

Bushlight has now installed around 50 renewable energy (RE) systems in Indigenous communities. Our post installation impact assessments have revealed that on average, household expenditure on energy services reduces by \$5,500 per year when Bushlight RE systems are implemented. Read more about Bushlight activities over the last 12 months and project outcomes in Bushlight's 2004-05 Annual Report, which will be made available on Bushlight's website, www.bushlight.org.au (Click on: What's New - Newsletters and Reports).

System Monitoring at Birri Williams



Community members and some of the many visitors who stay at Birri Williams on the weekend

Bushlight RE systems include basic data logging capacity that enables the system to monitor and store up to 28 days of a range of operational statistics including solar input, load and battery voltage.

Data downloaded from systems installed to date has recently been used by Bushlight Technical Services to review and validate our design processes (see page 4 for more detail). Another important role of the data download facility is to assist Regional Teams to proactively identify and remedy system faults or inappropriate use.

An illustration of this process occurred in Birri Williams, a small outstation located on

Mornington Island. Data downloaded from the system in early March indicated that high energy use and low PV input were preventing the batteries from reaching float voltage. To optimise battery life, Bushlight systems have been designed to reach float voltage approximately twice a month.

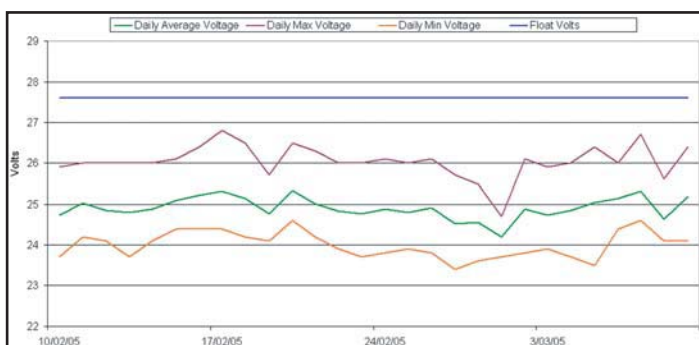
Bushlight staff found a tree that had grown significantly and was casting shade over a number of panels each afternoon. As this tree provided valuable shade for residents during hot periods it could not be felled. Heavy trimming of the upper branches resolved the immediate problem and the community was advised of the importance of pruning the tree in order to eliminate the

future risk. The community has subsequently ensured the tree is pruned and shading has not been a problem since.

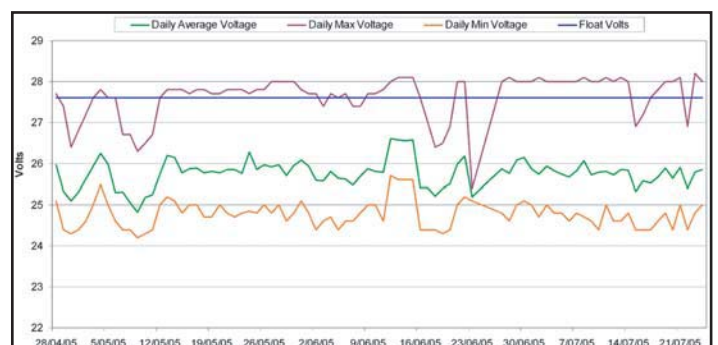
During the same visit, and with the aid of the data, Bushlight were able to provide the community with a deeper understanding of the importance of carefully managing energy use and how this can impact on the life span of the batteries.

Since this visit the operation and use of the system has significantly improved. The two charts provided below show the battery voltage trends before and after the visit.

Find more news from Birri Williams on page 3.



Battery voltages before additional training was given at Birri Williams



Battery voltages after additional training was given at Birri Williams

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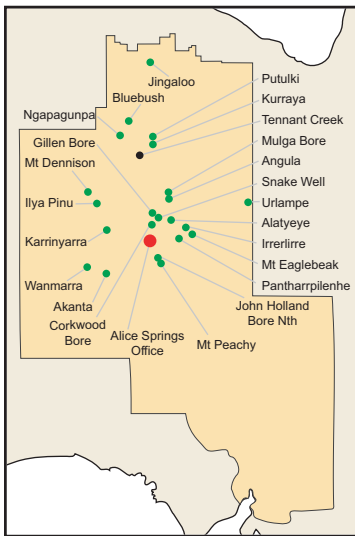
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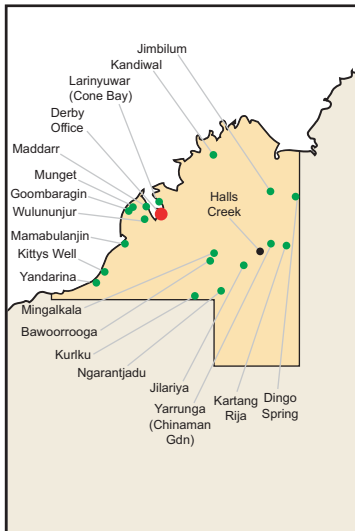
Bushlight - Light and Life in the Bush



