GreenCape

INDUSTRY BRIEF

Solar PV for businesses in the Western Cape

Abbreviations

BESS	Battery energy storage system
BTM	Behind-the-meter
CPI	Consumer Price Index
ESG	Environmental, social & governance
ESRS	European Sustainability Reporting Standards
IRR	Internal Rate of Return
kWh	Kilowatt-hour
kWp	Kilowatt-peak
LCOE	Levelised cost of energy
MWh	Megawatt-hour
MWp	Megawatt-peak
NPV	Net Present Value
O&M	Operations & maintenance
PPA	Power Purchase Agreement
PV	Photovoltaic
REC	Renewable Energy Certificate
SARS	South African Revenue Service
SSEG	Small-scale embedded generation
TOU	Time of Use

Glossary

- **BTM:** Installations that are located on the customer's side of the electricity meter, thus feeding directly into the customers' electricity demand.
- **TOU:** A tariff structure where the price of electricity varies depending on the time of day, day of the week, or season. The structure is sub-divided into off-peak (referring to low demand periods), standard (mostly relevant to daytime hours), and peak (high demand periods in morning or late afternoon).
- **Kilowatt peak (kWp) vs kilowatt-hours (kWh):** 'kWp' measures the most power the system can produce or its size. 'kWh' measures the energy the system produces over a period, 1 kW produced over 1 hour equals 1 kWh.
- **LCOE:** A measure of the cost of the generated electricity over the lifespan of the project, measured in R/kWh.

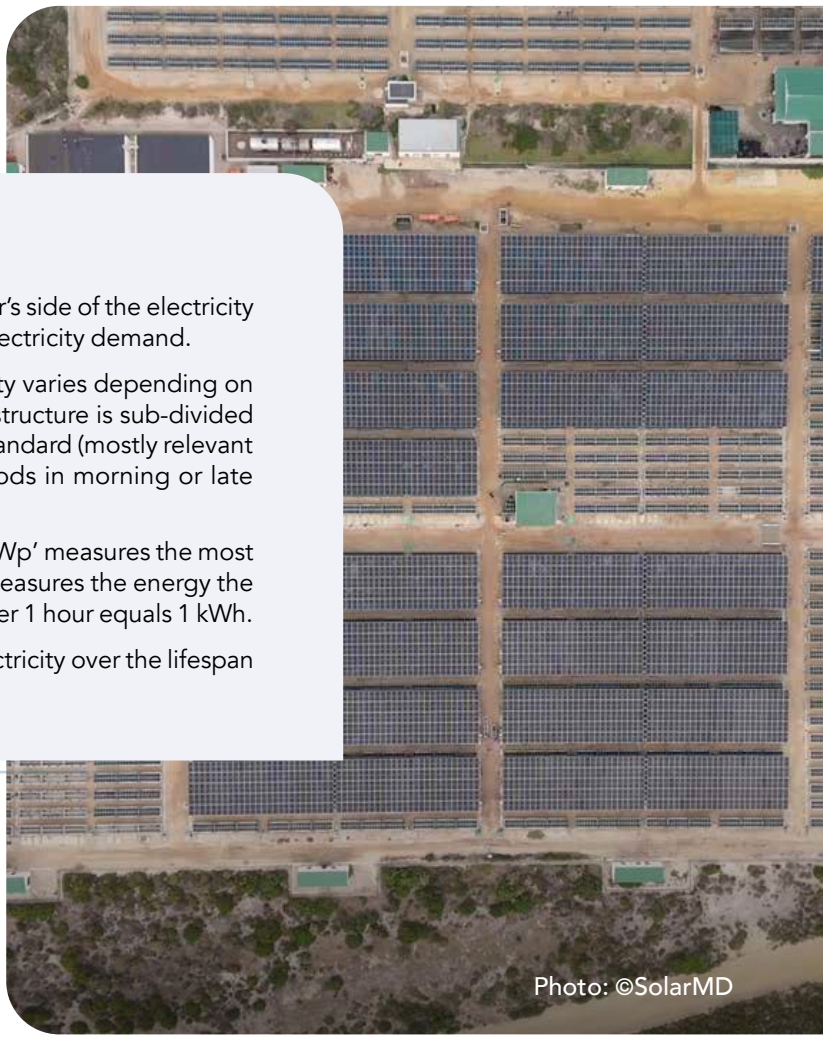

Photo: ©SolarMD

Main insights

1. Solar photovoltaic (PV) enables businesses to lower energy costs and support a transition towards sustainable, low-carbon operations.
2. The availability of diverse financing mechanisms has made solar PV more accessible for businesses.
3. A popular financing option is power purchase agreements (PPAs), which allows companies to eliminate the need for large capital outlays while locking in predictable, lower energy costs.
4. Businesses can install solar PV across all Western Cape municipalities and the Eskom network, with 20 municipalities offering feed-in tariffs that strengthen the business case by allowing companies to earn from excess electricity.
5. Green attributes or renewable energy certificates (REC) can be separated from a solar PV installation and sold through a voluntary market, however, the costs are marginal and the owner loses the ability to claim environmental benefits from the solar PV system.

