



Power Back Pty Ltd



Information Booklet
For Resource Agencies and Businesses

Introducing Power Back

176

COMMUNITIES WITH
RENEWABLE OFF GRID
POWER AND ELECTRICITY

1800 266 464

FIRST NATIONS-LED
SUPPORT BY
PHONE & EMAIL

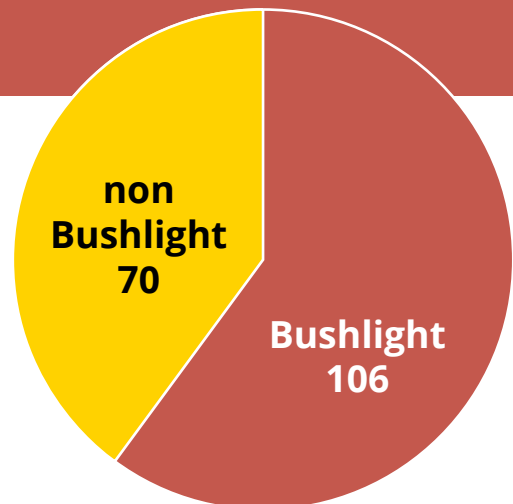
INCLUDING

Central Australia **71**

Top End **57**

Kimberly **31**

Queensland **17**



MAJORITY INDIGENOUS OWNERSHIP

Working towards

55%

**First Nations
Employees**

60%

**First Nations
Suppliers**

Power Back supports off-grid Bushlight and NonBushlight systems and provides renewable energy for remote communities to achieve their social, cultural and economic goals and meet their obligations to country.



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Power Back Pty Ltd
ABN 47 655 199 732

Power Back Pty Ltd

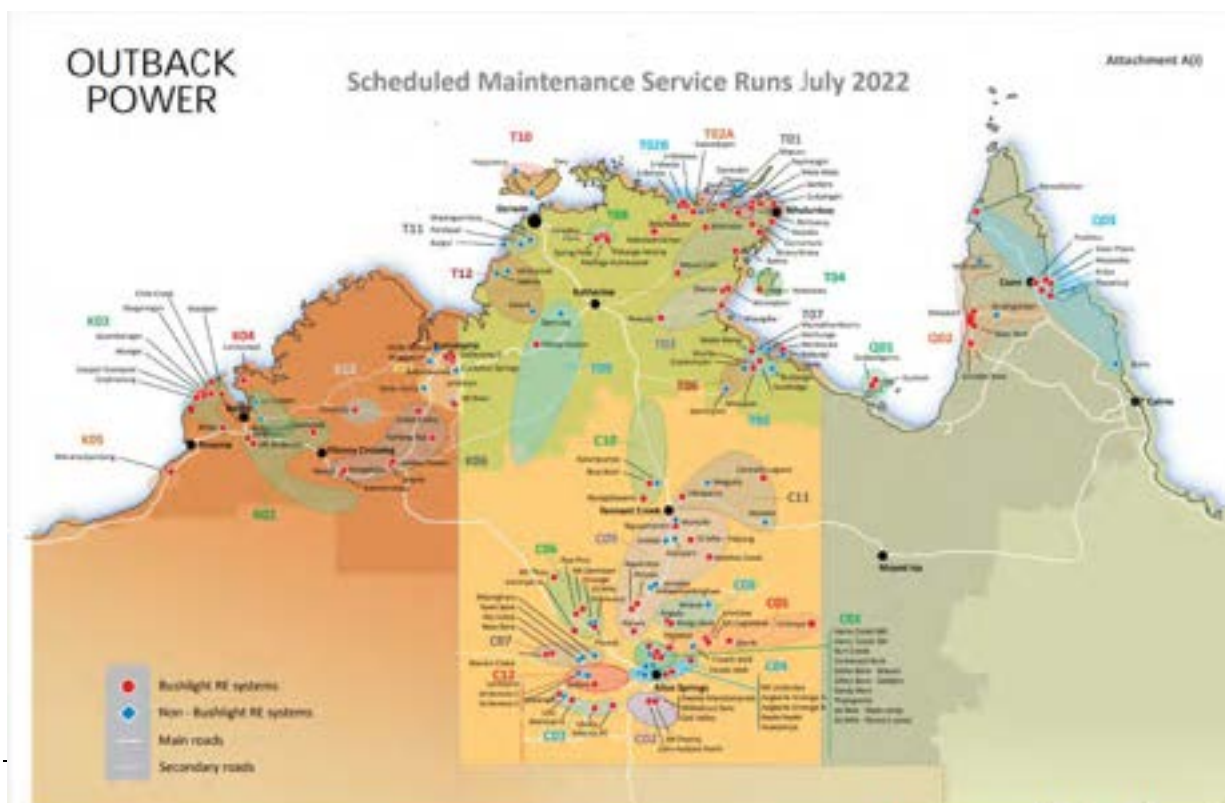
Power Back Pty Ltd is a new, Indigenous lead organisation that aims to change the lives of First Nations People living in remote Northern Australia by improving their access to renewable energy. Power Back brings together existing organisations that are experts in the study of racism through the lens of Indigenous sovereignty, and the provision of off-grid renewable energy system. These organisations have come together to transform access to renewable energy for these First Nations communities, drawing upon their respective expertise.

