



Urlampe

The Setting

This Fact Sheet provides information about the Bushlight Community Renewable Energy System installed at Urlampe. The system provides power for five houses and the work shed. The system was commissioned on the 4th of April 2006.

Background

Urlampe is situated approximately 550kms from Alice Springs along the Plenty Highway. Prior to the Bushlight System being installed the community used a Hatz diesel generator supplemented by three small DC and one small AC solar systems.

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 average maximum daily AC load of the system is 26.7 kWh/day.

The Bushlight system includes no DC power, however the small DC systems that were at

Urlampe prior to the Bushlight system being installed, have been kept and run DC fridges in three houses; while the small AC solar system continues to provide power for the lights and fridge in the 'Community House'.

The following major components are used:

- PV array - ground mounted with a capacity of 9.24 kWp (total of 56 x 165W panels)
- Battery bank - Capacity of 2400Ah @ 48VDC providing 2 days of storage at 23% average daily depth of discharge.
- Inverter – 5.0kW @ 40°C, with expected peak and surge loads of 4.7kW and 8.2kVA respectively
- Energy Management Units (EMU) - electricity metering and energy management devices that replace household switchboards.
- Energy Meter (EM) – electrical metering for small buildings e.g. sheds caravans.
- The total project cost was approximately \$292,900. This included system mobilisation and installation, two service visits in the first year and additional works such as reticulation, installation of ceiling fans and replacing switchboards with EMUs. The Northern Territory Government Renewable Energy Rebate Program provided rebates on the total cost of approximately \$130,047 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:

- An EMU has been installed at each of the 5 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.



Energy Management Unit

- Each EMU incorporates an intuitive user interface to aid energy management
- An EM has been installed in the workshop.
- 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.

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 Urlampe two old, inefficient refrigerators were replaced with appropriately sized new energy efficient units. Spotlights, incandescent lights and 40W fluorescent lights were replaced with 20W fluorescent lights.

Generator Use

The existing generator has been 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
- When the community wishes to use power tools or kitchen appliances

Other Energy Services

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

- Firewood for cooking outside
- Gas for cooking inside
- Thermal solar hot water service