This industry brief is written for:

Businesses in the Western Cape considering the installation of behind-the-meter (BTM) solar PV systems to reduce electricity costs, access renewable electricity and improve their energy security.

1 Context

South Africa's electricity landscape is defined by consistent and above-inflation electricity price increases, presenting significant financial pressure on businesses.

Since 2022, the levelised cost of electricity (LCOE) for embedded solar PV in South Africa has dropped to levels below many electricity tariffs, largely due to a continued decrease in the global cost of solar components and significant increases in utility tariffs, resulting in considerable cost savings for businesses and a notable uptick in solar PV installations. In the Western Cape there is an estimated 790 MW of BTM (mostly rooftop and parking-lot) solar PV installations.

Whilst cost-saving and price stability have been key drivers of the market, businesses are increasingly adopting solar PV to reduce carbon footprints and enhance operational resilience against South Africa's power challenges.[1] Adopting renewable energy not only supports sustainability goals, but also helps companies meet growing international supply chain expectations and prepare for stricter carbon regulations.

1 In many instances solar PV paired with battery energy storage systems to maximise resilience.

2 What determines the financial viability of a solar PV system?

Installation size:

Larger projects generally have a lower LCOE by spreading the fixed costs over the total system size. Companies should ensure that the design of the system is based on the consumption profile of the facility to avoid compliance issues or over production of electricity.

Technology:

The financial viability is influenced by the choice of technology and brands. Component prices may vary and most key components (inverters and solar modules) are imported, which makes the project exposed to currency fluctuations. South Africa is lagging in equipment compliance, and as such, companies should ensure that service providers offer equipment that abide by recognized international standards and testing conditions, such as IEC 61215 and UL 1703.

Location:

Factors, such as positioning, structure type (e.g., rooftop, ground-mounted), and orientation, influence the costs and amount of solar irradiation that reaches the solar PV modules. A higher output from a well-sited and oriented system leads to greater electricity generation and, consequently, more substantial cost savings and a stronger financial return on investment. In some cases, it is worth installing a smaller system in order to avoid excessive shading or layouts with low sunlight exposure.

Financing model:

The selected financing model, such as outright purchase, debt finance, or a PPA, depends on the business's risk profile and investment considerations. External financing through PPA or debt, allows businesses to focus on their spending within their own operations, however, this also increases the overall cost of the solar PV system over its lifespan. Businesses should determine their own hurdle rate when considering the funding options.

Daytime electricity tariff:

Higher tariffs increase the financial feasibility of a solar PV system by making the savings more substantial. For time-of-use (TOU) tariffs, the most relevant tariff is the standard rate, which applies mostly to daylight hours. Additionally, feed-in tariffs assist project viability by providing a financial incentive in cases of excessive electricity production.

3 Pricing of solar PV installations

The most recent pricing benchmarks for embedded (rooftop) PV are provided in Table 1. It illustrates the impact of economies of scale on the costs of embedded solar PV systems as well as the typical ranges for various financing mechanisms that are available. Price multipliers for alternative configurations for embedded solar PV systems are also presented.

Sometimes projects above 1 MWp face viability challenges due to licensing requirements, grid connection constraints, and lengthy administrative processes. These factors can delay implementation and increase costs, impacting the financial attractiveness of such projects.

Table 1: Benchmarks for embedded solar PV 2025/26

Procurement option	<100 kWp	100 kWp-500kWp	100 kWp-500kWp	>1 MWp	
Outright purchase R/ kWp installed capacity	R 13.50 – R 15.50	R 12.00 – R 13.50	R 10.00 – R 12.00	R 9.00 – R 13.50[2]	
Debt finance	Risk adjusted interest rate (margin plus prime). Debt funding is available from most commercial banks for a 5- to 10-year loan at a rate of prime lending rate (10.25% for December 2025) plus 1.5% - 3.5%.				
Lease-to-own (10 years) per month excluding annual escalation	R 7 000 – R 30 000	R 25 000 – R 120 000	R 100 000 – R 200 000	R 210 000	
PPA	A negotiated rate providing energy cost savings and greater price stability, typically below Eskom or municipal rates. The PPA tariff typically has an annual escalation rate linked to inflation, and a duration ranging from 10 – 20 years.				
Cost multiplier for different PV configurations	Rooftop	Rooftop with asbestos replacement	Ground- mounted	Floating	Carport
	1.00	1.30 – 1.50	1.10 – 1.20	1.50 – 1.75	1.25 – 2.00