Bushlight Communities



Community member Marjorie Braeden with Bushlight's Ben Purcell



Bushlight Communities



New trees from the tree planting program



Bushlight Community RE system at Akanta



Bushlight Energy Meter

Central Australia

The first Bushlight 120 volt Community RE System has been installed and is designed to meet an average demand of 27 kWhr per day.

Bushlight has been working with the people of Akanta since January 2005. The community of up to 27 people at any one time, comprises four houses, a school, ablutions, caravans and a workshop. Before the RE system was installed they relied on generator power, which was run for 2 to 3 hours a day using approximately \$6,000 of diesel each year.

While electrical energy was restricted due to financial constraints, the community had been using other energy options effectively. This included the use of wood and gas for cooking and solar thermal for heating water.

Power requirements for the school were low compared to the houses and the installation of a Bushlight household Energy Management Unit (EMU) was not a cost effective solution.

Bushlight responded to the situation by installing one of the new Bushlight Energy Meters (EM), which like the EMU, monitors and controls the amount of energy provided on a daily basis. The EM however has reduced functionality and cost, being approximately 25% of the cost of an EMU.

These units are ideal for buildings that have smaller energy needs or that may be occupied on an adhoc basis.

Kimberley

Bushlight have just completed a review of the Community Energy Plan at Kittys Well. This is a small coastal community approximately 200km south east of Broome. Prior to installing the Household RE System the community relied on a 9 kVA generator for power, using approximately 9,200 litres per year.

The wet season energy needs were much higher, partly because of fan use but more significantly due to an additional 25 occupants visiting over school holidays. In order to meet the high energy needs during the wet season the RE system would have needed to be considerably over sized in relation to the dry season energy needs.

With nine permanent residents living in two dwellings a household system was deemed more appropriate to meet their energy needs. While the RE system would not meet all of their wet season energy needs, it was agreed the generator would be used to top up the available energy. Since the system was installed the annual fuel consumption has reduced to 2,000 litres.

Reliable and affordable 24 hour power has enabled the community to invest additional funds into community based projects. This includes a recently completed and successful tree planting

program. There are now plans to also safeguard the community's water supply infrastructure from neighbouring livestock.

Another benefit the community has taken advantage of is the ability to leave the community for longer periods. They do not need to regularly monitor and tend generators and continuous power ensures food can be stored for longer. This has enabled the Traditional Owners to take the younger generation out on camps to teach them traditional law and culture. This in turn helps to ensure the land will be appropriately looked after in the future.



Community elder John Hopiga meeting with Bushlight's David D'Antoine during the review

Top End

The Top End team have just completed energy planning in Ganiyarrang homeland. This is the twentieth homeland the team has worked with.

Ganiyarrang is a one dwelling homeland with about five permanent residents and is located 50 km north of Ngukurr. Currently they rely heavily on diesel to provide power for half the day. This uses one 200 litre drum each fortnight at a cost of \$9,500 per year. While gas is used for some cooking and lighting, the majority of residents treat gas with caution due to concerns of potential explosions.



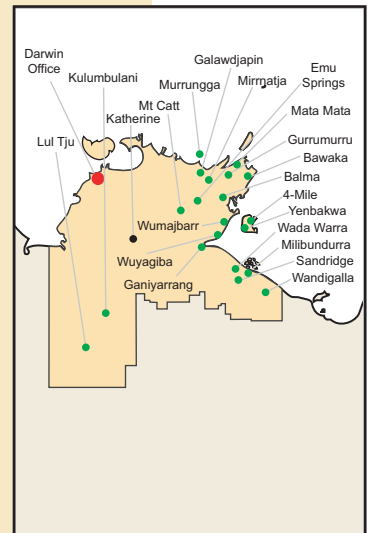
Bushlight's Ken Aitchison introducing renewable energy to the people at Ganiyarrang

Even though access is cut off in the wet season this is a progressive community with several programs underway and new projects planned.

