

_____

_____

3) If the service provider is not a natural person, has a spouse, child or parent of the provider or of a director, manager, shareholder or stakeholder referred to in subparagraph (2) is in the service of the state, or has been in the service of the state in the previous twelve months. (Yes/No)
    a. If Yes, please provide details

_____

_____

_____

Service Provider

Date:

Name:

Designation:

Signature: