Light and Life in the Bush

BUSH LIGHT

Fact Sheet 37 January 2006 www.bushlight.org.au

Mulga Bore

The Setting

This Fact Sheet provides information about the Bushlight Community System installed at Mulga Bore community. The system provides power for six houses, five shelters, a school, a clinic and workshop. This system was commissioned on the 28th November, 2005.

Background

Mulga Bore is 170km north east of Alice Springs. Prior to the Bushlight System being installed the community relied on a small number of petrol generators to provide power at two of the houses. The school had a separate generator for their use only.

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 48.5 kWh/day. There are no DC loads.

The following major components are used:

- PV array - ground mounted with a capacity of 20.4kWp (total of 240 x 85W panels)
- Battery bank - Capacity of 2100Ah @ 120VDC providing 2 days of storage at 25% average daily depth of discharge.
- Inverter – 10kW @ 40°C, with expected peak and surge loads of 7.1kW and 16.5kVA respectively
- Energy Management Units (EMU) - metering and management devices that replace the household switchboard.
- Energy Meters (EM) – electrical metering for small buildings e.g. sheds and caravans.
- The total project cost was $611,802. 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 EMUs. The Northern Territory Government Renewable Energy Rebate Program provided a rebate of $234,885 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.

Demand Side Management

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

Energy Management Unit

- EMUs have been installed at the six house, the workshop and women's centre. The primary purpose of the EMU is to control the total load on the system and ensure a fair distribution of power by providing each household with a predetermined amount of energy (the 'energy budget') each day.
- Each EMU incorporates an intuitive user interface to aid energy management.
- EMs have been installed at five shelters and the clinic building.

The Bushlight system enclosure

- 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. 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 the energy budget at midday.

Generator Use

A new generator was installed and connected to the solar system to enable battery charging when the generator is running and the power the school house during its operating hours.

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 heavy power use appliances, such as power tools, kitchen appliances and air conditioners.

Other Energy Services

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

- Gas for cooking
- Firewood for cooking and warmth
- Thermal solar hot water heaters

Contact Bushlight

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