



SUSTAINABILITY AND RESOURCE PROJECTS

RFP UJ 57/2024: A PHOTOVOLTAIC ENERGY GENERATION FACILITY AT THE UJ ON STANLEY BUILDING FOR THE UNIVERSITY OF JOHANNESBURG

1. INTRODUCTION

Proposals are hereby invited for the Engineering, Design, Procurement, Installation, and Maintenance of Solar Photovoltaic (PV) Systems to the UJ on Stanley at University of Johannesburg, South Africa.

The appointed service provider should have the capacity to install:

1. A maximum of up to 80 kWp of solar PV generation.
2. The system will work as a grid-tied system integrated to the existing 400kV from the grid, under normal conditions the system will play an important role of reducing COJ bill which will have a positive impact in the budgeting process for the UJ on Stanley Building.

The potential energy savings a year should be around 124 800 kWh which is equivalent to about R400,608.00 /year. The measurement was based on 146 Canadian (CS1H-320MS) solar panels, and it should be noted that installation is not prescribing Canadian solar panels as the only solution for clean energy.

2. SCOPE OF WORK

Bidders are requested to provide quotations for the following requirements:

- Full engineering and design of the Solar PV system according to applicable local and international standards for the identified site.

- Construction work and installation of equipment for the identified site.
- Supply of PV modules, inverters, parking lot mounting structure, cabling, mounting hardware and infrastructure, reticulation, grid connection works and remote monitoring and control.
- Submission of preliminary and final as-build design documentation as well as grid code compliance certificate to respective municipalities.

3. PRICING SCHEDULE / BILL OF MATERIALS

Bidders are required to price as per the items in *Table 2* below.

Table 1. Activity Schedule

Ref	Item Description /Activity	Description	Measurable Quantity	Unit of measurement	Price (ZAR)
1	Detailed design of PV system including all auxiliary systems and facilities		Design	Lump sum	
2a	Mounting structure: Parking Lot Structure erection	Suitable racking	Procurement	No. of units	
2a	PV Modules	Mono, PERC and half cut	Procurement	kWp	
3b	PV Modules		Installation work		
4	DC Cabling, including ducting, terminations, MC4		Procurement	M	
5	DC Cabling, including ducting, terminations, MC4, cable UV protection		Installation work		
6a	Sized Inverters		Procurement	kW	
6b	Inverters		Installation work		
7a	Low voltage (LV) AC Cabling between inverters and boards (including ducting)	Up to 750 V	Procurement	m	
7b	LV AC Cabling between inverters and boards (including ducting)		Installation work		
8	Energy and Power Meters		Installation work	No. of units	

9a	Control and monitoring system (all data monitoring and operation devices)		Procurement	No. of units	
9b	Control and monitoring system		Installation work	No. of units	
10	PV Facility commissioning and testing		Commissioning & Testing	Lump sum	
11	Structure engineering report & certificate		Preliminary & General	Lump sum	
12					
13					
14					
15					
Sub-Total					
VAT					
Total					

NOTE: Also, important to consider is the wiring zone. In this PV installation, a stringing strategy (along racking) is recommended.

4. BACKGROUND INFORMATION AND TECHNICAL SPECIFICATIONS

Apart from optimizing the current energy use, installing a solar system in the UJ on Stanley is recommended. The solar system should serve the purpose of further reducing or even eliminating the electricity bills of the UJ on Stanley and enable them to operate to a specified level during outages and at night where applicable. As a result the solar systems that will be installed will be hybrid, incorporating the grid, Solar PV and Battery Storage. *Table 33* shows the stages that are involved in implementing this recommendation.

The Solar systems that will be installed in the parking lot structure shall consist of Solar panels, grid interactive power conditioning unit (if

necessary) with remote monitoring system, mounting structures, earthing and lightening protections, IR/UV protected PVC Cables, pipes and accessories.

a. Solar Panels

Solar panels are the major components of the solar system, making it crucial to select the best suitable and performing. They must meet the latest edition of IEC PV module qualification test or equivalent SABS standards.

Among different types of module technologies, half-cut mono crystalline



solar panels with the passivated emitter and rear contact (PERC) property are recommended because of their higher efficiency. While the installer may argue otherwise, this recommendation is intended to keep the project in step with the advancement of the module technologies. The advantage of half-cut modules (solar cells that are cut in half) are that they have improved performance and durability. *Figure 1* shows the type of the recommended solar module. Traditionally, solar panels have 60 or 72-cells per panel, the proposed modules will have 120 and 144 half-cut cells, respectively. With solar cells halved, their current is also halved, thus lowering resistive losses, and producing a little more power.