The Green Finance Desk has compiled and continues to maintain a database of funding sources and incentives that could be relevant to companies operating in the green space: https://greencape.co.za/archives/green-finance-databases/

Cost savings vs green attributes:

Green attributes, also called a REC, refer to the environmental benefits associated with a solar PV system through offsetting carbon emissions from the national grid. It is possible to separate the green attributes from the cost of the electricity, enabling the sale of the attributes separately. Companies that are unable to reduce their carbon emissions are then able to purchase the green attributes from a solar PV system to assist with their carbon emission reduction goals. By selling green attributes separately, companies forfeit the environmental benefits, but are able to source lower cost electricity.

Careful consideration should be made of the long term needs of a company prior to signing into such an arrangement. Green attribute revenue is currently marginal in South Africa's voluntary market and often <5% of gross avoided cost; value depends on the contract and whether environmental attributes are retained or sold. If the project sells RECs, it should reflect on the lost avoided-emissions claim in any environmental, social and governance (ESG) framework narrative.

Carbon markets brief

2 This will depend on the specific type of the project, ground mount vs rooftop, MV vs LV, and the grid connection requirements (stipulated in NRS 097-2-1).

4 Financing mechanisms for solar PV systems – comparative model

A variety of finance and ownership mechanisms are available to businesses that seek to access renewable energy. A company will need to decide whether they want ownership and responsibility for their solar PV infrastructure or if they want to pay for the benefits the system offers. To better understand the benefit of owning a solar PV system as opposed to paying for benefits, two simple cash flow models are presented. Table 2 shows the assumptions applied for the model.

Table 2: Assumption used for solar PV ownership models

System size	200 kW	Inflation rate assumption	4% per year (average inflation for 2024 was 4.4%, November 2025 was 3.5%)
Electricity generation potential	1 200 kWh/kW per year	Annual electricity tariff increase	8.76% for the first year and 8.83% for the second year,[3] followed by inflationary increase[4]
Daytime electricity tariff	R1.90/kWh (Eskom Megaflex – non local authority; Legacy charge plus Standard rate with voltage less than 500V in the >900km zone, seasonally adjusted)	Solar PV module degradation	10% over 20 years
Project lifespan	20 years	Annual O&M contract and insurance	5% of full system cost per year
Debt interest rate	12%	Debt Payback period	10 years
Full system costs	R13.50 per Watt installed	Year 10 inverter replacement cost	20% of full system cost

Asset ownership:

Purchasing a solar PV system outright requires a significant upfront cost (capital expense or debt financing). The owner takes full responsibility for system performance, operation and maintenance (O&M), and risks. Long-term equipment replacements or upgrades may also be required (e.g. inverter component replacement after 10 years), thus requiring businesses to monitor and plan ahead for the system. Alternatively, a business can outsource O&M via a service contract, shifting the operational burden.

The model in Figure 1, indicates savings on a capital funded project of R8 million over 20 years and a simple payback of 6 years, while a debt (10-year) funded project will have a savings of R6.2 million over 20 years or an 10-year payback (if the 10-year invertor replacement is paid for using capital).

3 The first two-year above inflation tariffs are obtained from the NERSA approved tariffs for 2026/2027 and 2027/2028 tariff adjustments.

4 Eskom tariffs has historically increased above inflation; however, this trend is unlikely to continue. Improved finances at Eskom, increased political and social pressur to reduce electricity costs and changing tariff structures will likely see a lower tariff escalation of especially daytime tariffs in the long-term.

