

Energy Services Provided for Corkwood Bore

The first Bushlight household energy system was installed and commissioned in November at Corkwood Bore, about 65km north of Alice Springs, in the Northern Territory.

Background

Harry Creek East outstation was relocated away from the new Alice Springs to Darwin rail corridor. Seven new houses were completed in June 2003, with power proposed to be supplied by diesel generators. However, Bushlight worked with the Ingkerreke Resource Agency, Corkwood Bore community, the NT Government, ATSIC and the Central Land Council to negotiate an increase in funds to install RE systems at each house.

Energy planning

Several meetings were held with the community to discuss the new proposal and seek agreement for Bushlight's involvement. Separate meetings were then held with the residents of each house to discuss issues such as the demographics of the household, what plans people have for the future of the community, and what other services were available at Corkwood Bore.

We also discussed other issues such as the concept of energy, and how some activities can be done with different forms of energy, for example cooking with fire, gas or

appropriate forms of energy to use for different activities at Corkwood Bore. After deciding which activities were best done using solar energy, we looked at specific appliances, working out how much power they use.



Bushlight Household Energy System, Corkwood Bore

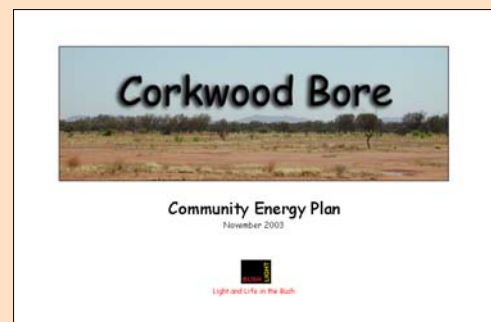
Bushlight System Design

A number of steps were involved in the design and installation of the system based on the information gathered. Community Profile and System Design Requirement documents were developed and Bushlight Technical Services designed the system based on this information. The Bushlight Capital Works Manager then took over the system procurement and installation.

Key CEP Documents and Resources

A number of key documents and resources have been developed for Corkwood Bore including:

- The Community Energy Plan, including the Community Service Agreement
- Community Energy Plan Story Book
- The Bushlight System User's Manual



Training - Level 1 Install Stage

After the system was commissioned, training was provided to the family using the system covering safety, system operation and maintenance, trouble shooting and management of energy services.

Future installations

Energy planning has progressed to selection of energy services in several communities in Central Australia and the Kimberley, with another six Bushlight Household systems built for installation. Following this, a further eight systems will be installed: on the remaining six houses at Corkwood Bore and two more houses at Mt Peachy.

Community Service Agreements

Previous newsletters have included articles on the energy planning process Bushlight facilitates for each community. Newsletter 2 included the article *Community Energy Planning: What is it?* and Newsletter 3 described the energy budgeting activity, in the article *What is an Energy Budget?* This article describes the Community Service Agreement.



Bushlight staff facilitating discussion

The Community Service Agreement (CSA) records the basis on which the community, the organisation servicing and supporting energy systems (usually the community's resource agency), Bushlight and ATIS have agreed to work together to ensure sustainable energy services for the community. It formalises the recognition of everyone's role in contributing to the sustainability of the Bushlight systems.

Bushlight's ongoing responsibilities described in the CSA are to provide training to community members in system operation and managing energy services. Bushlight also ensures warranty and service arrangements are in place and working effectively.

Community responsibilities outlined in the CSA are to operate the system correctly, perform basic system maintenance, use energy and appliances as recorded in the energy budget, and make contributions towards maintenance costs.

The system service/maintenance provider responsibilities are to provide repairs and scheduled maintenance for the RE system, and to budget and manage funds collected or system maintenance and equipment replacement.

The CSA forms part of the Community Energy Plan document, which records all the outcomes from a community's energy planning.

What Makes a Bushlight Household Renewable Energy System Different?

With the installation of a Bushlight RE system at Corkwood Bore, it is worth reflecting on the technical developments that have gone into Bushlight systems to make them reliable in harsh operating environments.

Arising from the ACRE/CAT RAPS Market Survey and consultation with the RE industry (www.bushlight.org.au), a range of features to improve reliability have been built into Bushlight systems.

Systems are designed for harsh operating environments

Bushlight system enclosures are designed to withstand hot, dusty, dry or humid conditions and coastal environments. The enclosures are insect and vermin proof, made from powder-coated aluminium and mounted on a galvanised steel skid for ease of transport.

