

REMOTE MONITORING – MAINTAINING SYSTEMS FROM AFAR

The Bushlight Design Team has been investigating ways of increasing the time and cost efficiency of Bushlight's technical operations. One strategy being investigated is streamlining the way Bushlight responds to maintenance requests. The current system requires community residents to call Bushlight if there is a problem with their system and describe the problem over the phone. If troubleshooting over the phone is not successful Bushlight staff or a nominated contractor will visit the community to determine the cause of the problem and resolve it. The remote locations of many of the communities Bushlight works in means getting to the community can be very costly as it often involves hundreds of kilometers of travel.

To increase the efficiency of Bushlight's ability to respond to maintenance issues, the Design Team is trialing a system for remotely monitoring the systems at Bushlight communities. This trial is currently underway in four communities in the Top End region of the Northern Territory - Paradise Farm, Patonga Homestead, Spring Peak and Lingarra.

The remote monitoring system operates via the mobile phone network, which allows information to be directly transmitted from the Bushlight system monitoring equipment in the community to the Bushlight office in Alice Springs. It enables staff to view data about the system performance so that a problem can be picked up even before a maintenance request is logged. If a community resident calls to report a problem, the remote monitoring system allows maintenance staff to undergo initial troubleshooting from the office. They can determine such things as whether or not the solar panels are charging, if the batteries are flat and if the generator is working.

The impact of this remote monitoring system is twofold. Firstly, the problem can be resolved more quickly, thereby increasing the reliability of the RE system for community residents. Secondly, in some instances a trip to site by maintenance staff may be avoided, and this in turn saves both time and money. For example, if the reason for power failure to a house is that the circuit breaker has been switched off, Bushlight staff can 'see' this problem from the office, and explain to the residents how to fix it. If the problem is more complex they will still need to travel out to site, but will be much better prepared, with a clearer idea of the nature of the problem and necessary parts to fix it.



The charge controllers and inverter at Paradise Farm, Kakadu are monitored from the office in Alice Springs

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A NEW VISION FOR BUSHLIGHT – STRATEGIC PLANNING IN 2009

Bushlight has been successfully delivering reliable renewable energy services to Indigenous homelands since 2002. In this time, systems have been installed in 105 communities, and Bushlight's Community Energy Planning process has been conducted in each of these communities as part of our comprehensive community engagement model.

During these past (almost) seven years, Bushlight has undergone a continual process of refinement and innovation in all aspects of technology and service delivery. In 2009, Bushlight is developing a new multi-year strategic plan to further improve the range and quality of services offered.

As part of developing the strategic plan, the Bushlight Management Team undertook a series of interviews, seeking to gain feedback on what Bushlight has been doing well, in which areas we could improve and to identify key future strategic opportunities. Thirty stakeholders were consulted from a range of organisations across three states and territories. They included Australian and State/Territory Government agencies, power utilities, service providers, Land Councils, community development organisations and residents of Indigenous homelands.

The Management Team was very pleased with the quality of the responses from our stakeholders and their feedback was used to inform the formulation of our strategic objectives and operational plan. Bushlight would like to thank all participating stakeholders for their well considered and constructive feedback during the review process. The final strategic plan will be made available on the Bushlight website in the coming months.

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NEW MANAGEMENT STAFF FOR REGIONAL TEAMS

Ken Aitchison – Regional Operations Manager

Ken started his career with Bushlight in March 2005 as a Project Officer for the Top End Regional Team. After occupying this position for 6 months, he moved into the Regional Manager's role for the Top End. During the past four years, Ken has developed an in depth understanding of the community engagement process and a valuable breadth of knowledge about Bushlight. He is now in the position where he can share this knowledge and give guidance to all regional teams as the new Regional Operations Manager. In this role, Ken will oversee the functioning of all community engagement activities across the four regions, and will travel to each region on a regular basis.

Nina Brown – Regional Manager

Nina started working with Bushlight in October 2008 as a Project Officer for the Top End Regional Team. Nina has previously worked in community development roles both in Australia and overseas. After working closely with Ken for the last few months, she has now taken over the role of Regional Manager for the Top End.

Bushlight would like to congratulate Ken and Nina on their new positions!



