



a world class African city



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## **BACKGROUND**

City Power Johannesburg (SOC) Ltd is a state owned regulated environment accountable for providing electricity services to all its customers. As the electricity distribution service provider of the City of Johannesburg (CoJ), City Power's core competency is to purchase, distribute and sell electricity within its licensed area of supply. City Power strives to support the City of Johannesburg to address the South African challenge of security and quality of electricity supply, in order to enable consumers, who reside in the City of Johannesburg jurisdiction, to reliably attain electricity at a defined quality and at affordable transparent rates.

### **1.1. Strategic Alignment**

The key elements of City Power's 2022 to 2030 business plan include reducing its reliance on Eskom and Kelvin as sources of power and actively engage alternative sources of power where it is financially and technically feasible.

In order for City Power to achieve its objective of diversifying and improving the security of our sources of energy supply as well as managing the cost of bulk energy procurement, new energy generation options such as rooftop and farm-scale photovoltaics, gas powered generation, energy storage systems and off-grid solar high mast are considered as part of the City Power Energy Mix. The strategy aligns with the City's Clean Energy Target of 35% of the electricity consumed in Johannesburg to come from clean energy sources by 2030.

### **1.2. City Power Landscape**

City Power presently acquires bulk electricity supply mainly from two sources which are Eskom and Kelvin Power Station. Kelvin's generating capacity covers 12% of City Power's total demand with the remainder being supplied by Eskom.

City Power had a 20-year Power Purchase Agreement (PPA) with Kelvin Power that commenced in 2001 and ended in November 2020. However, the PPA was recently extended by 24 months on new terms, while there is an indefinite Supply Agreement with Eskom. City Power is the exclusive customer of Kelvin Power in terms of the PPA. Kelvin originally consisted of two coal-fired technologies (Kelvin A and Kelvin B), with a combined nameplate capacity of 600MW. Kelvin A was commissioned from 1950 to 1956 and had a total maximum rated output of 180MW. The Kelvin A station was shut down in 2012 due to aging infrastructure. Kelvin B was commissioned between 1962 and 1970. It consists of 7 boilers and 7 steam turbines of 60 MW each (1 turbine and 1 boiler are on long term outage) giving a total installed capacity of 420 MW and maximum output of up to 360MW.

## **1. INTRODUCTION**

The security of supply concerns have awoken the utilities to invest in alternative energy solutions in order to complement the constrained electricity grid and load shedding mitigation. As a result City Power has established new Energy Management Department to oversee City Power's journey to embracing alternative energy solutions as part of the mainstream supply into the grid. To realise the above objective, it is crucial for City Power to outsource world class Engineering Strategic Partners to assist in providing effective implementation of the Alternative Energy Strategy.

## **2. OBJECTIVE**

The objective of these Terms of Reference is to detail the areas of responsibility to assist in the scoping towards appointing Engineering Strategic Partners for the implementation and rollout of City Power's the Alternative Energy Strategy. The Engineering Strategic Partners will also be responsible to seek funding (grants and donations) and implement renewable energy projects.

## **3. SCOPE OF WORK**

In order for City Power to achieve the objective of reducing reliance on Eskom and Kelvin as well as implementation of alternative energy solutions, an Alternative Energy Strategy (Implementation Plan) has been compiled for approval by both the Board and Shareholder (Council). The latter will usher the unfolding of critical events that will advance the implementation of a strategy that will forever transform the electricity supply landscape of the City as has never been seen before. To ensure a prudent and transparent execution of this Programme, City Power requires the expertise of Engineering Strategic Partners. While the engineering strategic partners will comprise various and diverse skills and expertise (under one roof), the City Power Programme Manager will liaise with Engineering Strategic Partners Lead official, who will serve as their only point of contact with City Power. The scope of work shall include all the stipulated elements within this document. The Strategic Partner shall be responsible for all the work to be executed within the terms of reference. The Strategic Partner shall:

### **3.1. Alternative Energy Systems**

- 3.1.1. Design, manufacture, shipping, assemble, testing (SAT), start-up, commission, warrant and make ready for service a fully functional turnkey alternative energy systems and balance of plant equipment.
- 3.1.2. Provide all required equipment/materials labour and tools required for installing, testing, and commissioning the alternative energy systems, including a list of equipment spares.
- 3.1.3. The design, install and commission for the electrical connection of the alternative energy systems to the point of connection as determined by the Responsible Person within City Power shall be part of Bidder's responsibility. Additional to requirements as stated shall form part of the installation; electrical cables, protection system, Supervisory Control and Data Acquisition (SCADA) and Human Machine Interface (HMI), back to the alternative energy systems.
- 3.1.4. Design, install and commission of a communication connection from the alternative energy systems to the City Power grid network.
- 3.1.5. Supply any special equipment and tools required for the operation and maintenance of the alternative energy systems.

