

The business case for solar PV in South Africa



Main insight

Solar PV can help South African businesses save ~15% in electricity costs, with systems paying for themselves within 3 - 12 years of installation, providing free energy for nearly 15 years thereafter.

The market continued to show significant growth in 2019, with the estimated total installed capacity rising to between 850 MWp and 1 GW.

In 2019 between 250 MWp and 400 MWp of rooftop solar PV has been installed.

The business case for solar PV in South Africa

There has been an exponential increase in the installation of solar PV by homeowners, businesses, government and industry in South Africa. Installations are driven largely by a combination of supportive local government policy frameworks, above-inflation electricity price rises, and decreasing technology costs. The case studies in this brief highlight some installations made by businesses as a result of this changing environment.

This industry brief highlights:

1. The financial viability of solar PV installations and current pricing.
2. Finance available for solar PV installations.
3. When and where can you feed in – Western Cape regulations and tariffs.

What determines the financial viability of solar PV systems?

The financial viability of solar PV is dependent on a number of different factors:

- **Installation size:** Larger projects produce cheaper electricity as fixed costs such as design and specification are spread over more panels.
- **Technology choice and exchange rate:** Prices still vary and some components need to be imported.
- **Location, roof type and roof direction:** These all influence the amount of sun that reaches the solar PV panels.
- **Financing model selected:** This is dependent on the client's risk profile or financial standing and the length of contract when looking at power purchase agreement (PPA) type models.
- **Client's current electricity tariff:** Higher tariffs increase solar PV's feasibility.
- **Client's consumption patterns:** Timing of energy use is important, particularly if peak use is during the day (when the sun shines) as Eskom charges a peak charge at this time. A peak charge depends on the highest your energy use reaches.

The financial viability of solar PV installations

Modelling shows that the economies of scale are significant, with larger systems having greater financial viability. Table 1 shows that small systems (< 100 kWp) cost ~R15k per kWp compared to large systems (> 500 kWp) that cost less than R10k per kWp. This is also reflected in the PPA tariffs with decreasing tariffs as system size increases.

Table 1: Solar PV price benchmarks

System size	Capital cost of system (per kWp)	Power Purchase Agreement tariff (per kWh)
> 50 kWp and 100 kWp	R12 000 – R15 000	R0.90 – R1.20
> 100 kWp and < 500 kWp	R9 000 – R13 000	R0.80 – R1.00
> 500 kWp	R8 000 – R12 000	R0.60 – R0.90

