

Wumajbarr's Bushlight Community RE System



Wumajbarr outstation is being enjoyed by more family members since the Bushlight Community RE System was installed

Bushlight's new Community RE Systems have been designed to ensure fair and equitable distribution of available power to all houses.

The first Bushlight Community RE System was installed at Wumajbarr, North East Arnhemland, in May 2005. Community members are happy to have quiet 24 hour power, and more family members are reported to be spending time on the community since its installation.

Wumajbarr's equipment and battery enclosures are in a centrally located shed, with the solar array alongside it. The main switchboard at each house has been replaced by an Energy Use Meter (EUM).

An essential part of the Bushlight Community System design, the EUM, delivers each household an "energy budget" every day.

The energy budget is a set amount of power which is worked out in consultation with community members and varies depending on individual household needs.

The EUM meters electricity use on a daily basis. If the rate of energy use is high and the agreed energy budget is exceeded, the EUM cuts supply to that household's non-critical appliances. Non-critical appliances may include

fans, televisions and stereos. By cutting power to these appliances, continuous power to critical appliances, such as lights, smoke detectors, refrigerators and freezers, is ensured.

In addition to replacing the main switchboard the EUM comes with a separate easy-to-read user interface. This is designed to allow residents to manage their electricity use, showing how much power is available to the household and how much is being used.

A series of lights indicate power availability, with lights gradually dropping out as power is used up. When the next energy budget becomes available, all the lights come on again.

The allocation of energy budgets eliminates the possibility of the system getting damaged due to batteries being heavily discharged on a regular basis.

Community RE Systems allow use of both a central located community generator and individual household generators. These may be used to provide backup and/or additional power.

See page 3 for more information about the Community RE System at Wumajbarr.

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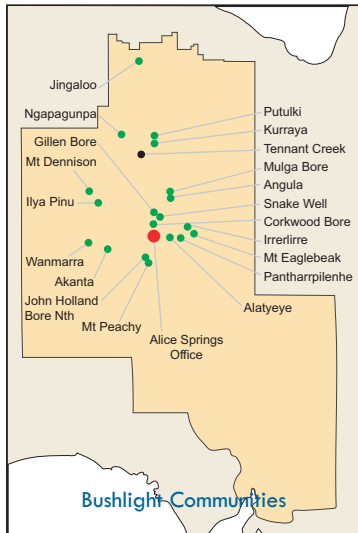
EUM user interface



Equipment and battery enclosures at Wumajbarr

Light and Life in the Bush

Central Australia



Corkwood Bore was the first community to have a Bushlight system installed, and residents have become ambassadors for Bushlight.

Since the seven Bushlight Household Systems were installed at Corkwood Bore in late 2003 and early 2004, the community has welcomed many visitors to look at the systems. Residents say they also “talk up” Bushlight solar systems to other Homelands’ families.

One Corkwood Bore family has also been happy to assist Bushlight by trialing a prototype Energy Use Meter in their home.

One year after the installations, Bushlight undertook a Community Energy Plan (CEP) Review process at Corkwood Bore.

CEP Reviews are primarily designed to allow communities to express their level of satisfaction with the new renewable energy services. However, they also enable Bushlight to assess many other aspects including changes to the community brought about by the installation of Bushlight RE systems, and ease of access to qualified service providers for scheduled or unscheduled system maintenance.

Some of the community outcomes that have been recorded at Corkwood Bore include:

- 1 The provision of renewable energy services has enabled more people to live permanently at Corkwood Bore. Resident Leonie Palmer, who does carer respite for children, says the homeland is a safer and healthier place for children than Alice Springs.
- 2 Substantially reduced fuels costs due to not requiring diesel for power.



Bob Palmer and his family with their Bushlight RE Household System

- 3 At Harry’s Creek, where the residents lived before moving to Corkwood Bore, families ate more tinned food. Now that fridges can be run 24 hours a day a lot more fresh food is eaten.
- 4 When plenty of power is available, another resident uses power tools to make artefacts to sell.

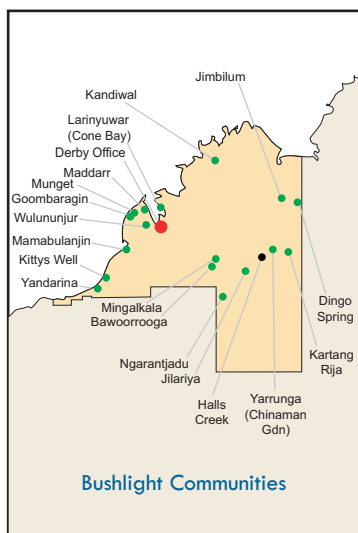
Information collected through the CEP Review is currently being used to write a case study on Corkwood Bore. This will be made available on Bushlight’s website, when it is completed.



Laurel Palmer with her mother and some of the children who stay at Corkwood Bore



Julie Lechleitner with a painting in progress



Kimberley

Over the last six months the Kimberley Bushlight Team has been working with 17 communities to improve access to reliable RE energy. One of these communities, Jilariya, is a very small one house community located on Lamboo Station about 50km west of Halls Creek.

A 9kVA generator had been setup to supply power. However, the diesel consumption became too excessive for the community to sustain. Due to only managing to afford power for 50% of the time, their living conditions were both difficult and uncomfortable.

Bushlight worked with the seven permanent residents for a period of ten months, and in June of 2005 a household RE system was installed. This system has sufficient capacity to power up a small fridge and freezer, entertainment, lights, fans and a couple of caravan park type poles with lights for their visitors’ area.

With 24hr power now available one of the immediate benefits the people have spoken of is reliable continuous refrigeration. They are able to save money due to not needing to buy diesel, but also because of the reduced amount of travel required through having the capacity to store fresh food for longer.

Top End

Residents of Wumajbarr in south east Arnhemland are happy to have 24 hour power, after Wumajbarr became the first community to get a Bushlight Community RE System.

This has been the culmination of a year of planning by residents, Numbulwar Homelands Council Association (NHCA) and the Bushlight team.

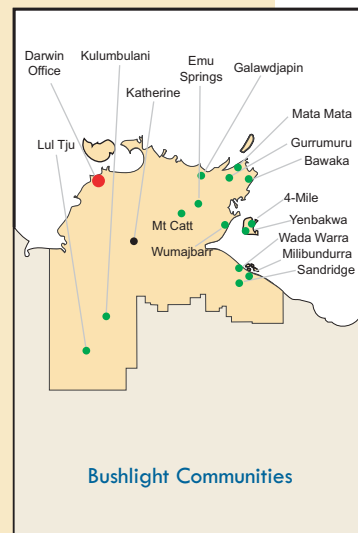
Wumajbarr is a small outstation with three occupied houses that all required a reliable energy supply. Previous energy services consisted of a small diesel generator that was too noisy for residents to run for long periods.

Bushlight was faced with two options at Wumajbarr: to provide three standalone household systems, or provide a single centralised system feeding all three dwellings. The most efficient and sustainable solution proved to be a centralised community system.

Community member Chris says the new solar RE system, which provides power for fans, lights, fridge/freezers and entertainment, is “Manymak,” (“good” in Yolŋu Matha).

According to Andrew Hodder of NHCA, “The new facilities are being used and enjoyed, and we are seeing other family members now making more use of Wumajbarr Outstation.”

During the installation, Bushlight held user training sessions with residents in which Bobby and Andrew from NHCA also participated. Further training in trouble shooting and energy management is scheduled throughout the year, as the residents gain experience in using their new power supply.



Training for system community members at Wumajbarr

North Queensland

The number of communities working with Bushlight in North Queensland is expanding rapidly.

Cheryl Prestipino, recently recruited as Bushlight’s North Queensland regional manager, has been busy facilitating energy planning in several homelands across the Cape and Gulf areas. There are now 17 homelands with RE energy services either installed or under design.

Cheryl is working hard with Bushlight Technical Services and homeland residents to finalise the remaining system designs and installations this year before the next wet season.

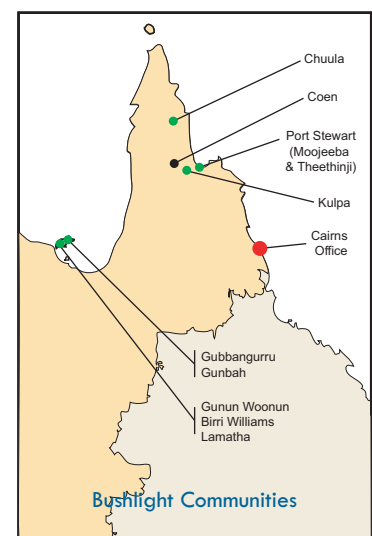
In other developments, as elsewhere, performance data has been downloaded from the installed RE systems. The data shows how much energy has been provided by the PV panels, how much has been used by residents, at what times it was used and the level of charge in the batteries over each day.

