



Fact Sheet 13

November 2004

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## Gunun Woonun

### The Setting

This Fact Sheet provides information about the Bushlight Household System installed at Gunun Woonun community. The community comprises two houses but the system only provides power to the main house. This system was commissioned on the 7<sup>th</sup> November 2004.

### Background

Gunun Woonun is a community on the south side of Mornington Island. Access to the community can deteriorate significantly during the wet season. Prior to the Bushlight System being installed a 10kVa generator provided power, and was operated for up to 12 hours a day.

### 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 7.9kWh/day. There are no DC loads.

The following major components are used:

- PV array - Roof mounted with a capacity of 3.0kWp (total of 24 x 123W panels)
- Battery bank - Capacity of 2,400Ah @ 24VDC providing  $\cong$  3 days of storage at a 50% maximum depth of discharge
- Inverter - 2.2kW @ 40°C, with expected peak and surge loads of 1.5kW and 7.7kVA respectively
- The total cost was \$112,073. This included system mobilisation and installation; data-logging equipment, two service visits in the first year and additional works (installation of additional AC house wiring and new reticulation). The Queensland Government Renewable Energy Diesel Replacement Scheme provided a rebate of \$54,915 on the total cost



## Monthly Load Variations

The time of year that the maximum daily power consumption is expected to occur is in the build up to the wet season. The main contributor to this increased load is:

- Refrigeration: These appliances use 30 to 40% more power during the wet season months when the ambient temperature is higher

## Technical Demand Side Management

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

- Low amp circuit breakers have been installed to prevent the usage of high power demand appliances
- Individual device timers have been installed for all ceiling fans and most lights. The duration of this timer has been set to meet residents needs
- The general power circuit has been fitted with centrally controlled timer switch. The duration of this timer has 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 the residents to manage their power consumption appropriately.

## Appliance Acquisition & Replacement

Bushlight helped to organise acquisition or replacement of the following appliances:

- An existing inefficient AC fridge was replaced with a new Westinghouse 227L/75L fridge/freezer
- All 40W fluorescent tubes were replaced with 20W fluorescent tubes
- Two existing spotlights were replaced with 20W fluorescent fittings

## Agreed Deferred Loads

During the Community Energy Planning process it was agreed with the householders that some specific appliances would be treated as deferred loads. This means the appliances will only be used during those periods when the batteries are fully charged and excess power is being generated. At Gunun Woonun, it was agreed that the washing machine would be a deferred load or generator power would be used.

## Generator Use

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

- During the wet season there may not be sufficient excess power for the use of the washing machine
- When the community wishes to use power tools, electric kitchen appliances or the solar hot water booster

## Other Energy Services

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

- Gas for inside cooking
- Firewood for outdoor cooking
- Solar thermal for hot water
- Independent solar system for a 2 way radio



## Contact Bushlight

Bushlight Administration  
PO Box 8044, ALICE SPRINGS NT 0871  
Tel (08) 8951 4344, Fax (08) 8951 4333  
enquiries@bushlight.org.au