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| **TSC - TECHNICAL SPECIFICATIONS FOR THE INSTALLATION & COMMISSIONING OF THE SOLAR PV SYSTEM UPGRADE 30kWp AT THE ADMIN BUILDING** |

# **1. TECHNICAL SPECIFICATIONS**

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| **Item** | **Description of item** | **Specification compliance: Yes/No**  **(Indicate ‘Yes’ or ‘No’; describe deviation from requested spec)** | **Unit Price** | **Total Price** |
| **1.1** | The construction must include delivery, installation, certification and commissioning: |  |  |  |
|  | Installation of roof-top Solar **30kWp** PV System upgrade to the existing system at the admin building complying with the following specifications:   * Solar modules 20 x 550Wp * 10 kWp 3phase PV inverter * 30 kWh battery storage * 30kVA inverter (3 x 10kVA) |  |  |  |
| **1.2** | **AC Distribution**   * Upgrade of electrical circuits, where necessary. * Solar power to supply the main distribution board (DB) from the inverter room. |  |  |  |
| **1.3** | Any downtime when connecting new solar power to existing grid should be done after normal working hours (08:00 – 16:30), Monday to Friday) to avoid disruptions to activities on the campus. |  |  |  |

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| **1.4** | Installation of PV panels to be in most cost/energy efficient location: | | | | | |
| **1.5** | **PV system type**   * Roof mount: Perform structural analysis on the roof to ensure the roof structure is fit for installation and to ensure the structural integrity of the building is not compromised. * Roof type: IBR roof sheeting. |  |  |  |  |  |
| **1.6** | **Type of solar panels**   * **Install** Mono-Crystalline PV modules, each solar module should have a maximum power output (Pmax) of 595 W. The selected Mono-Crystalline PV should be finalized in consultations with ARC-TSC personnel who supervise the construction. * Solar PV panels should be installed on the roof with PV mounting structures facing northward and not exposed to shading. * The solar panels placement must comply with building codes. |  |  |  |  |  |
| **1.7** | **Battery bank**   * Install lithium-ion battery bank for a backup power of 2.5 hours (amount of backup 75 kWh: 2.5hrs x 30kWp = 75kWh). * 30 kWh battery storage. |  |  |  |  |  |
| **1.8** | **Electrical loads**   * All lights and other critical loads (refrigeration, ice machines etc). Load isolation is critical. The electrical loads powered must be well balanced according to the expected solar output (30kWp). * Loads will be split into 2 i.e., essential and non-essential loads. |  |  |  |  |  |
| **1.9** | **System architecture**   * The system should allow for seamless integration for future expansion of the PV and battery bank. |  |  |  |  |  |
| **1.10** | **Standby generator & UPS**   * The system should allow for seamless integration with the existing standby generator and the UPS. * During power outage, the generator will automatically replace the grid supply. |  |  |  |  |  |
| **1.11** | **Commissioning**   * The PV system to be signed off by Professional Engineer (Pr. Eng.) or Professional Technologist (Pr. Tech.) * PV solar system design must be approved by Pr. Eng. or Pr. Tech * Letter of installation and commissioning approval from Eskom or municipality. * Installation must have been performed under the supervision of a qualified electrician according to the approved design * Electrician has to sign a certificate of compliance (CoC) for the installation * Pr. Eng. signs off an as-built drawing, after system works as specified * Installer or supplier provides any additional documents and reports for commissioning the PV system to client (ARC) * All compliance certificates/electrical audit/municipality registration/permission and requirements according to current government regulations at time of commissioning. |  |  |  |  |  |
| **1.12** | **Miscellaneous**   * All preliminary work, including draft technical drawings must be discussed with ARC personnel before construction begins. |  |  |  |  |  |