

Focus on Education

Parents living in urban and regional centres are unlikely to pay much attention to the link between electricity and the education of their children. Grid power provides schools with energy for appliances such as lights, air conditioners and computers 365 days a year and teachers in these settings are able to teach without concern for the availability of electricity.

But for families living on their traditional country hundreds of kilometres from the nearest town centre access to reliable power can be a constant concern in relation to their kids' education. Whether they're relying on School of the Air, home schooling, or have a full time teacher living in the community and working at a Homeland School, ensuring there is sufficient power to run a classroom is never straightforward.

Bushlight and the Centre for Appropriate Technology have long considered appropriate infrastructure and service provision be a critical factor in enabling Indigenous people to live sustainably on their homelands. Accordingly, Bushlight has focused on providing reliable power to small, remote, culturally and environmentally diverse Indigenous communities since 2002.

But once a community has access to reliable power – then what? How does having reliable infrastructure translate into better educational outcomes, more jobs, greater community resilience and increased wellbeing? And what's needed to move communities who do enjoy access to reliable power into more productive use of that power?

This case study explores the links between improved energy services and access to education, focusing on three North Western Australian communities where Bushlight has installed a renewable energy (RE) system.



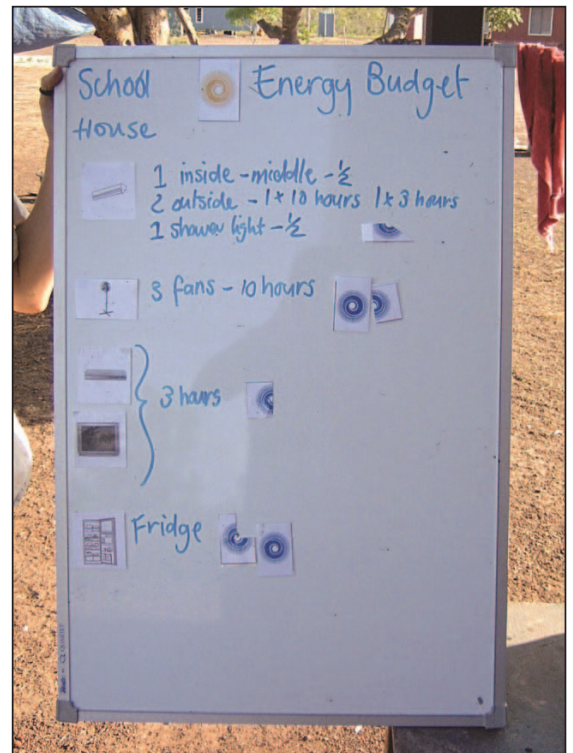
This map shows Bushlight systems where the power needed for a classroom or home school has been included in the system design. Most of these communities have continued to run schooling since the system was installed.

Reliability

Prior to having a Bushlight RE system installed, most homeland communities used diesel generators to supply power. Diesel generators are an excellent way to produce power in settings where generators are regularly serviced, parts are easily available, there is an affordable and consistent supply of diesel and the skills and knowledge to maintain the generator exist in the community. Unfortunately these factors rarely coalesce in remote areas meaning diesel power generation is often unreliable in the delivery of energy services to homeland communities.

With a Bushlight system installed, communities have access to a set amount of solar power every day (an “energy budget”) and can access additional power via a backup generator. This means that Bushlight supported communities can choose to allocate power to:

- Lights and fans in classrooms (lights are especially important where students study at night);
- Radios and the internet for accessing School of the Air; and
- Laptops or computers.



Home Schooling at Dingo Spring and Bidan

Yvonne and her three boys Joseph, Zachariah and Mathias returned to Dingo Spring just under two years ago. Having a Bushlight system has meant that Yvonne and her family have had access to reliable power and she can home school her kids using the internet to stay in touch with a teacher and access home schooling resources.

Mel Marshall at Bidan has worked hard to provide her three kids with access to mainstream education opportunities. The Bidan school initially operated out of her house but the community now has a small classroom which has a small “energy budget” from the Bushlight system. In 2012, she’ll be running the school herself, making sure the kids access School of the Air via a satellite dish and organising other field trips to support the curriculum.

The strong educational outcomes at both Dingo Spring and Bidan are driven by the determination of the communities to guarantee a good education for their children. There is no doubt that access to reliable power has enabled these residents to pursue educational aspirations for the future wellbeing and success of their families.



Mel Marshall with her son Kegan



These boys from Dingo Spring can now go to school every day in their home community

Longevity

Quality education outcomes rely on students going to school regularly over the course of many years. Once a Bushlight system is installed, it has a lifespan of 20 or more years, with a battery bank replacement required around 10-12 years. This means there is a guaranteed amount of power available to the school every day. With this in mind, residents are well positioned to make long term decisions and plan for the educational needs of the community in the long term.

