

# Solar System Case Study

## SOLAR PV INSTALLATION

As part of an on-going commitment to energy reduction, the Owners, Asset Managers and 101 Management team have recently installed a 59.4 KW Solar Photo Voltaic (PV) System.

The panels are being installed in a vertical configuration in front of the wall cladding at the rooftop Levels 56 and 57.

The system comprises 180N0, 330 watt rated output solar panels, with 40 panels to the east face, 100 panels to the north face and 40 panels

to the west face. This arrangement will assist in providing a significantly more uniform energy production profile throughout the day, however, peak output will typically be 40KW only.

The anticipated annual energy production is predicted to be in the order of 50,000 KWh/annum.

The design arrangement and peak/uniform output characteristics have been selected as it means that all of the energy produced, even at peak times, can be consumed on site and provided over a longer period of the day.

Of particular note is that, on typical days, the 40KW production during day-light hours will almost identically match the loads on the Main Switchboard that serves the Tenants Condenser Water System (TCWS) for the Building.

As the TCWS is a 24/7 system, this means that during the day light hours of each day of the year, the Solar PV System will be contributing significantly to the energy demand and reducing the impact of that continuous energy load.

A further benefit of the Solar PV system for a CBD building is that it is:-

***This system, Solar PV, will generate a virtually guaranteed output of carbon free energy for years to come. It fits with one of our operating principles which is, "Do It Right and Do It Once"***

- predictable energy producer 365 days per annum.
- is compact in space requirements (we have a vertical array).
- is a good alternative to wind in the CBD as wind power requires non-turbulent wind flow (unlikely at the top of a building due to updrafts).
- reliable product for long-term energy production (guaranteed for 25 years, 40 year design life).
- unlikely to ever be overshadowed.

It will be noted that the cost of this system installed is about 40% higher than other commercial Solar PV Systems. This is due to the fact that the system is installed in a significantly high wind pressure zone and the support system required resulted in increased costs, and a longer payback.

Nevertheless, the 101 Management team believed that the total benefits of the system, and the high likelihood that it will produce energy for 40 years or more, outweighed the additional cost of this solution.



### Achieved Savings and Payback Overview

Overall Project Cost:	\$212,000
Achieved Electrical Savings:	50,000KWh/per annum
Electricity Emissions Savings:	67 tonnes CO2/per annum
Saving of Base Building Energy:	0.7%
Electricity Costs Savings:	\$7,000.00/per annum
Simple Payback:	30.2 Years