Figure 1. Typical passivated emitter and rear contact and half-cut solar modules

In addition, smaller cells experience reduced mechanical stresses, which limits chances for cracking. Also with shading, the advantage is that if one half of a module is shaded, the other half will still perform.

The total solar system capacity must not be less than allocated capacity (kWp). Protective devices against surges at the solar panels shall be provided. PV modules must be tested and approved by one of the authorized test centers in the country to ensure reliability. The rated output power of any supplied solar panels shall have tolerance of +/- 3%.

Normal Maintenance and Warrantee

The supplier and/or installer of solar panels provides a standard 12-month regular maintenance required to ensure optimal performance.

5. TENDER EVALUATION

The tender will be evaluated in three (3) stages:

Stage 1 – Tender Compliance

Stage 2 – Functional / Technical Requirements

Stage 3 – Financial and B-BBEE

6. STAGE 2: FUNCTIONALITY AND TECHNICAL COMPETENCE

The submitted RFP responses will be evaluated based on the list of criteria defined below and in the specific sequence.

The tender evaluation criteria are listed in sequence below:

1. Stage 2: Functionality

No	Functionality Criteria	Maximum Points Obtainable
1	<p>Number of previous Solar PV projects completed in the last 5 years.</p> <p>On Turnkey Solutions of PV Solar System with Grid Tied and Hybrid Systems</p> <p>(3 Practical completion certificates, 3 Client reference letters, project values, client information with contact details.</p> <p>Solar PV installations ≥ 3 = 30 points $2 \leq$ Solar PV installations ≤ 2 = 20 Points Solar PV installations = 1 = 10 Points No previous Solar PV installations = 0</p>	30

2	<p>Methodology</p> <p>30 points - Good methodology submitted which is specific and tailored to suit the objective</p> <p>15 points - An average Project Approach / Methodology submitted</p> <p>0 point - Methodology does not Adequately Deal with the Objectives and or is too Generic</p>	30
3	<p>Contractors Resources</p> <p>Profile of project team, Curriculum Vitaes, Qualifications, Professional Registration, and Experience relating to Construction. Submit CVs with contactable references.</p> <p>1. Electrical Engineers (12 Points)</p> <p>Professional Registration</p> <p>6 Points - Registered with ECSA as Pr Eng Or Pr Tech Eng</p> <p>0 Points – No Proof of Professional Registration</p> <p>Qualification</p> <p>Valid certified copy of Qualifications in the Built Environment = max 6 Points</p> <p>0 Points - No proof of Qualification</p> <p>Experience (NB Experience does not count without proof of qualification and registration)</p> <p>6 Points - More than 10 years' experience with relevant post-qualification</p> <p>4 Points - More than 3 years and up to 7 years' experience with relevant post-qualification.</p> <p>2 Point - More than 1 year and up to 3 years' experience relevant post-qualification.</p> <p>0 Point - 1 year and less relevant post-qualification experience</p> <p>2. Project Manager (9 Points)</p> <p>Qualifications</p> <p>Valid certified copy of Qualifications in the Built Environment = max 6 Points</p> <p>3 points - National Diploma or Higher Qualification</p> <p>Experience</p> <p>6 Points - More than 10 years of post-qualification experience</p> <p>4 Points - More than 2 and up to 5 years post-qualification experience.</p> <p>2 Point - More than 1 year and up to 2 years post-qualification experience</p> <p>0 Point - 1 year and less post-qualification experience</p> <p>3. Electrician (9 Points)</p> <p>Qualifications</p> <p>Valid certified copy of Qualifications in the Built Environment = max 6 Points</p> <p>3 Points - Valid certified copy of a Trade Certificate in Electrical Engineering</p> <p>0 Points - No proof of Trade Certificate</p> <p>Experience</p> <p>6 Points - More than 4 years of post-qualification experience</p>	30

	4 Points - More than 2 and up to 4 years post-qualification experience. 2 Point - More than 1 year and up to 2 years post-qualification experience 0 Point - 1 year and less post-qualification experience	
4	Programme Proposed working schedule on carrying out the work systematically within a reasonable time. - Construction Programme 10 points – Construction Program detailing all activities in the Bill of Quantities (BoQ) and all within the required timeframe. 5 points – Construction program incorporates some of the activities in the BoQ and is within the required time frame. 0 point – Construction Program is not aligned with the BoQ or is not within the required timeframes.	10
	Total Points Awarded	100

A minimum of 70 points is required by any tenderer before further evaluation. All bidders who achieve 70 points or more will be evaluated equally in terms of Stage 3.

7. Stage 3: Financial and B-BBEE

1. Price (80 points)
2. B-BBEE (20 points)