Design

The Bushlight Community Energy Planning process involves a series of meetings during which residents talk about their current energy needs as well as their future aspirations for their community. A Bushlight system is then designed to meet these needs and to expand as required for future growth.

One of the benefits of a Bushlight RE system is that each dwelling has a quarantined amount of power tailored to the needs of the users of that building, an “energy budget”. So, if the school building requires 8kWh a day to function, that energy budget is provided to that building every day and cannot be accessed by other buildings in the community. Having a set amount of power available in a classroom each day allows teachers to effectively plan their lessons without the uncertainty of unreliable power.

Support

Bushlight provides training to the entire community (from kids through to grandparents), explaining how to use their system, troubleshooting, fault finding, shut down procedures and energy efficiency. Training residents means people can make active choices about how they use their allocated “energy budgets”. By involving the whole community, all power users are well equipped to make decisions about power use, including kids in the classroom.

In addition, Bushlight staff are always available to troubleshoot and provide technical advice over the phone. Investing in community training and then providing this technical support over the phone means that residents themselves are often able to faultfind and fix small operational issues quickly and without the delay and expense of using organised contractors.



The classroom at Barrkira School



Mata Mata School in Arnhem Land



Students at the Barrkira School in Arnhem Land

Future Initiatives Supporting Strong Education Outcomes:

TAFE at Mingalkala

Motivated communities such as Mingalkala show how reliable infrastructure can assist Aboriginal people to earn a living and remain on their country.

The Mingalkala Bushlight system was installed in 2005 and since then, the community has gone from strength to strength. Access to reliable power played a big part in motivating many people to come back to the community. Mingalkala quickly outgrew the capacity of the original system and in 2011 Bushlight upgraded it to meet current community needs. The Centre for Appropriate Technology, also upgraded the Mingalkala generator in 2011.

In addition to running a fencing business, Outback Fencing Services, community leader Stanley Till is busy making his dream of an on country TAFE a reality. He says a TAFE on his homeland will achieve better educational outcomes than the one in town, where young people are easily distracted. His goal is for relevant training to be available to young people in the region so they're able take advantage of local work opportunities which are often filled by workers from elsewhere in Australia.

Stanley worries about the diminishing support for homeland communities and the impact it will have on Aboriginal people's quality of life. He wants to share Mingalkala's story as an example of how remote homelands can support themselves while remaining on their country. He says that not all Aboriginal people want to live on larger Indigenous communities and that there *are* opportunities for Indigenous people to live and work in remote areas.

To date, he's been donated a number of ex-mining demountables and organised to run the refurbishment of the demountables as a TAFE course in construction (as shown in pictures at right). Stanley and his students have refurbished the interior of the demountables so one can be used as a classroom and the other for accommodation as well as building a deck and shade structure.

At present there is no power to the TAFE buildings. Bushlight will be working with Mingalkala in 2013 to establish the best possible way to supply power to these buildings as well as conducting further training with residents and students about energy efficiency, system operation and system maintenance to enable them to maximise their use of the existing solar power.

Whatever the details, Bushlight is keen to support Stanley with the practicalities of supplying power to the Mingalkala TAFE as a part of the Bushlight Livelihoods Project in 2013.

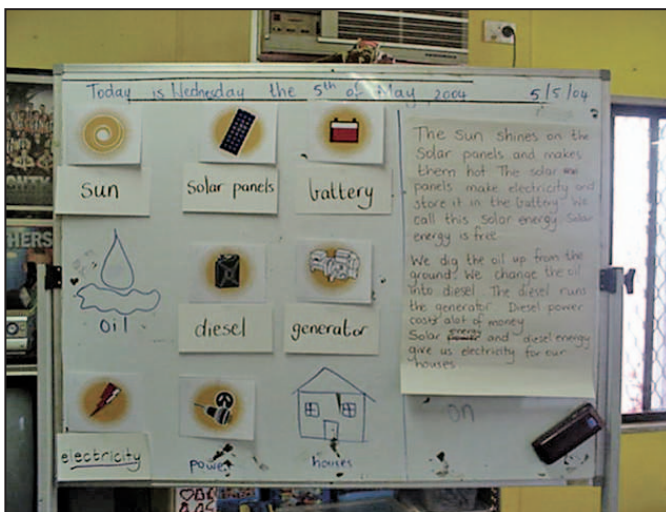


Although educational success relies on many factors both within and outside of community control, access to reliable power can overcome many of the challenges of remote learning.

In many cases, where a quality education is a priority for homeland parents and kids, a reliable power allocation for teaching purposes combined with a solid understanding of how to manage power use may just be enough to keep a homeland school or classroom alive. Certainly, the residents of Dingo Spring, Bidan and Mingalkala have shown how with reliable infrastructure remoteness need not be a barrier to making a good education on country a reality.



Ukaka School in Central Australia



Energy Planning in the Classroom at Mulga Bore, Central Australia