

# Light and Life in the Bush

**BUSH** LIGHT

Fact Sheet 53

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



## Blue Bush

### The Setting

This Fact Sheet provides information about the Bushlight Community System installed at Blue Bush community. The system provides power for three houses and two sheds. This system was commissioned on the 7<sup>th</sup> July 2006

### Background

Blue Bush is 100km North West of Tennant Creek. Prior to the Bushlight System being installed power was provided for 15 to 20 hours a day by a 23kVa diesel generator, which cost the community nearly \$20,000 a year to run.

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

The following major components are used:

- PV array - ground mounted with a capacity of 5.76kWp (36 x 160W panels)
- Battery bank - Capacity of 1700Ah @ 48VDC providing 2 days of storage at 23% average daily depth of discharge.
- Inverter – 5kW @ 40°C, with expected peak and surge loads of 4.9kW and 6.2kVA 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 approximately \$336,185. 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 approximately \$144,464 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:

- EMUs have been installed at the three houses. The primary purpose of the EMU 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 EMU incorporates an intuitive user interface to aid energy management
- An EM has been used at the workshed.



*Energy Meter Unit*

- 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 certain light and 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.

## Appliance Replacement

As part of the overall approach to demand side energy management, Bushlight assists the community with identifying inefficient appliances, which can be replaced as funds become available. At Blue Bush, an old, inefficient fridge and chest freezer were replaced with appropriately sized new models.

## 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:

- When the community wishes to use power tools or air conditioners

## Other Energy Services

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

- Gas for cooking
- Firewood for cooking and warmth
- 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