The enclosures have a unique, passive cooling system that provides a high level of ventilation while minimising the effects of

dust, insects and vermin. Fans also regulate the internal temperature of equipment enclosures if required, which improves component life and reliability.



Dennis Stanley, Bushlight, testing the prototype Bushlight Household System

Component and system testing

System components, and a system prototype, are subjected to rigorous operation, stress and acceptance testing under the expected operating environment at ACRELab (now RESLab). Bushlight pre-approves, and in some cases pre-tests, major system components that are used in Bushlight RE systems, which we believe will result in improved reliability.

Factory system configuration and commissioning

Each Bushlight Household RE system is configured and commissioned in the factory. Any operational issues can be addressed prior to despatch, ensuring a quality system is delivered.

Customised system design

Bushlight systems are a standard design, for ease of servicing and maintenance, however each system can be customised for individual communities. The size of the PV array, battery bank, circuit breakers and inverter, the number and type of load circuits, circuit timers, and other components can be customised to help communities manage their energy usage.

System designed for ease of use, maintenance and troubleshooting

Bushlight system enclosures have three levels of access, i.e.,

- front panel (main switch, power and circuit indicator lights, timer buttons, volt and wattmeters).

- trouble shooting panel (battery isolator, array/circuit breakers, AC/DC meters, timer control, PLC).
- electrical compartment (inverter, communications link, wiring, etc).

System monitoring with communications interface

Systems include programmable logic controllers to monitor a range of system performance parameters. This information is used to diagnose and troubleshoot faults, and to provide information for preventative maintenance schedules, and can also be analysed to provide in-situ component, system performance or environmental data to Bushlight and the RE industry.

Top End Regions Set to Benefit From Renewable Energy

Zoe Pilven, Bushlight's Top End Regional Manager, has been working closely with Garrak-Jarru Regional Council and Miwatj Provincial Governing Council on the development of a Regional Outstation Energy Plan for each region. This involves visiting and consulting with homelands, resource agencies, AT SIS and AT SIC to determine regional energy needs and priorities. From this, a capital works plan is developed and once system funding is confirmed, community energy planning begins.

Bushlight expects to be installing systems in the Top End as soon as access is open after this year's wet season.

Field Trips Before the Wet

Bushlight Top End has been visiting as many homelands in participating regions as possible before roads are closed by the wet. In the Miwatj region homelands associated with the Numbulwar, Laynhapuy and Marthakal organisations have been visited. In the Garrak-Jarru region homelands associated with Walangeri, Wardaman, Jilkminggan, Ngaliwurru-wuli and Mabunji organisations have been visited.

Bushlight Top End has also been consulting with several other organisations including Ramingining, Daguragu and Yugul Mangi.

Welcome to the North West Regional Governing Council

Bushlight would like to welcome the North West Regional Governing Council to the Project. On 14 October the Council formally moved to sign a Memorandum of Understanding (MoU) with Bushlight. Bushlight aims to have reliable, cost effective renewable energy systems installed at homelands within the Council's jurisdiction before the end of this financial year. The MoU will be signed in early December with North West Chairperson, Lawrence Costa and Bushlight Chairperson, James Bray.

Bushlight in the Gulf and West Queensland

Over recent months, Bushlight has been very active in the Gulf and Western Queensland region, visiting remote outstation communities to assess their power usage and need for (Bushlight) renewable energy systems.

The visits enable Bushlight staff to obtain a clearer understanding of the requirements and individual needs of outstation communities and provide community members with the



Typical large diesel generator used in many outstations

opportunity to have input into the process of future development of a renewable energy system to meet their own particular need. The information collected on the individual outstations will assist in the overall development of a regional energy plan for the Gulf and Western Queensland Region and in selection of eligible communities.

Recent visits to outstations located on Mornington Island, in the Gulf of Carpentaria, have once again, clearly highlighted the need to reduce community reliance on expensive diesel generated power. During these visits, community members were able to provide Bushlight staff with an insight into the limitations imposed on their lives by the reliance on diesel-generated power. The high cost of fuel, the need to store bulk fuel, the difficulties experienced in transporting bulk fuel in remote areas are just a few of the identified problems faced by remote outstation communities in maintaining a power supply for their daily use.

Renewable energy systems will have a dramatic effect on the day-to-day life on outstations.



Using a diesel generator to keep this fridge and freezer cool for one day could mean that some communities are spending up to \$26.00 a day on 20 litres of diesel.

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