

# Light and Life in the Bush

**BUSH LIGHT**

Fact Sheet 28

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[www.bushlight.org.au](http://www.bushlight.org.au)



## Akanta

### The Setting

This Fact Sheet provides information about the Bushlight Community System installed at Akanta community. The system provides power for four houses, a school, a caravan and several ablution blocks. This system was commissioned on the 5<sup>th</sup> September 2005.

### Background

Akanta is 185km south west of Alice Springs off the Ernest Giles Rd. Prior to the Bushlight System being installed power was provided for two hours a day by a 21kVa generator, which cost the community about \$5,000 a year.

### Community Energy Planning Process

Bushlight has developed a participative approach to energy planning called the Community Energy Planning Model. Facilitated by regional Bushlight staff, this process assists householders to make informed decisions about their specific energy needs, including generation and consumption, which ultimately influences the most appropriate energy service options.



### Basic Technical Information

The maximum daily AC load of the system is 32.8 kWh/day.

There are no DC loads.

The following major components are used:

- PV array - ground mounted with a capacity of 12kWp (total of 160 x 80W panels).
- Battery bank - Capacity of 1200Ah @ 120VDC providing 2 days of storage at 24% average daily depth of discharge.
- Inverter - 10kW @ 40°C, with expected peak and surge loads of 5.7kW and 14.2kVA respectively.
- Energy Management Units (EMU) - electricity metering and management devices that replace household switchboards.
- Energy Meter (EM) - electrical metering for small buildings e.g. sheds, caravans.
- The total project cost was \$340,981. This included mobilisation and installation, two service visits in the first year and additional works such as reticulation, fencing of the PV array compound and replacing switchboards with EUMs. The Northern Territory Government Renewable Energy Rebate Program provided a rebate of \$139,396 on the total cost.

## Monthly Load Variations

The design load assumes the maximum daily energy consumption occurs during the summer months when fridges and freezers are cycling more frequently and ceiling fan use is greatest.

## Demand Side Management

To minimise the risk of excessive power usage the following strategies have been implemented in consultation with the residents:

- EMUs have been installed at the four houses. The primary purpose of the EMU is to limit the total daily load of a household to a predetermined and agreed amount of energy (the 'energy budget'). This ensures a fair and equitable distribution of energy throughout the community and prevents the system from being overloaded.
- Each EMU incorporates an intuitive user interface to aid energy management.
- An EM has been used at the school. Similarly to the EMU, the EM limits the total daily load at this site to a predetermined and agreed amount of energy (the 'energy budget').



*Energy Meter*

- Low current circuit breakers have been installed to prevent the usage of high power demand appliances.
- Individual device timers have been installed for certain lights. The duration of these timers have been set to meet residents' needs.
- Centrally controlled timers have been installed for light/fan and general power circuits. The duration of the timers have been set to meet residents' needs.

In addition to the technical demand side management measures, Bushlight staff have facilitated a range of education and training activities to assist residents to manage their power consumption appropriately.

During pre-installation discussions, residents agreed to use certain appliances, such as washing machines, only when there is enough power available. The best time to use them is in the morning, before the EMU resets a households daily energy budget at midday.

## Appliance Acquisition & Replacement

As part of the overall approach to demand side energy management, inefficient appliances are identified and replaced as the community is able to do so. At Akanta, three old, inefficient refrigerators and one chest freezer were replaced with appropriately sized new energy efficient units. All incandescent lights were replaced with 20W fluorescent lights.

## Generator Use

The existing generator was connected to the solar system to enable battery charging when the generator is operated.

The following situations have been identified where the generator may need to be run:

- During extended periods of cloud cover and when there are many visitors.
- When the community wishes to use power tools, air conditioners or electric musical instruments.

## Other Energy Services

In addition to the energy being supplied by the Bushlight Systems, the Akanta residents continue to rely on the following additional energy sources:

- Gas for cooking
- Firewood for cooking and warmth
- Solar hot water heaters

## Contact Bushlight

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