

An Investment for the Future

1.17MW Solar Photovoltaic (PV) System



April 2017



Adelaide Airport Limited's (AAL) vision is to be a top tier Airport Business Centre in Asia Pacific, recognised for delivering exceptional outcomes to our customers, partners, shareholders and community. We aim to deliver high quality facilities and services that are regarded as best in class, safe, secure and sustainable.

Adelaide Airport is an economic hub for South Australia transporting over 8 million passengers per year and is currently the fastest growing international airport in Australia. In line with its Master Plan the airport will continue its growth and invest further in airport infrastructure as well as an Airport Business District over the next 30 years.

At completion, the largest private commercial solar array in Australia and the second largest in South Australia.



Key Facts

1.17_{MW}

capacity

8.5%

total airport
electricity use

\$2.45M

MidTermIRR

4,500

panels

1,768_{MWh}

output

915 tCO₂-e

carbon abatement

AAL continually seeks ways to reduce its energy use - which constitutes around 85% of its carbon footprint - and to reduce that footprint per passenger year on year.

Rationale

The airport's Sustainability and Low Carbon Policies underpin its approach to operations and airport development. The Adelaide Airport Environment Plan commits to the ongoing reduction of the airport's carbon emissions and to Airports Council International's (ACI) carbon accreditation program. ACI Level 3 Carbon Optimisation has already been achieved with Adelaide being the first airport in Australia to do so.

AAL continually seeks ways to reduce its energy use - which constitutes around 85% of its carbon footprint - and to reduce that footprint per passenger year on year. The inaugural Carbon Management Plan 2014 envisaged a number of carbon reduction projects of which a large solar array provided the greatest carbon abatement opportunity (around 8%) albeit not the cheapest. Weighing up both tangible and intangible benefits this project looked like being an attractive investment.

Business Case

Key tangible and intangible factors included in the business case were.

- The delivered cost of the electricity per kWh.
- Expected system output.
- Significant carbon reduction contributing to achieving AAL's 2019 target via a low risk project.
- Enhance AAL's reputation as a sustainable company/airport.
- Meet investors' environmental, social and governance (ESG) risk expectations.
- Potentially delay the future need to purchase increased peak demand.
- Increase energy self-sufficiency and energy price certainty for a portion of energy demand.
- Manage risk of exposure to future rises in price of grid power from fossil fuel sources and any future carbon policy impost.
- Assist SA Government in achieving its renewable energy targets.





Completed in March 2016, the system has utilised leading edge technology consisting of 4,500 high quality tier 1 TrinaSmart 260W solar panels with DC power optimisation and 18 SMA inverters - thus providing safe and reliable renewable energy of 1,768 MWh.

Approach

To determine the feasibility, location and optimum size of a large solar array Adelaide Airport commissioned a feasibility study. Analysis included reviewing various airport buildings' demand profiles, structural features, billing information and meter data, as well as the marginal cost of electricity from a solar array for comparison purposes.

Various funding models were also assessed including ownership, leasing and power purchase agreements. Analysis revealed that an ownership model would produce a superior financial return and would enable AAL to retain control over the car park roof.

The study concluded that a 1MW solar PV on the short term car park's 8,000 square meter rooftop was optimal, taking into account the energy demand of the building and the flat surface, and would completely offset

the annualised electricity consumption of the car park. To enable a financial model to be created the study also looked at the capital cost of installing additional solar power generation versus the ongoing cost of electricity and the purchase of GreenPower. AAL currently purchases 10% GreenPower.

The financial scenarios initially revealed that a new solar PV project was not commercially viable and no grant funding could be found to subsidise a development. Although there were plenty of intangible benefits the project was required to meet internal investment hurdle rates in order to proceed. Rather than discontinue this study however market indications showed that it would be worth testing on price.

A request for information was issued to selected industry parties in 2014 and concluded that a directly owned and operated 1MW solar PV system could be feasible. Subsequent work on the design of the electrical and structural elements of the solar project by internal staff and AAL's incumbent contractors concluded the likely costs of these aspects thereby enabling a tender to be more clearly defined, potentially reducing the overall price. A request for tender was subsequently issued in June 2015 which (after evaluation, interviews and negotiation) resulted in a larger PV system solution than envisaged (at 1.17MW) and acceptable internal rates of return, which exceeded AAL's minimum requirements, thus enabling the project to proceed.

“Working with Adelaide Airport’s site constraints we engineered a bespoke solution to solve the delicate balance of optimising power output, while delivering a robust business case.” – David Naismith, Commercial Director, Solgen Energy

Outcomes

Solgen Energy was selected as the preferred tenderer from nine submissions. Commercial Director David Naismith said “Working with Adelaide Airport’s site constraints we engineered a bespoke solution to solve the delicate balance of optimising power output, while delivering a robust business case.” AAL was delighted to have chosen a reputable Australian company committed to utilising 70% local SA solar contractors and labour hire, as well offering vocational training for TAFE SA students.

The total project cost of \$2.45 million or \$1.67/kWh resulted in an acceptable mid-term internal rate of return on investment of 13.1%, a positive net present value and a payback period of 8 years. Given movement in the energy market since construction, it is expected that these forecast outcomes will be materially exceeded. The 1.17MW system generates around 8.5% of total AAL electricity use and is expected to cut the airport’s carbon footprint by 915tCO₂-e. The installation is the largest privately owned commercial array in Australia and the second largest “non-generator” project in SA.

Completed in March 2016, the system has utilised leading edge technology consisting of 4,500 high quality tier 1 TrinaSmart 260W solar panels with DC power optimisation and 18 SMA inverters - thus providing safe and reliable renewable energy of 1,768 MWh. The installation will boost AAL’s sustainability credentials and assist in meeting its carbon reduction targets and maintaining Airport’s Carbon Accreditation.