

## Learning's from recent solar PV installations in South Africa



Many businesses are investigating the option of the solar photovoltaic (PV) installations for their electricity generation needs. One of the challenges relating to Solar PV is the high cost of installations relative to the existing electricity price. Dube TradePort and Standard Bank have both completed Solar PV installations in South Africa in the last year and have shared considerable detail on their installations publically, providing an excellent opportunity for others to learn from their experience.

### **Installation Costs**

Installation costs will vary depending on the configuration and scale of the installation appropriate to your business. Costs of the Standard Bank and Dube Tradeport Installation are shown below:

Standard Bank Durban Office: In 2011 Standard Bank completed a 45 kW peak solar PV installation. The cost of the installation was R1.8 Million or R40,000 per kW.

Dube Tradeport AgriZone: In 2011 Dube Tradeport completed a 675 kW peak solar PV installation. The cost of the installation was R17 Million or R25,185 per kW.

Both of the installations were rooftop and neither installation included any batteries to store the electricity generated. Including battery storage would substantially increase the costs of installation.

The relative cost of the installation shows the impact of installation size on the cost per installed kW, demonstrating that a larger installation is likely to be more viable.

Two factors are expected to help bring down solar PV installation costs in South Africa. Firstly, global prices of solar panels are decreasing rapidly. Secondly, ground breaking installations such as those done by Dube and Standard Bank are contributing to improved professional capacity, this should result in decreased professional costs for follow on projects.

### **Electricity Yield**

In the case of the Standard Bank Durban Office the expected annual yield of the installation is 80,000 kWh. The performance of solar PV panels will degrade over time and subsequently the yield will decrease. This yield is predicated to decrease by 0.8% annually. The current

business and general tariff for Durban is R1.13 per kWh. So the annual savings in the first year of installation will be R90,400. The annual electricity increase planned for 2012/2013 in the Durban area is 11%. Assuming annual increases remain the same going forward the payback period for the project is in the region of 12 years.

Dube Tradeport expects an annual yield of around 749,000 kWh. This yield is also predicted to decrease by 0.8% annually. Dube have indicated that they expect to save R765,000 annually as a result of avoided electricity costs. Based on these figures it can be estimated that the payback period will be between 10 and 11 years depending on electricity price increases.

### **Grid Connection**

Standard Bank elected not to connect their installation to the grid as their entire electricity yield can be used in-house at the Standard Bank Offices. Dube Tradeport, on the other hand, is planning a second phase installation. Once this is installed their electricity yield may exceed their on-site requirements. As a result Dube Tradeport has connected their installation into the eThekweni Municipality grid to make it possible to feed excess electricity to the municipality once phase two is complete. To make the connection, Dube had to apply for permission to the Electricity Department of eThekweni Municipality (eThekweni embedded energy application forms are available here). Negotiations between Dube and eThekweni Municipality regarding the sale of electricity to the Municipality are yet to commence. However, the municipality has made provision for power purchase agreements from embedded energy generation installations such as this and has publically indicated that it will pay suppliers at the same rate at which municipalities are charged to purchase electricity in bulk from Eskom.