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- 3.1.6. All equipment and installation shall be provided with a guarantee of (Twelve) 12 months and Ten to Fifteen (15-20) years warranty at minimum.
- 3.1.7. Submit to City Power a review and comment plan of all design drawings, and miscellaneous documentation required to provide a complete installation; including all as-built documentation, calculations, design drawings, equipment drawings required for the alternative energy systems.
- 3.1.8. Provide a schedule for all design, fabrication, installation and testing activities for the project.
- 3.1.9. Provide a proposed maintenance schedule for the alternative energy systems, as per the Original Equipment Manufacturer (OEM).
- 3.1.10. Conduct grid impact studies prior installation of the alternative energy systems.

### **3.2. Energy Efficiency**

- 3.2.1. Design, manufacture and retrofit existing inefficient energy consuming equipment with smart energy efficient energy consuming equipment (i.e. with smart sensors and thermostats) in City Power and CoJ infrastructure, including but not limited to buildings, street lighting and traffic signals; as a fully functional turnkey project.
- 3.2.2. Provide all required equipment/materials labour and tools required for installing, testing, and commissioning the energy efficiency systems, including a list of equipment spares.
- 3.2.3. Supply any special equipment and tools required for the operation and maintenance of the energy efficient equipment.
- 3.2.4. All equipment and installation shall be provided with a guarantee of (Twelve) 12 months and Ten to Fifteen (15-20) years warranty at minimum.
- 3.2.5. Submit to City Power a review and comment plan of all design drawings, and miscellaneous documentation required to provide a complete installation; including all as-built documentation, calculations, design drawings, equipment drawings required for the energy efficient equipment.
- 3.2.6. Provide a schedule for all design, fabrication, installation and testing activities for the project.
- 3.2.7. Provide a proposed maintenance schedule for the energy efficiency systems, as per the OEM.
- 3.2.8. Undertake communication and awareness programmes among staff on energy efficiency.
- 3.2.9. Obtain Energy Performance Certificates (EPCs) for City Power and CoJ buildings as per the regulation for the mandatory display and submission of energy performance certificates (EPC's), under section 19(1)(b) of the National Energy Act, 1998 (Act No. 34 of 2008).
- 3.2.10. Develop templates for conducting Measurement, Reporting and Verification (MRV) of Energy Savings.

## **4. REQUIREMENTS OF THE PROJECT**

The invitation applies to qualified and suitable submission of proposals to provide alternative energy and energy efficiency projects feasibility studies, design and implementation to City Power Johannesburg to assist in the following;

- 4.1. Meeting the City's financing needs through the monetisation of alternative energy resources available around the City of Johannesburg area of jurisdiction.
- 4.2. The development of investments that will facilitate the reduction of energy costs as well as assisting the City in reducing its carbon footprint. These investments are expected to be in line and consistent with the

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regulatory, legal, social, economic and environmental by-laws within which City Power Johannesburg as an energy distributor operates.

- 4.3. Therefore, these Terms of Reference require the Engineering Strategic Partners that will be comprised of skills that will enable the achievement of a diversified energy mix implementation.

## **5. DURATION AND BRIEFING**

- 5.1. The work of the Engineering Strategic Partners shall be carried out hand in hand with City Power, and that the duration of shall be based on contract agreement with the winning bidders.
- 5.2. City Power reserve the right to request the Engineering Strategic Partners to brief City Power's involved stakeholders at the end of each program in a workshop type of a meeting. The briefing shall be in the presentation format.
- 5.3. A schedule of milestones shall be compiled and presented at EXCO for approval.
- 5.4. Routine reports (e.g. bi-weekly) shall be provided including the capturing of meeting minutes where the Engineering Strategic Partners must provide Secretariat function.

## **6. DOCUMENTATION**

Engineering Strategic Partners shall provide all documentation on handover to City Power at the end of the project (Hard copies and Electronic format). All reports shall be submitted to the Programme Manager in line with predefined and agreed timelines.

- 6.1. Presentations.
- 6.2. Feasibility studies reports.
- 6.3. Detailed designs.
- 6.4. Impact assessments reports.
- 6.5. Minutes.
- 6.6. Implementation Plan
- 6.7. All documentation utilised for achieving the goals of the Sustainable Energy Mix Strategy.

All the project information shall remain confidential and the property of City Power. The Engineering Strategic Partner or its subsidiaries companies shall not take part in any tender relating to the above and shall not disclose this information to the third party.

## **7. Training**

Training of key City Power personnel shall be required for the daily operation and preventative maintenance/troubleshooting of the alternative and energy efficiency systems at commissioning stage. This

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training shall be provided by the Contractor and priced for in the bid submission. The training programme shall cover all aspects of operations and preventative maintenance/troubleshooting of the systems and sub-components. It shall be preferable to have a combination of theoretical and practical training for the key personnel as identified by City Power.