Work has already begun to prepare a market garden and a fence is soon to be completed to keep wild buffalos and horses away from community area. Ganiyarrang was also recently chosen as one of three outstations where petrol sniffers could be taken to 'dry out' and receive basic life skills training.

This community based initiative that came about after several unsuccessful attempts to get external assistance to tackle the issue of youth petrol sniffing in the community of Ngukurr, community elders decided to try and devise their own solution. The program, run since July of this year, has proven extremely beneficial. In recognition of their achievements the community has had a grant application approved to expand and continue the program.

The provision of reliable, continuous and affordable power will make living at this homeland outstation more practical; and will also ensure that the above and other planned programs continue to thrive.



Bushlight Communities



Bushlight's Ian Foster discussing energy use with the community

North Queensland

Bushlight revisited Birri Williams on 10th September 2005. Johnny Williams explained how he was able to monitor battery levels to make sure they were 'looked after'. He also stated that he was able to use additional energy during the middle of the day to run his power tools, to make artifacts to sell to the tourists at the nearby resort, without 'harming the batteries'.

While Johnny proved his ability to observe and manage his system a data download indicated that power to non-essential appliances had been lost twice in the last 28 days. Both of these occasions were on weekends, which was also when the site visit were being carried out.

Later that evening a large number of people came to the community, after a days fishing. It was discovered that the usual population of two adults would swell to over twenty people on

weekends. The two graphs below show power use on the weekends to be considerably higher.

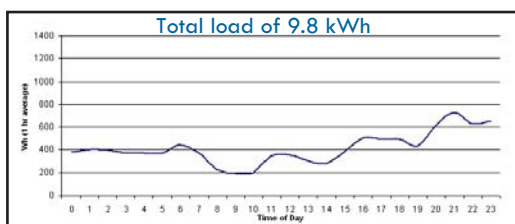
While Johnny was assertive in telling people to be careful of how they used power, many of them were hungry and this took precedence as they started to use the electric frypan.

The Bushlight staff were able to use this opportunity to provide training to the additional community members. They were very receptive to the information being shared and immediately undertook to check the battery levels, and switched the generator on when they wanted to use the electrical kitchen appliances.

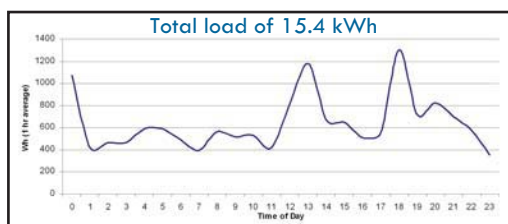
Johnny was very appreciative and said to the young men 'when you are grandfathers, you will be working this solar system!'



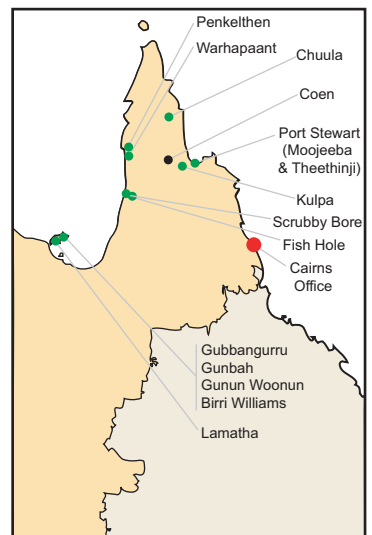
Bushlight's Sue Graham training community members



Load on Tuesday 12th July 2005



Load on Friday 15th July 2005



Bushlight Communities

Bushlight RE System Installation Program

Contacts

BUSHLIGHT ADMINISTRATION
PO Box 8044
ALICE SPRINGS NT 0871
Phone: (08) 8951 4344
Fax: (08) 8941 4333
enquiries@bushlight.org.au

