



## Wanmarra

### The Setting

This Fact Sheet provides information about the Bushlight Community System installed at Wanmarra community. The system provides power for three houses. This system was commissioned on the 8th of August 2005.

### Background

Wanmarra is 280km east of Alice Springs, adjacent to Kings Creek Station on the Luritja Rd. Prior to the Bushlight System being installed power was provided by a 17kVa generator when diesel was available.

### 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 21.5 kWh/day. There are no DC loads.

The following major components are used:

- PV array - ground mounted with a capacity of 8.0kWp (total of 100 x 80W panels)
- Battery bank - Capacity of 2200Ah @ 48VDC providing 2 days of storage at 20% average daily depth of discharge.
- Inverter – 5.0kW @ 40°C, with expected peak and surge loads of 2.5kW and 5.6kVA respectively
- Energy Use Meters (EUM) - electricity metering and management devices that replace the household switchboard.
- The total project cost was \$244,793. This included system 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 \$102,833 on the total cost.

## Monthly Load Variations

The design load allows for the maximum daily power consumption to occur during the summer months when fridges and freezer are cycling more frequently and ceiling fan use is greater, also taking into account Christmas holiday visitors.

## Demand Side Management

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

- EUMs have been installed at the three houses. The primary purpose of the EUM is to control the total load on the system, and ensure a fair and equitable distribution of power by providing each household with a predetermined amount of energy (the 'energy budget') each day.



- Each EUM incorporates an intuitive user interface to aid energy management
- Low amp circuit breakers have been installed to prevent the usage of high power demand appliances
- Individual device timers have been installed for certain lights and fans. The duration of these timers have been set to meet residents' needs
- Centrally controlled timers have been installed for 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 EUM resets the 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 Wanmarra two old, inefficient refrigerators were replaced with appropriately sized new energy efficient units.

## Generator Use

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

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, kitchen appliances, electric heaters, air conditioners or solar hot water boosters.

## Other Energy Services

In addition to the energy being supplied by the Bushlight Systems, the Wanmarra 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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