This information has been useful to Bushlight when assisting homeland residents to fine tune how they manage their energy services. For example, in one system the data showed much heavier energy use than was expected. Further investigation with the help of Bushlight staff, found a broken thermostat on a freezer. This caused the freezer to run continuously without cycling, which caused excessive energy usage. Residents have disconnected the freezer until a replacement can be obtained.



Household RE system installed at Gubbanguru in June 2005

Bushlight expects the ongoing monitoring of system data in this way, combined with regular system maintenance, will help ensure sustainable, 24 hour energy services to homeland communities.



Bushlight RE System Installation Program

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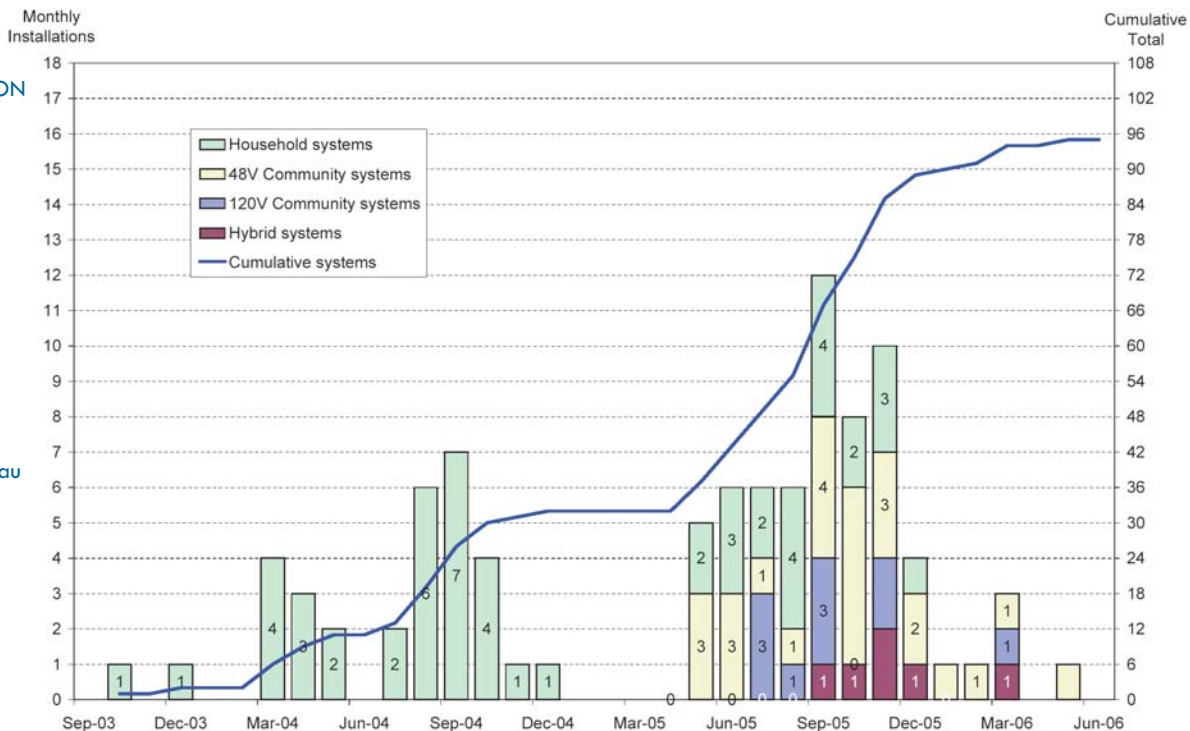
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Technical Services

The high volume of installation work which started during 2005 will continue up to the start of the wet season.

Over June, eight new installations were completed. These included three of the new Bushlight 3.3kW Community RE Systems and the deployment of Bushlight's first household Energy Use Meters.

Over the same period, 11 tenders for the installation of 15 household and community RE systems were issued. Tenders for a further 11 sites, including the first installations of Bushlight's 5kW and 10kW Community Systems, will be issued in July.

The supply of Bushlight community and hybrid systems marks the end of our research and development phase and has led to the consolidation of Bushlight Technical Services

staff in Alice Springs. Their focus will now be on system design, installation and commissioning and the establishment of a robust service network for remote RE technology.

A description of the range of Bushlight's household, community and hybrid RE systems is available on our website www.bushlight.org.au. Click on *RE Industry*, then *Bushlight Systems*.

Contractors and suppliers interested in tendering for Bushlight work should contact Lyndon Frearson, on 08 8951 4341, 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*.

Visit our website:
www.bushlight.org.au



Community system enclosure with PS 1-6 Inverter



Access road to Wumajbarr



Household system installation underway, Jilariya Kimberley