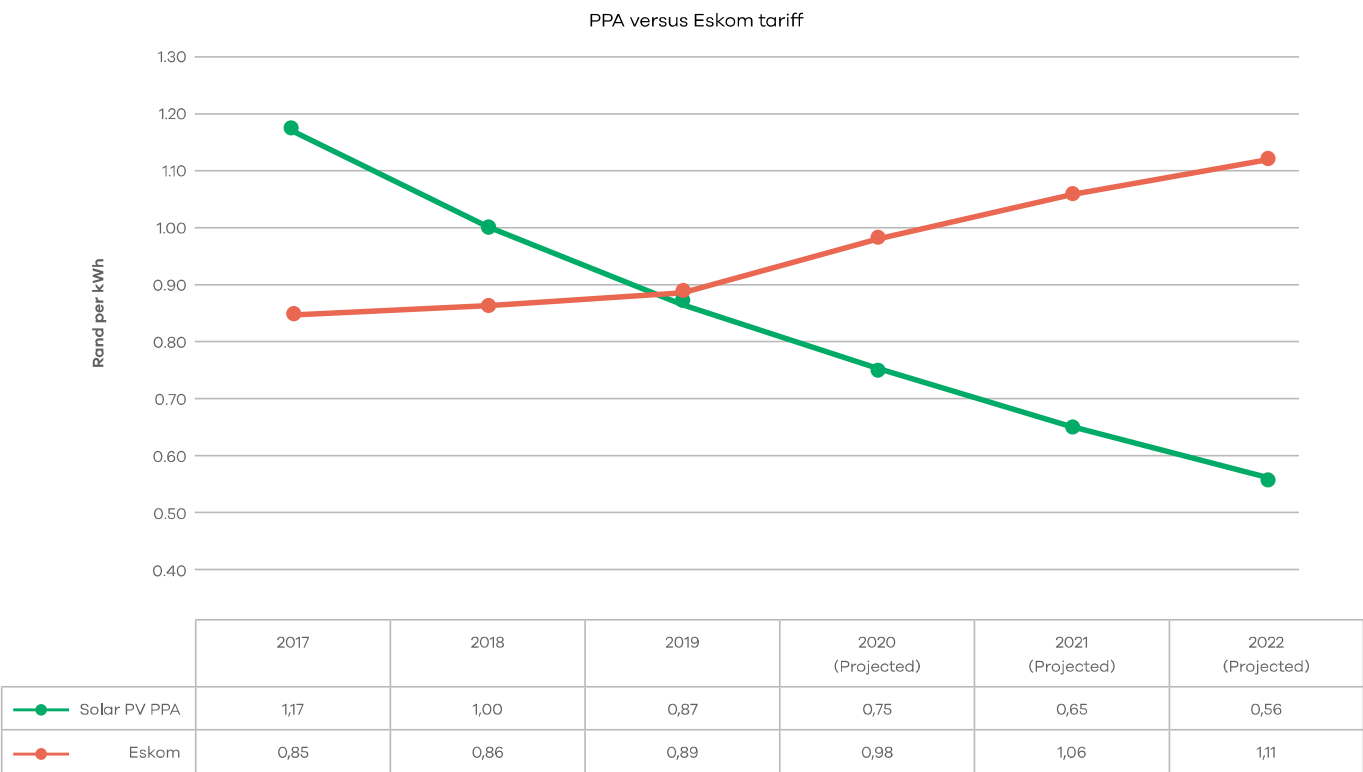


Figure 1: PPA versus Eskom tariff

As seen in Figure 1, PPA tariffs reached a point of price parity with average Eskom tariffs in 2019 and the PPA tariff is set to decrease further over the next few years. In a modelling exercise performed by GreenCape based on actual industry costs, an approximate payback period of five years is achieved for a 250kWp system. As solar PV systems have a lifespan of ~21 years, this means potentially 15 years of free energy.



Case Studies

SAB, Newlands Brewery

01

700kWp plant located in Newlands, Cape Town.

Technology:

2016 Canadian Solar Polycrystalline 370 watt modules
5 x ABB BVS 100 and 2 x ABB trio 50 Inverters
Roof space of 4000 M²

Return on investment:

Annual generation of 1 090 7325 kWh
Carbon emission savings of 1010 tonnes p.a.
4% reduction on electricity costs p.a.

Charlesville Mall

02

396 kWp plant located in Cape Town.

Technology:

1200 Ja Solar
6 x Huawei 50kTL Inverters
Roof space of 3168m²

Return on investment:

Annual generation of 586 080 kWh
Carbon emission savings of 562,6 tonnes p.a.
30% reduction on electricity costs p.a.
4.2 years payback period

Golden Arrow Head Office

03

820 kWp plant located in Epping, Cape Town.

Technology:

80 Jinko Solar, JKM320PP-72
1630 Canadian Solar CS6U 330Wp
702 Canadian Solar CS6U 365Wp
1 x Schneider Electric, CL 25000E Inverter
27 x SolarEdge 27.6K SE Inverters
Roof space of 4785m²

Return on investment:

Annual generation of 1380801 kWh
Carbon emission savings of 542 tonnes p.a.
95% reduction on electricity costs p.a.
5.5 years payback period

Solar PV incentives

Feed-in tariffs:

Customers are 'paid' for any electricity they feed onto the grid, through reductions in their energy bills. See – [SSEG Feed-In Tariff map](#).
Map available: www.westerncape.gov.za/energy-security-game-changer

Tax benefit (12i):

Tax allowance incentive designed to support greenfield and brownfield investments through support for both capital investment and training.

Pay less carbon tax:

As a low carbon energy source, solar PV will reduce the impact of the impending national carbon tax on businesses.

Tax benefit (12b):

100% accelerated depreciation in the first financial year. In effect, it equates to a 28% discount on the price of the solar system.