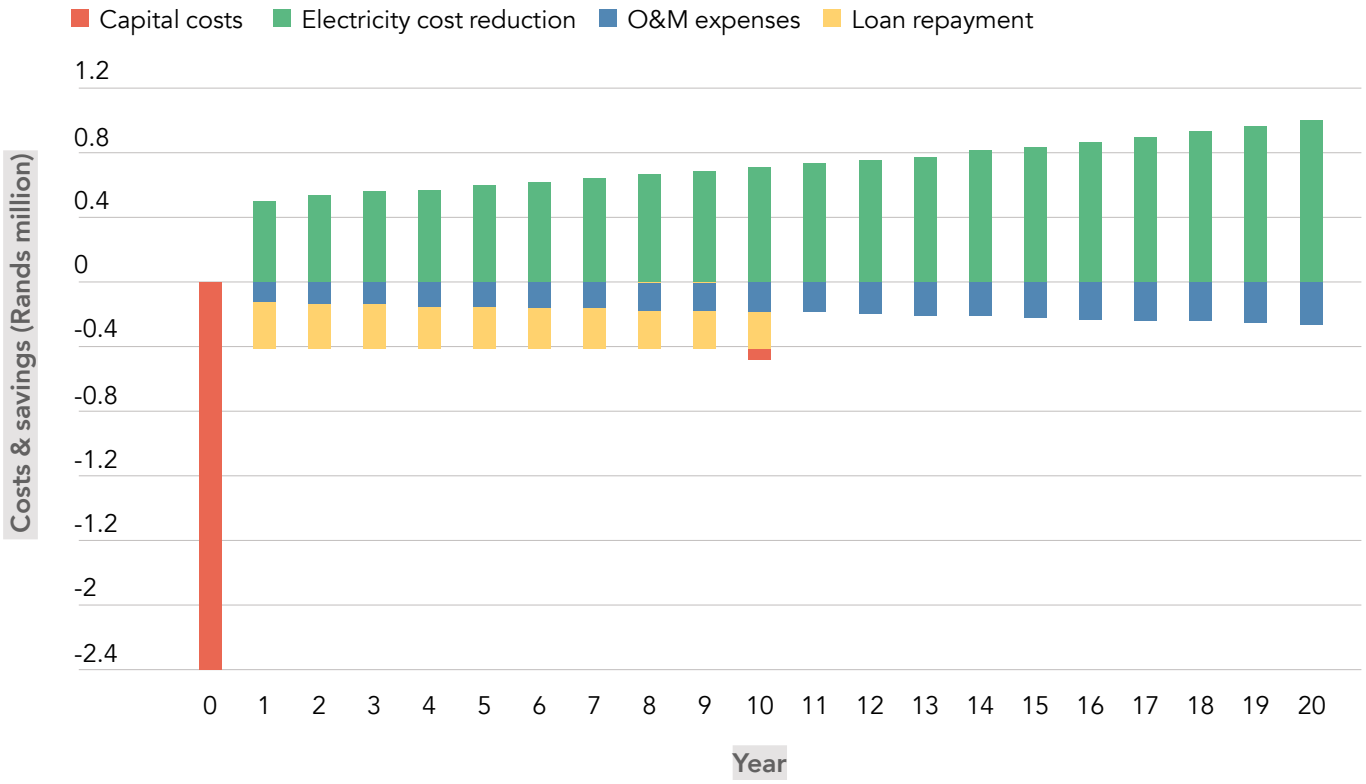

Figure 1a: Financial model for the outright purchase of a PV system showing the initial capital expense, loan repayments, O&M expenses and electricity cost savings.