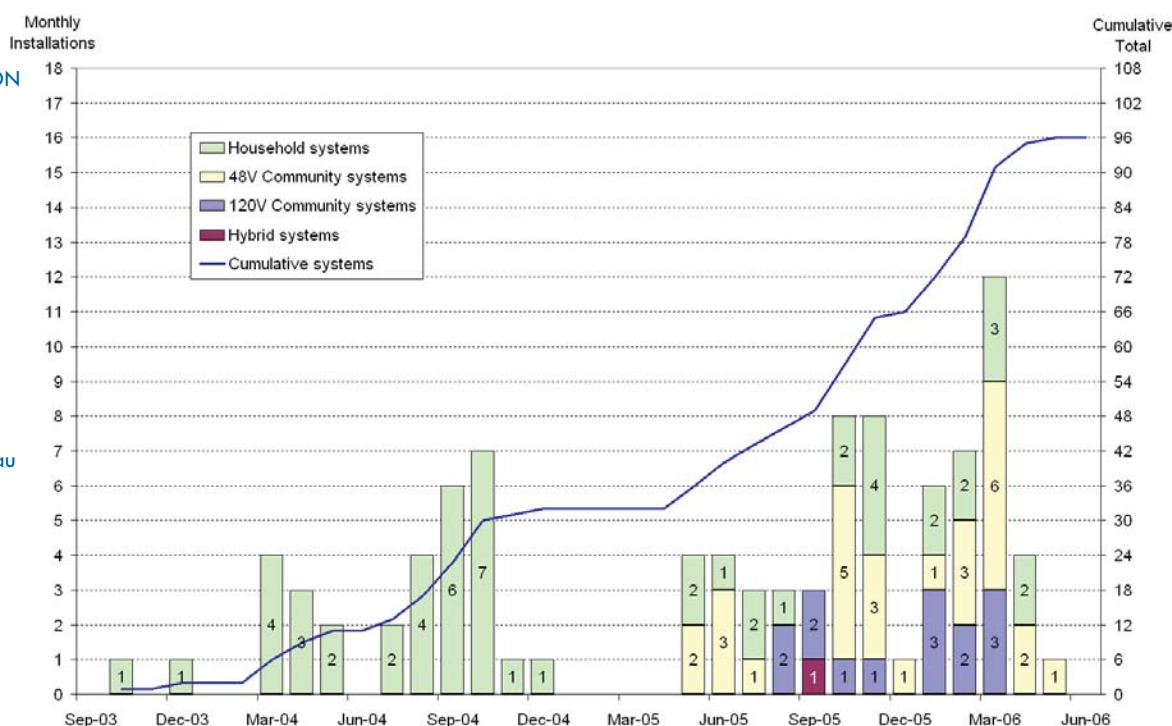
Technical Services
PO Box 8044
ALICE SPRINGS NT 0871
Phone: (08) 8951 4341
Fax: (08) 8941 4333
techservices@bushlight.org.au

Central Australia
32-38 Priest St
PO Box 8044
ALICE SPRINGS NT 0871
Phone (08) 8951 4342
Fax (08) 8951 4333
rmcentral@bushlight.org.au

Top End
Suite 1/20 Knuckey St
GPO Box 2875
DARWIN NT 0801
Phone (08) 8981 7599
Fax (08) 8981 7233
rmtopend@bushlight.org.au

Kimberley WA
3/68 Clarendon Street
PO Box 1304
DERBY WA 6728
Phone (08) 9191 2585
Fax (08) 9191 2598
rmderby@bushlight.org.au

North Queensland
7/330 Sheridan Street
PO Box 6182
CAIRNS QLD 4870
Phone (07) 4031 0505
Fax (07) 4031 0431
rmcairns@bushlight.org.au



Technical Services

With Bushlight's data logging program now well underway, Bushlight Technical Services has developed a set of data analysis applications to allow full performance assessment and reviews of installed systems. We have completed several detailed Performance Reports and are committed to completing one for every system installed by the end of 2005.

Two of the completed Performance Reports and associated data, for systems at Wanmarra and Birri Williams, have been used to carry out a detailed review of key design assumptions and variables that Bushlight uses in the RE system design process.

Of the 12 key design variables and assumptions referred to in the design standard AS4509.2 our existing approach was validated in 9 cases. With revised data available from manufacturers, Bushlight's has reassessed the other 3 variables

being used and made appropriate adjustments. The adjustments made to these variables were in the order of 2.5 to 3%.

Bushlight's Capital Works program continues to gain momentum: the past quarter has seen the commissioning of our first 120 volt enclosures and sheds, along with the first Energy Meters, and revised Energy Management Units. Fifty systems have been installed to date and 15 more are scheduled to be installed by the end of 2005.

Contractors and suppliers interested in tendering for Bushlight work should contact Lyndon Frearson, on 08 89514341, or email CWM@bushlight.org.au

Tender processes are available on www.bushlight.org.au - click on *RE Industry*, then *Installer Tender Process* or *Enclosure Tender Process*



Community RE system at Wanmarra, Central Australia



Community RE system installation under way at Lul Tju, Top End



Community with new household RE system Gubbangurru, Queensland

Visit our website:
www.bushlight.org.au