Annexure E - Alternative Energy Scenarios

City Power is currently facing a critical shortfall of approximately 2 MVA within its available electricity supply capacity at Lufhereng Substation (88/11 kV) due to the non-allocation of the applied Notified Maximum Demand (NMD) increase from Eskom. This delay in capacity allocation has resulted in a supply demand imbalance, limiting City Power's ability to connect new developments such as Lufhereng Ext 11, particularly during peak times. A total of 1600 houses have been allocated for Lufhereng Ext 11 and require approximately 2MVA during evening (3 hours) and morning peak (2 hours).

To address this interim shortfall and ensure continued service delivery, City Power has proposed installing a Solar photovoltaic (PV) system with battery energy storage system (BESS) as a Distributed Energy Resource (DER) to offset grid reliance and provide localized supply resilience.

Given the land size of approximately **3 to 6 hectares in Lufhereng** , Design and determine the size of solar rooftop PV and Battery Storage system that would assist City Power to peak shave during peaking hours.

N.B Kindly explain the system operation and use any renewable energy software to design the system.

N.B The demand at Lufhereng Sub is currently 10 MVA.

Technical Evaluation	Scoring	Weight
Design Provide the design that include but not limited to: 1. Solar PV – 3 Points 2. Inverter – 4 Points 3. Battery Storage – 3 Points The design shall demonstrate the ability to support approximately 2 MVA peak shaving demand for morning and evening peak periods.	10 Points	40
Detailed technical design drawings , indicating a minimum of three integration options on how will the solar plant tie-in at 11 kV distribution board and simulation results using an approved renewable energy software;	Provided = 10 Points Incomplete/not provided = 0 Points	30
Prove detailed technical analysis on the system operational scenarios, power flow analysis, protection philosophy applicable to the following areas (Grid Impact Studies): • Hybrid Mode • Backup Mode	Provided = 10 Points Incomplete/not provided = 0 Points	30

Technical Evaluation	Scoring	Weight