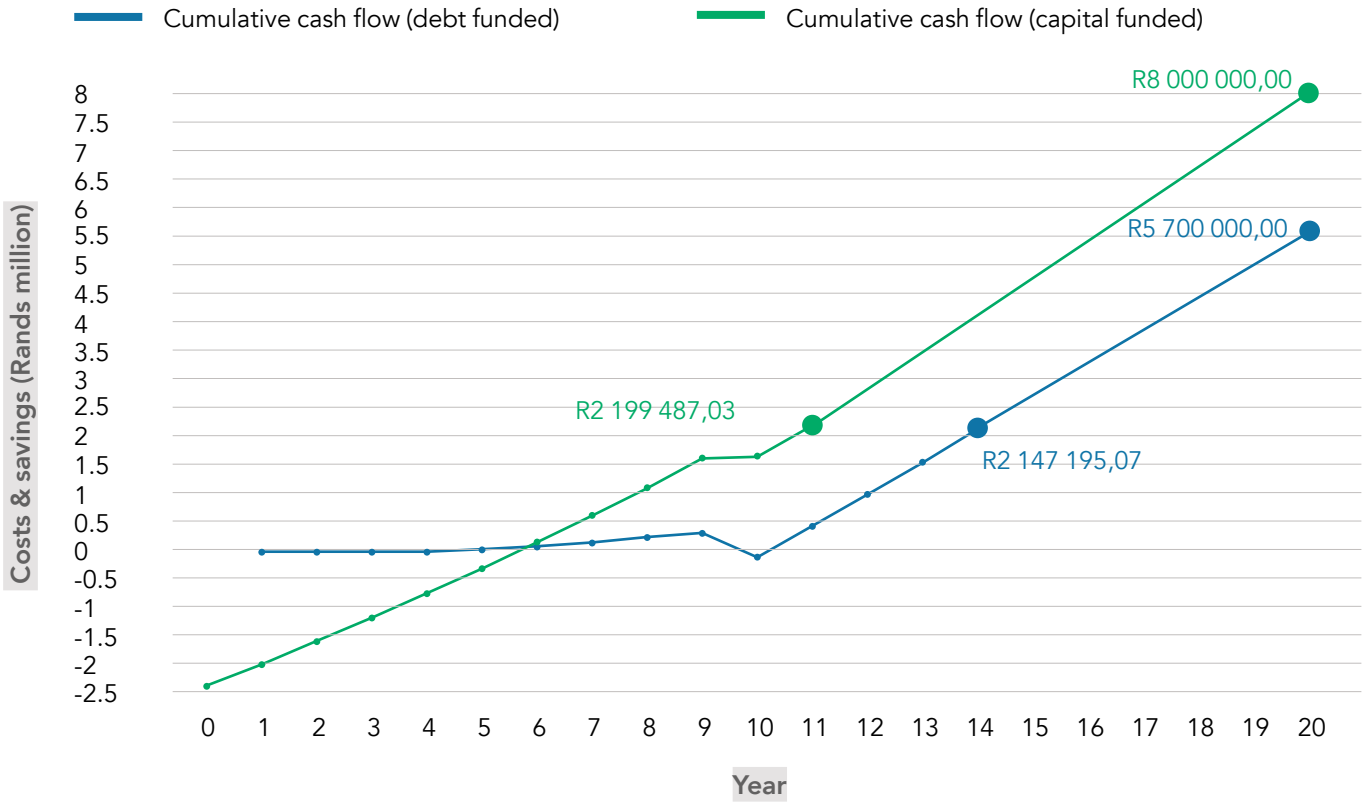

Figure 1b: Financial model for the outright purchase of a solar PV system showing cumulative cash flow models for both capital and debt-funded options.

The key benefit of owning the asset is realizing high long-term returns and leveraging available incentives (see page 10). These returns are primarily driven by projected increases in daytime electricity tariffs (standard) hours, which have historically escalated above inflation.

Pay-for-access:

Companies have the option to access the benefits of solar PV without owning the asset, avoiding capital expenditure and responsibilities for O&M. The two most commonly utilized models are rent-to-own and power purchase agreements.

Rent-to-own agreements are usually fixed term, 10-year agreements where the customer rents the system and ownership is transferred to the customer at the end of the lease agreement. The customer is not responsible for system performance risk until it is handed over. This model is less common with more companies focusing on the PPA model.

Under a PPA, a third-party provider installs, owns, and maintains the system. The customer buys power at a predetermined cost, in many cases lower than existing tariffs paid. The customer benefits from a cheaper tariff without upfront investment or responsibility for the asset.

These agreements vary from 10 – 25 years, with longer periods resulting in lower tariffs, and provides a predictable tariff increase, usually inflationary, to ensure predictable energy expenses.

The financial model in Figure 2 indicates the benefit offered by the PPA model that utilize a tariff -10% model for the first year followed by an inflationary increase. The model indicates a total saving of R1.3 million over 20 years and the realization of savings from the first year of operation with no investment costs. It is important to note that the savings is completely dependent on the tariffs, with higher tariffs resulting in larger savings.