Nina Brown, Top End Regional Manager and Ken Aitchison, Regional Operations Manager

MAINTENANCE PROGRAM - MAINTAINING COMMUNITY RE SYSTEMS

In 2006, Bushlight received funding from the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) to develop a RE system maintenance program. Initially our work focused on delivering maintenance services to Bushlight RE systems, in each case at the invitation of the system owner. More recently we have begun providing maintenance services to an increasing number of 'non-Bushlight' RE systems, again at the request of the system owners.

Bushlight's role is to assess each community and RE system against established eligibility criteria, and if eligible, work to include the RE system into one of Bushlight's existing maintenance schedules. Maintenance on these systems is carried out by qualified technical contractors. Approximately 80 non-Bushlight systems have been incorporated into the Bushlight maintenance schedules to date, and this is expected to rise to around 100 by mid-year.

Whilst many of these systems have received some level of maintenance in the past a number have not been regularly serviced. Bushlight contractors work to replace failed components and where required, bring the systems up to Australian Standards. According to Bushlight Maintenance Manager, Malcolm Bond, some of the older non-Bushlight RE systems had safety issues and didn't meet the current Australian Standards.

The photos below demonstrate the improvements that have been made to an RE system at the community of 16 Mile in Central Australia. When Bushlight first encountered the system, the enclosure for the inverter was in very poor condition, the insulation was deteriorating and it was physically difficult to access. Bushlight have installed a new equipment enclosure, rewired the circuitry, replaced faulty panels and provided an Operation and Maintenance Manual as well as safety information such as safety signage and start up / shut down procedures. The system also required additional work to bring it up to current Australian Standards and a major service was performed to maximise its energy provision potential.

A training program for residents of communities with non-Bushlight RE systems is currently being finalized which will include an introduction to system components, safety, basic operation and troubleshooting and information on energy efficiency and demand side management. This training program will be delivered to each community as their system is incorporated into the Bushlight maintenance program.

Before Bushlight intervention



The existing equipment enclosure at 16 Mile was difficult to access



The insulation was deteriorated

After Bushlight intervention



The new equipment enclosure is easier and safer to access



Equipment and enclosure brought to Australian safety standards

SIGNIFICANT FUEL SAVINGS IN KAKADU

Patonga Homestead, Kapalga, Spring Peak and Paradise Farm are four outstations situated in Kakadu National Park in the Top End of the Northern Territory. Bushlight began working with these communities 16 months ago following a request from Warnbi Aboriginal Corporation who was concerned about the financial and environmental costs of running diesel generators 24 hours a day, 7 days a week to power the communities. At this time each community was using approximately 20,000 litres of diesel at an annual cost to Government of \$30,000 per community. Over a period of six months residents, Bushlight and Warnbi worked together to determine a solution acceptable to all parties to help the communities reduce diesel usage, and thereby make significant savings.



The Bushlight Hybrid RE system at Kapalga

During the Community Energy Planning (CEP) process, Bushlight talked to residents about their energy needs including what appliances they used, and how long they were used for each day. Bushlight's Regional Teams collated this information with other details about the community and provided this data to the system designers. The Bushlight Design Team determined that the best solution to meet the energy requirements of these communities was an automated Hybrid system that utilises a combination of solar and diesel to power the community.



Spring Peak Community Energy Planning meeting

In order to allow for a cost recovery mechanism within the system, the existing Bushlight Energy Management Unit (EMU) was altered so that prepaid power cards could be used. In addition to ensuring that residents can make an unsubsidised, per kilowatt financial contribution to diesel costs, the power card EMU also offers greater flexibility for users. They can choose to remain within their daily 'energy budget' which is determined during CEP in consultation with residents and delivered every day at 12 noon. Alternatively, they can use their power cards to pay for additional energy from the generator. This function is particularly useful when there are high energy needs in the community due, for example to high visitor numbers or the use of air conditioners.

In May 2009 it will have been 10 months since the Hybrid RE systems were installed in these four communities, and the data is showing significant reductions in fuel expenditure and usage. According to Warnbi, on average each community has reduced their diesel usage by approximately 64% (1000L per month), which can be projected as an approximate annual saving of \$18,400 per community. This clearly has substantial environmental benefits through the reduction of fossil fuel emissions. In June 2009, another Hybrid RE system will be installed in the nearby community of Patonga Airstrip, where similar savings are expected.



Residents use the power card meter (left) to check the amount of credit available on their power cards. The Bushlight Energy Management Unit (right) allows flexibility for each household to manage energy according to their needs.