Solar PV is VAT deductible:

VAT registered entities can deduct the VAT portion of the solar PV system.

When and where can you feed in?

All grid-connected solar PV systems need to be authorised by the municipality prior to installation. Connecting without approval is illegal and dangerous as it could compromise the safety of those in the building, the grid and those working on the grid.

The Western Cape Province is leading the way in South Africa, with the majority of municipalities allowing grid-connected systems and having the necessary regulations and tariffs. Figure 1 below highlights when and where feed-in is an option in the Western Cape.

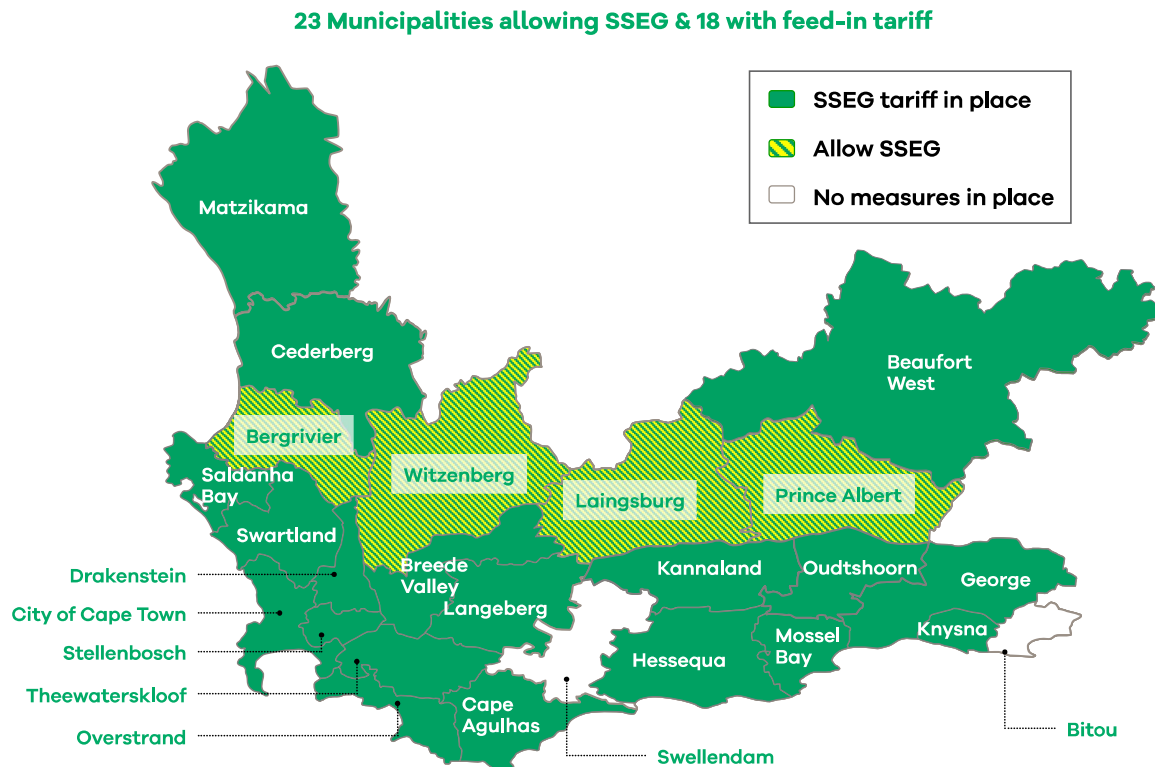


Figure 2: Western Cape Municipalities that allow grid connection and have feed-in tariffs

Outside of the Western Cape there are ~45 local municipalities that also have the relevant rules, regulations, tariffs and policies.

Need help exploring solar PV options for your business?

In order to find an accredited installer visit the South African Photovoltaic Industry Association (SAPVIA) PV GreenCape website (<https://www.pygreencard.co.za/customers/>). The South African PV GreenCard is a safety certification, a quality assurance standard, and training programme for solar PV installers.

Next steps

To find out more, contact GreenCape: energy@greencape.co.za; (021) 811 0250. For additional energy services information visit GreenCapes Energy Services webpage (www.greencape.co.za/content/energy-services)

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