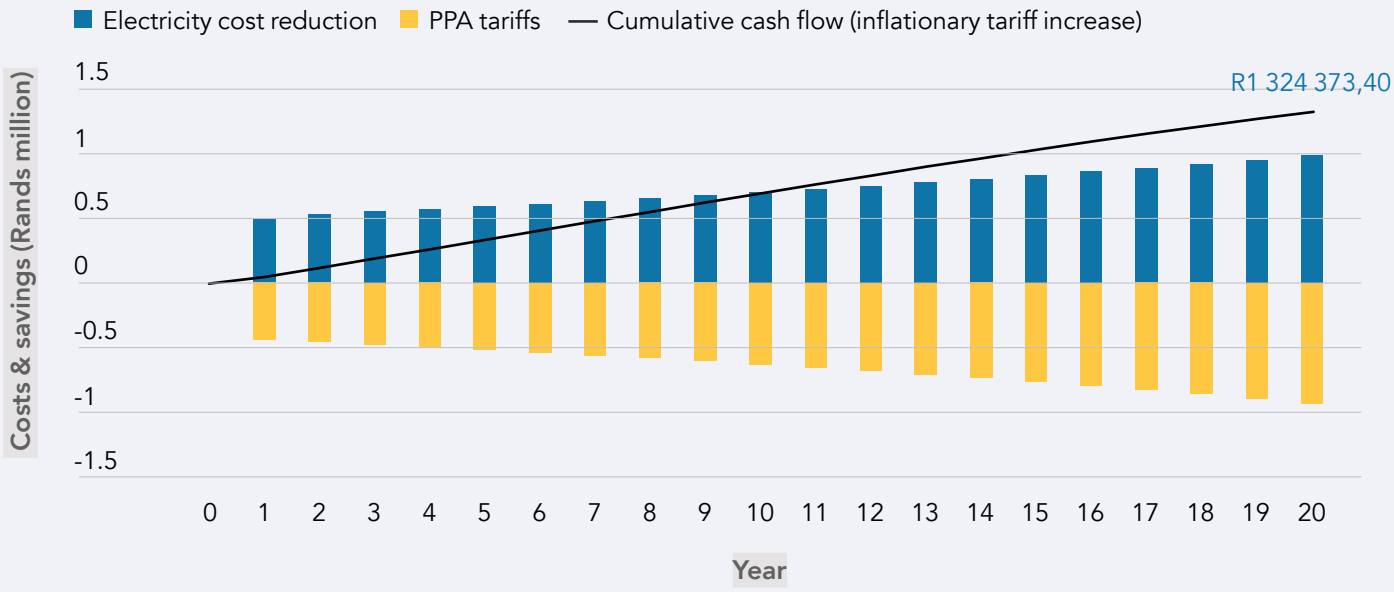

Figure 2: Financial model for a PPA

The PPA model simplifies the process of accessing renewable energy, by allowing a company to only pay for electricity through a billing system with a service provider and provides companies with a predictable long-term energy cost model. However, companies are required to carefully assess the PPA terms to make sure sufficient performance guarantees, exit clauses and other key legal considerations does not pose a significant risk to the company in the long-term. The contracting phase could result in significant legal costs and may take time to finalise prior to implementing the renewable energy solution.

Easipack Project

A 485.6 kWp solar PV system constructed by ACES Africa and developed by Ofgen at Easipack's facilities in Athlone, Western Cape. The system is installed across two rooftop structures and was financed by IDC through a debt/asset-ownership model.

Technology:

- Panels: LONGi 555 W
- Inverters: Huawei string inverters

Annual generation:

The system produces **661 MWh** per year, reducing Easipack's grid electricity consumption by an equivalent amount. This results in approximately **R1.4 million** in annual electricity cost savings.

Financial returns:

Year 1 cost savings: R1 476 000

Total projected undiscounted savings (20 years): R28 million (linked to high tariff increase assumptions)

NPV @ 8%: R1.01 million

IRR: 18%

Lanzerac

A 1 MWp solar PV system, combined with a 1.764 MWh battery energy storage system (BESS), constructed by ACES Africa and developed by Atlas Power at the Lanzerac estate in Stellenbosch, Western Cape. The system uses a ground-mounted, fixed-axis design and was financed through a Bravura debt/asset-ownership model.

Technology:

- Panels: AIKO 620 W
- Inverters: Sigenergy hybrid inverters
- Battery: Sigenergy BESS (1.764 MWh)

Annual generation:

The system produces 1.778 GWh (1,778 MWh) per year, reducing Lanzerac's grid electricity consumption by an equivalent amount. This results in approximately R2.3 million in annual electricity cost savings.

Furthermore, the BESS allows for improved grid management, providing additional savings through peak reduction and load shifting.

Financial returns:

Year 1 cost savings: R2 313 000

Total projected undiscounted savings (20 years): R50–60 million (linked to high tariff increase assumptions)

NPV @ 8%: R1.0 million

IRR: 18–19%

Business case risks

The electricity regulatory, policy and tariff environment is dynamic which could risk the business case. It is important for a business to consider and model for the impact these risks could have on the project in the long-term. The most noteworthy risks are:

Tariff structure changes: Eskom applied to NERSA for changes to the TOU pricing model, which will likely continue to be adapted in the future to accommodate a changing electricity environment, such as reducing the price of daytime tariffs (standard TOU tariffs) to accommodate increased solar PV installations. This will reduce electricity savings achieved through a solar PV system and reduce the financial viability of an installation.

