

# Solar Case study: Tourism business

Taronga Western Plains Zoo, Dubbo, NSW



The solar system is highly visible to arriving visitors, making it a great advertisement of our sustainability credentials.

Facilities Coordinator, Taronga Western Plains Zoo

## Project summary

This case study is an example of a project driven primarily by sustainability goals, combining positive environmental achievements with financial and marketing benefits. The financial benefits led to the installation of two more solar systems at the Taronga Western Plains Zoo.

## Fast Facts

### Solar system

- 99.8 kW roof-mounted system
- 344 x 290W polycrystalline panels connected to 4 x 25kW inverters

### Results

- Helped Taronga achieve 'Gold Partner Status' within the NSW Government Sustainability Advantage Program
- Positive public sustainability messaging

### Costs/savings

- Installation cost \$150,000 (\$1.50/W)
- Self-funded through infrastructure budget
- Electricity bill savings of \$21,000 per year
- On track for a payback period of approx. 5.5 years without export

### Environmental benefit

- Saves 2,825 tonnes of CO<sub>2</sub> over the lifetime of the system
- Ongoing creation of large-scale technology certificates (LGCs)



## About the business

Taronga Western Plains Zoo near Dubbo maintains a wide range of animal exhibits for visitors, and makes significant contributions to global conservation efforts, education and research.

The solar system was installed across several rooves including on the roof of the Savanna Visitors Plaza, in December 2016. The Plaza hosts the ticket office, gift shop and function centre.

The main electrical demands are for air conditioning, lighting, and refrigeration for a cool room and freezers.

### Solar strategy

#### Why solar?

The Zoo’s organisational plan contains strong sustainability goals, including the maintenance of Gold Partner Status under the NSW Government Sustainability Advantage Program.

While these environmental motivations drove the initiative to install a solar system, the project would not have been pursued without demonstrating the potential for strong financial returns and a short payback.

#### System design

Taronga conducted preliminary energy audits to determine which of their two sites (Sydney or Dubbo) was the best candidate for a solar system. This analysis informed a tender process to find their installer. The final solar provider was selected from a group of local and national respondents and looked after the entire project from start to finish including the design, construction and connection of the system to the network.

Working with the Zoo’s Environment Manager, the solar provider conducted studies to design a system that would meet environmental targets while demonstrating the best possible business case.



The design of the system was chosen to avoid shading from the numerous large trees.

The financial analysis estimated a five to six year payback period.

Other energy-related technologies were also considered, but it was decided that rooftop solar was the best solution for the business.

Because the zoo already has other solar systems on the property, they were ineligible for small-scale technology certificates (STCs). However, they registered as a renewable energy power plant, allowing them to generate large-scale generations certificates (LGCs).

#### Challenges - longer payback

The system was funded from an existing infrastructure budget, so estimates of financial performance had to be robust and clear before the funding was used for solar instead of other infrastructure.

Unusually, the Zoo is currently unable to export to the grid due to contracts, but are investigating a negotiated feed-in tariff (FIT) to achieve greater financial benefits.

### Results

The Zoo reports significant reductions in energy bills and carbon footprint, and has maintained its Sustainability Advantage Gold Partner Status credentials.

An equivalent 2,825 tonnes of carbon dioxide (CO<sub>2</sub>) are saved over the system’s lifetime.

The solar system sends a positive message to Zoo visitors. The system is visible on entry to the Zoo, and staff receive significant positive feedback from the public.

Through the solar system Taronga Western Plains Zoo achieved both their financial and environmental goals and are now pursuing additional solar installations in other areas of the park.

