



## Gillen Bore

### The Setting

This Fact Sheet provides information about the Bushlight Household System installed at Gillen Bore outstation. The system was commissioned on 6<sup>th</sup> April 2004.

### Background

Gillen Bore is a small outstation approximately 70km north of Alice Springs. Two existing houses were supplied with power from a solar/diesel hybrid system. In 2003 a new house was built, however the existing power system was not sufficiently sized to meet the increased power demands. Bushlight commenced working at Gillen Bore in late 2003. The funding was provided by the Pilot Projects capital works grant.

### 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 design of an appropriate system.

### Basic Technical Information

The maximum daily AC load is 5.6 kWh/day. There are no DC loads.

This system comprises the following major components:

- PV array - 1.95 kWp (26 x 75W panels)
- Battery bank - 1200 Ah @ 24VDC providing ~2 days of storage at a 50% maximum depth of discharge
- Inverter - 1.5kW @ 40°C. The expected peak and surge loads are 1.0kW and 4.4kVA respectively

- The total system cost was \$75,650. This included system installation, data logging

equipment, two service visits in the first 12 months and modifications to the existing house wiring. The NTG's Renewable Energy Rebate Program provided a rebate of approximately \$33,962 on the total system cost.



Bushlight Household System capable of producing 5.6 kWh/day

## Monthly Load Variations

The maximum daily power consumption is expected to occur during the hot summer months. The most significant contributors to the higher summer load are:

- Ceiling Fans - it is assumed that fans will be used significantly during the months from September to April.
- Refrigerators - refrigerators use more power during the summer months when the ambient temperature is higher. It is estimated that refrigerators are likely to operate for 13 hours/day in summer compared to only 5 hours/day in winter.

## Technical Demand Side Management

To minimise the risk of excessive power usage low amp circuit breakers have been installed to prevent the usage of high power demand appliances. The decision was taken in partnership with the householders.

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 replaced an existing inefficient AC refrigerator with a new AC, Westinghouse 390L fridge/freezer.

## 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. In the case of the Gillen Bore, it was agreed that the use of washing machines would be deferred until excess power is available.

## Generator Only Circuits

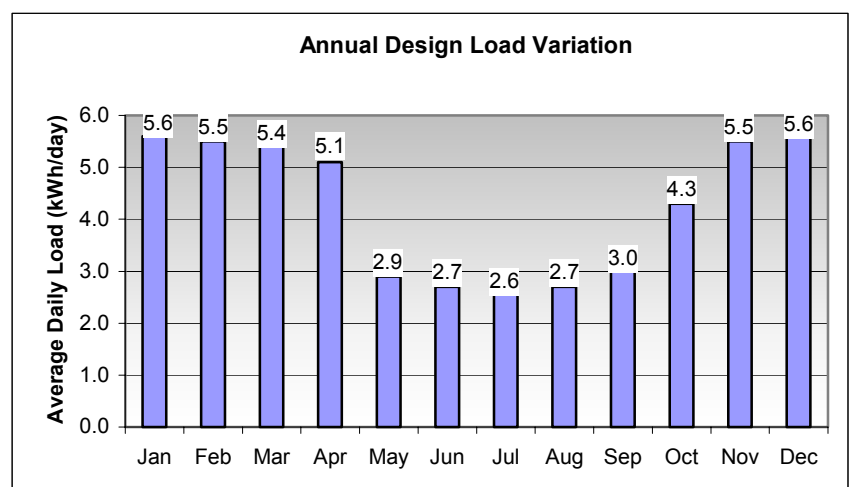
Two generator only circuits have been installed. To provide power to these circuits, the householders will need to switch from solar to generator mode and ensure the generator is running. The two generator circuits are:

- Solar hot water booster - it was agreed the use of boosters would require more power than could reasonably be generated by the solar system. Therefore, the most appropriate solution is to use the generator if the booster is required
- Generator only power circuit - two dedicated 15 Amp power sockets have been installed, one in the kitchen and one on the veranda. These sockets can be used for appliances with high power demands, such as electric frypans, electric ovens and larger power tools and welders

## Other Energy Services

In addition to the energy being supplied by the Bushlight systems, the household continues to rely on the following additional energy sources:

- Firewood for outdoor cooking and for outside / indoor warmth
- Gas for inside cooking
- Solar thermal for hot water



## Contact Bushlight

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