However, these risks can be significantly mitigated by integrating BESS. As battery costs continue to decline, they enable energy arbitrage and allow businesses to install larger PV systems on the same connection by storing excess generation, for a detailed guide, see maximising the value of BESS brief.

Changes in solar PV policy: Municipalities and Eskom are able to change their policies on solar PV systems, which can materialise as prohibiting the feed-in of electricity, applying high connection fees for connecting solar PV, among other. These changes risk the returns of a project and may require businesses to reassess the viability of their solar PV system, install smaller systems or implement energy management and storage solutions to better manage their generation and demand.

Solar PV incentives

A range of national and municipal incentives strengthen the business case for solar PV in South Africa. These incentives may not be relevant if a company chooses to not own the system, through a PPA or rent to own:

Carbon emission reduction: Although not an incentive, solar PV assists businesses in reducing the impact of carbon regulations on their businesses. The Carbon Tax Act of 2019 levies tax against companies based on their greenhouse gas emissions above a certain threshold. Additionally, the Climate Change Act of 2024 commenced in March 2025, creating a regulatory framework for low-carbon, climate-resilient economy, aiming to establish sectoral emissions targets and mandating greenhouse gas reporting and climate risk disclosures. However, many provisions are deferred through an added Appendix: Deferred provisions of the Climate Change Act, 2024, and will not be enforced immediately. The Climate Change act, paired with the Carbon Tax Act, may impact many businesses in the future with solar PV being a key tool to reduce liability.

Accelerated depreciation: Section 12B of the Income Tax Act allows solar PV assets (smaller than 1MW) to be depreciated by 100% in the first financial year.[5] One of the qualifying criteria is that the asset is owned by the taxpayer, therefore the benefit cannot be accrued through rental or PPA agreements.

Feed-in tariffs: The Western Cape continues to create a supportive environment for embedded solar PV, with enabling municipal regulations that improve the investment case for businesses. Of the province's 30 municipalities, 19 now offer small-scale embedded generation (SSEG) feed-in tariffs, listed in Table 3 and shown in Figure 3. While these feed-in tariffs are typically less than the value of electricity offset by self-consumption, they still enhance the investment case by allowing businesses to sell excess electricity. This is typically done via bill credits or direct payments, subject to municipal approval and system compliance.

For more information on viable solutions to invest renewable energy for your business.

Beyond feed-in, wheeling is also gaining traction. Western Cape municipalities like Swartland, George, and the City of Cape Town already allow wheeling within their distribution areas, with George actively conducting pilot projects. Outside of the Western Cape, approximately 45 local municipalities also have relevant rules, regulations, tariffs, and policies for grid-connected systems.

Table 3: Western Cape SSEG tariffs

Municipality	Commercial feed-in tariff (Rand)
Beaufort West Local	1.11
Bergrivier Local	0.80
Bitou Local	1.22
Breede Valley Local	0.89
Cape Agulhas Local	1.23
Cederberg Local	1.11
City of Cape Town	1.03
Drakenstein Local	0.85
George Local	1.22
Knysna Local	1.12
Langeberg Local	0.85
Matzikama Local	0.97
Mossel Bay Local	1.17
Oudtshoorn Local	1.14
Overstrand Local	1.14
Prince Albert Local	0.42
Stellenbosch Local	1.26
Swartland Local	0.87
Swellendam Local	1.41

