



Fact Sheet 17

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Chuula

The Setting

This Fact Sheet provides information about the Bushlight Household System installed at Chuula community. The system provides power for the main building, which is permanently occupied. This system was commissioned on the 19th December 2004.

Background

Chuula is located approximately 2 to 3 hours drive south west of Lockhart River. Access to the community is one of their biggest problems, as the community is cut off during the wet season. Prior to the Bushlight System being installed a 6kVa generator provided power, and was operated for up to 6 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 6.4kWh/day. There are no DC loads.

The following major components are used:

- PV array - Roof mounted with a capacity of 3.4kWp (total of 40 x 80W 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 2.1kVA respectively
- The total cost was \$100,358. This included system mobilisation and installation, two service visits in the first year and additional works (installation of additional AC house wiring). The Queensland Government Renewable Energy Diesel Replacement Scheme provided a rebate of \$55,196 on the total cost





Monthly Load Variations

The time of year that the maximum daily power consumption is expected to occur is in September and December. The main contributor to this increased load is:

- Fans: During the build up and wet season the use of fans is expected to increase by 20%
- Occupancy: This community has many visitors and the number of occupants increases significantly during July, September and December

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 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.

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 Chuula, 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 Chuula residents continue to rely on the following additional energy sources:

- Gas for cooking and refrigeration
- Firewood, but soon to be replaced by solar thermal, for hot water
- Petrol for an independent water pump



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