



SOLAR-POWERED SYNERGY: SUN CITY SHINES WITH +R1-MILLION ENERGY SAVINGS IN TWO MONTHS

INTRODUCTION

As one of South Africa's largest and most popular entertainment and casino resorts, situated in a remote part of the North West Province, Sun City depends on **reliable, always-on electricity** to power its energy-intensive 1-million metres² of built space, which includes the Valley of Waves, The Palace of the Lost City, hotels, engineering facilities, kitchens, Casino, golf courses, retail and entertainment spaces.

However, given South Africa's ongoing energy crisis, rising electricity prices and vulnerability of the national grid, the entertainment resort decided to take advantage of the area's mostly sunny conditions by investing R16 million in a photovoltaic (solar) system that would reduce its reliance on Eskom and provide significant cost savings in the mid-to-long term.

Tsebo, having been Sun City's trusted partner for Engineering and Facilities Management Solutions over recent years, began by optimising the Resort's current assets as a foundational step before integrating them with renewable energy solutions. Their commitment to maintaining Sun City's vast engineering infrastructure in top condition solidified Sun City's confidence in Tsebo Energy Solutions to execute the project with a customer-centric approach, guaranteeing minimal downtime, professional and ethical behaviour, thorough attention to detail, and operational efficiency.



This is one of the many initiatives that Sun City, in particular, and Sun International, are rolling out to reduce energy use both from a supply and demand perspective. Efficient lighting, HVAC retrofits and reconfigurations, water-heating and a gradual move to renewables all form part of the plan.

– Brett Hoppé,
Sun City General Manager



From left, Tsebo Facilities Solutions CEO Aubrey McElnea, Sun City Sustainability Manager Lwazi Mswelanto, Tsebo's Senior Operations Engineer TM Lesetla and Sun City General Manager Brett Hoppé

THE CHALLENGE

Tsebo was tasked with providing an end-to-end energy solution that considered Sun City's Environmental, Social and Governance (ESG) requirements by ensuring the correct tender processes were followed and that due consideration was given to creating job opportunities in the local community.

Sun City required a phased approach to reduce its reliance on the national grid, starting with the installation of a **1.4 megawatts peak grid-tied solar photovoltaic system** comprising over **2,500 solar panels**, which needed to be positioned to gain full advantage of the North West's mostly sunny conditions without interfering with the resort's carefully designed aesthetics.

Selected for its abundant sunlight and ample space, the roof of Sun City's conference and entertainment centre was ideal for the project. However, it posed challenges. The process demanded the **removal of roughly 12,600m² of tiles** and elevating the solar modules and installation equipment to the high roof, all while upholding stringent health and safety standards.

The initial focus was on powering the **energy-intensive Valley of Waves and reducing the resort's Maximum Demand Effect of 1.1 MW/MVA** (the highest level of electrical demand monitored over 30 days). This would be followed by the phased installation of additional solar panels to reduce reliance on the national grid further.

THE SOLUTION

To ensure transparency at every stage of the process, Tsebo reviewed irradiation levels (kW/m²), drew up technical specifications, advised Sun City on applicable tax incentives and provided the correct request for information (RFI) and request for proposal (RFP) documentation for tender.

Tsebo adjudicated the tender process from submissions to creating tender-evaluation reports and overseeing the commissioning process. From there, the Energy Solutions team project-managed and monitored the performance of every step of the installation from start to handover. On an ongoing basis, the team uses the Consumption Management Dashboard to ensure regular energy performance oversight and client reporting.

Installation specifications

- **2 584, 550W** monocrystalline solar modules
- **12 x 112 kW** inverters
- **Day Time Solution** Required/PV
- Energy to be fed into the Sun City's **internal network**
- **Grid-tied solar solution** (no battery storage)
- Estimated **2300 MWh annual energy yield**
- Estimated **net saving of R3.2 million per annum**
- Significant **reduction in carbon emissions (CO₂e)**
- **Consumption Management Dashboard**
- Local-to-local **community employment and skills transfer**



BEFORE



AFTER



INVERTER ROOM



GRID-TIED SOLAR SYSTEM

BENEFITS AND RESULTS

With scheduled preventative maintenance, the plant's lifespan is expected to exceed 25 years, with the initial R16 million investment paying for itself within five years.

In fact, recent data collated by Tsebo's **Consumption Intelligence software** shows that the projected annual net saving of R3.2 million could be exceeded, with energy-saving valued at about R1 million (413,871 kWh) recorded in just over the first two months of operation. Furthermore, from a sustainability perspective, the solar plant will see Sun City reduce its annual CO₂ equivalent emissions by more than 2,510 metric tons per annum.



413 871 kWh in energy savings achieved in just over two months, equating to more than **R1 million in savings**



Annual CO₂ equivalent emissions to surpass projected 2,510 metric tons per annum



The solar plant's lifespan is expected to exceed **25 years**



The investment will pay itself off in less than **five years**

“

This is an **equivalent of what 329 average-sized South African households** consume over a year. On good sunshine days, which will be most days, the facility currently frees up **10% to 15% of Sun City's electrical demand** from the national utility supplier Eskom, which will be to the benefit of the grid in the vicinity, and by extension local communities that feed off the same supply.

– Brett Hoppé,
Sun City General Manager

”



A Ray of Hope: Social Upliftment

Twenty-three local community members were contracted over four months to remove approximately 12,600m² of tiles from the roof of the resort's conference centre to clear the way for the installation of over 2,500 solar modules.

The contracted community members underwent rigorous health and safety training and comprehensive on-the-job training during the project's tile clearing and solar installation phases.

“

Sun City has always been focused on community development and upliftment, and all of the projects we undertake involve the transfer of skills. Our doorstep communities rely on Sun City for employment, and we, in turn, rely on them to provide us with services, so for us, it is crucial to be able to give back to our neighbours.

Lwazi Mswelanto, Sun City Sustainability Manager

”

“

Our array of innovative solutions and over five decades of experience, positions Tsebo as a strategic **Environmental, Social, and Governance (ESG) accelerator**. Working with like-minded companies, whether suppliers, partners or clients – like Sun City, to achieve sustainability targets more effectively and efficiently.

*– Aubrey McElnea,
CEO of Tsebo Facilities Solutions*

”

Other benefits

- **Improved energy resilience** (e.g., blackouts, load-shedding)
- **Cutting-edge technology** not only assists in achieving **immediate savings** but also reduces utility and operational expenses
- **Consumption Intelligence System** provides **real-time insights into energy usage**
- **Maximise the potential of current assets** for a shift to renewables
- Opportunities for **tax breaks, funding,** and increased adherence to **industry norms and global best practices**
- **Reduce CO₂e** to minimise environmental impact and pave the way to achieving carbon neutrality (Net-zero).
- Customised energy solutions for **long-term benefits** and a variety of options **tailored to the client's needs**
- **Elevated brand reputation** and a commitment to **responsible ESG initiatives**

“

We are super-excited about what it has been producing to date, and we have **immediately embarked on another 10%** on top of what we have.

– Brett Hoppé,
Sun City General Manager

”



Significant expansion plans on the horizon

Building on the current momentum, an **additional 209 panels** will be installed by November 2023, increasing the installed **capacity to nearly 1.6 MW**. Subsequently, the Tsebo-Sun City Partnership is embarking on a significant project to **transition the Resort from the national grid completely**. This initiative will meet the entire Resort's electricity needs and provide an **excess of approximately 20% to 30%**. The evaluation phase of this project is well underway.



GET IN TOUCH |

+27 11 441 5300 | info@tsebo.com
www.tsebo.com