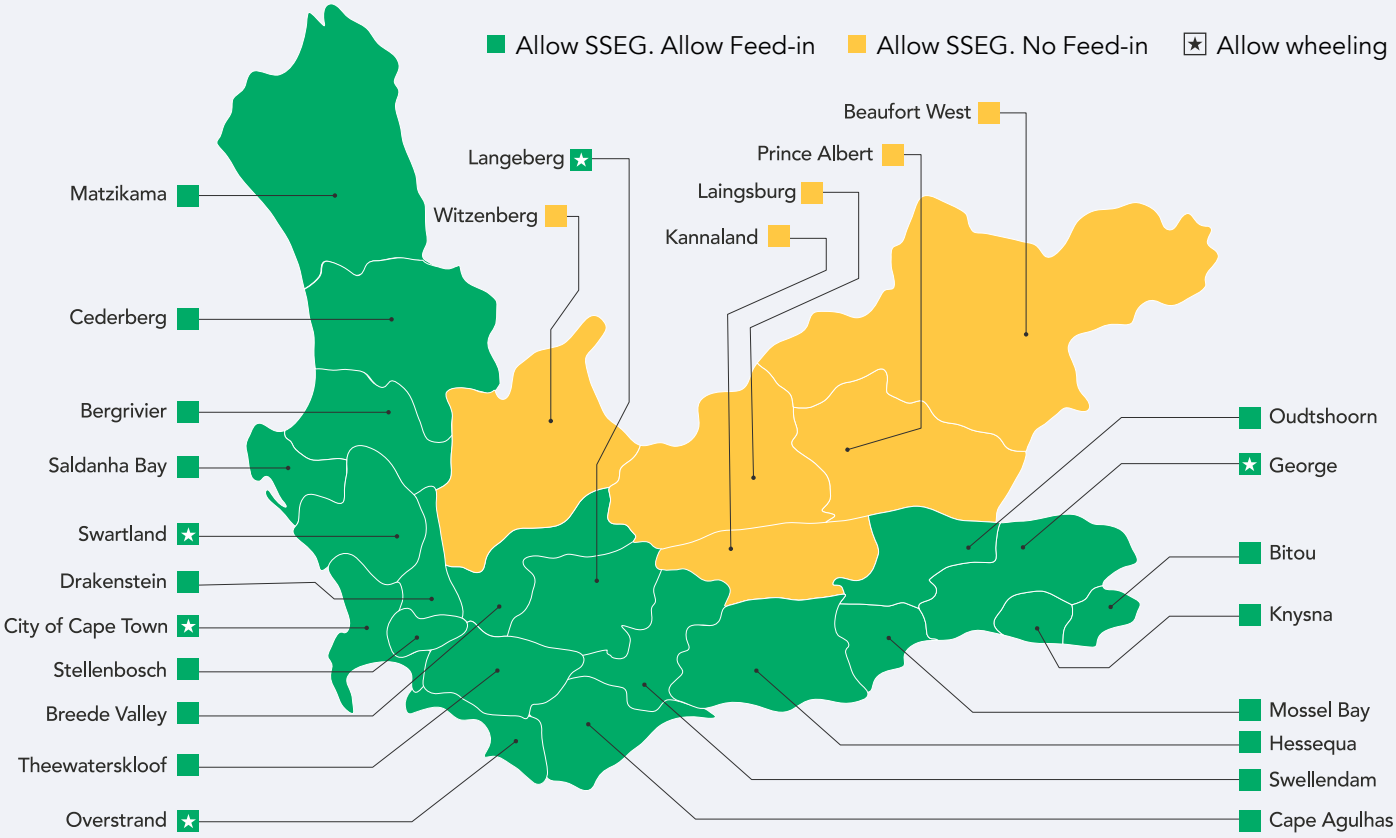

Figure 2: Financial model for a PPA | **Source:** GreenCape analysis

5 The South African Revenue Service (SARS) published the "Guide on the Allowances and Deductions Related to Assets Used in the Generation of Electricity from Specified Sources of Renewable Energy" setting out the allowances available to businesses. to reduce electricity costs and changing tariff structures will likely see a lower tariff escalation of especially daytime tariffs in the long-term.

Aqunion Romansbaai

A 2.4MWp solar PV plant located in Gansbaai with 8.2MWh BESS installed by Sustainable Power Solutions funded through a PPA. The batteries provided security of supply with additional benefits from tariff arbitrage.

Project type:

Custom carports over abalone tanks.

Technology:

Panel: JA Solar, Inverters (Solar): Sungrow, Inverters (Battery): EPC power, Batteries: CATL

Annual generation:

3 600 MWh

Financing type:

PPA and Equipment rental payback

5 Helpful resources

1. To find an accredited installer, visit the **South African Photovoltaic Industry Association (SAPVIA)** PV GreenCard website: The PV GreenCard is a safety certification, quality assurance standard, and training programme for solar PV installers. Furthermore, **SAPVIA published** O&M best practice guidelines for solar PV installations.
2. **Western Cape Government's** Executive decision-makers guide to investing in renewable energy: has been published to help support businesses make investment decisions for investing in renewable energy.
3. **National Business Initiative's (NBi) Business** decision-makers guide: Renewable energy in South Africa
4. Western Cape Government's small-scale embedded generation (SSEG) feed-in tariff map.
5. Western Cape Government **Department of Environmental Affairs and Planning (DEA&DP) (2025)**: Executive decision makers guide to investing in renewable energy.

This publication was produced by GreenCape in partnership with the Western Cape Government Department of Environmental Affairs and Development Planning (DEA&DP).

For more information and support contact:

GreenCape: energy@greencape.co.za | (021) 811 0250

For more information and support contact

Please contact GreenCape's energy sector desk at: energy@green-cape.co.za | (021) 811 0250

GreenCape
Supporting the business of green

Western Cape Government
FOR YOU