Operating from our bases in Brisbane and Darwin, Power Back is the current Service Provider to NIAA for the management of the Outback Power Programme (OBP). Our team comprises of a majority indigenous lead board of directors with an industry leading solar engineering team and skilled field technicians. Complementing our technical team is a dedicated indigenous engagement and outreach team that are in the field, meeting communities face to face and building relationships with key stakeholders across the government, NGO and service provision sector.

With our mission to improve remote community access to renewable energy and our reach out and engagement with communities we are keen to partner with leading contractors with a passion for renewable energy and a strong interest in improving the lives of those living on country.

Power Back Pty Ltd aims to:

- Provide** outstanding First Nations led service for community through our 1800 number / email,
- Support** reliable power and electricity with regular maintenance and timely response to faults.
- Build and maintain** relationships with stakeholders to ensure clear communication.
- Manage** refurbishments / upgrades to ensure they meet community and OBP requirements.
- Provide** clear community user guides that are easy to use and tailored for each community.
- Employ** First Nations people and support First Nations business at every opportunity.





Our Directors

Chelsea Watego (formerly Bond) is a Munanjahli and South Sea Islander woman with over 20 years of experience working within Indigenous health as a health worker and researcher. She is currently Professor of Indigenous Health at QUT's School of Public Health and Social Work. She has written for IndigenousX, NITV, The Guardian, and The Conversation. She is a founding board member of Inala Wangarra, an Indigenous community development association within her community, a Director of the Institute for Collaborative Race Research, and was one half of the Wild Black Women radio/podcast show, but most importantly, she is also a proud mum to five beautiful children. Her debut book, *Another Day in the Colony*, published by UQ Press and met with critical acclaim.

Chris Edlond is a project manager and electrician with a focus on quality and safety. He has northern European ancestry and extensive experience working on off grid systems in remote communities. He also comes armed with a Science Degree majoring in Mathematics from the University of Queensland. Chris adopts a highly analytical approach to his role and is constantly driven towards continually improving the relevant processes. A veteran of almost 20 years in this role at a large electrical contracting business, Chris brings a wealth of critical expertise to any project large or small. He is also a father of three.

Kevin Yow Yeh is a Wakka Wakka and South Sea Islander man, Social Worker and Sessional Academic at the Queensland University of Technology. Additionally, Kevin is employed by the Australian Health Practitioner Regulation Agency (Ahpra) to lead its systemic reform work, ensuring the notification process is culturally safe for First Nations peoples. Kevin is a Director at the Institute for Collaborative Race Research and is an active member of the Meanjin (Brisbane) community where he enjoys collaborating with other First Nations peoples across academia, activism and the arts.



1. Background

1.1 Outback Power Programme

The National Indigenous Australian's Agency (NIAA), through their Housing and Infrastructure Branch undertakes policy and program management in relation to the monitoring and maintenance of off-grid solar power systems in small remote Indigenous communities, which are unserved by a local energy utility, through the Outback Power Programme. These systems provide essential services to outstations, homelands and remote communities. **Power Back Pty Ltd** is NIAA's current service provider for this program.

The Outback Power Programme is a legacy activity maintaining systems installed through the former Remote Indigenous Energy Program (2012-2014) and Bushlight Program (2002-2012).

Currently the vast majority of Outback Power Systems either 24V, 48V or 120V systems and are comprised of:

- (a) Master inverter charger – Selectronic SP Pro;
- (b) DC Charge controllers – Depending upon system voltage – Plasmatronics, AERL or Magallen;
- (c) AC Coupled inverters – Fronius, ABB or Kaco SCERT's;
- (d) PV Panels – various but largely very old BP panels;
- (e) Batteries – Gel filled, value regulated lead acid (typically Sonnenschein).

No small-scale certificates (STC's) under the Renewable Energy Target scheme are applicable to Outback Power System works.

All works completed must comply with the following standards, including but not limited to:

- (a) AS1170;
- (b) AS3000;
- (c) AS3008.1;
- (d) AS4508;
- (e) AS5033;
- (f) AS5139; and
- (g) AS/CA S009.

System units are Outback Power systems are off-grid solar power systems, which interface with a diesel generator. Outback Power systems generally consists of a solar array, charge controller, inverter, and a battery bank. The Outback Power system is designed to provide a hybrid power system, by interfacing with the existing diesel generator which supports the community as a back-up power source, provides an equalisation charge to the battery bank, and enables management of high-power loads such as air-conditioning (Diagram 1).

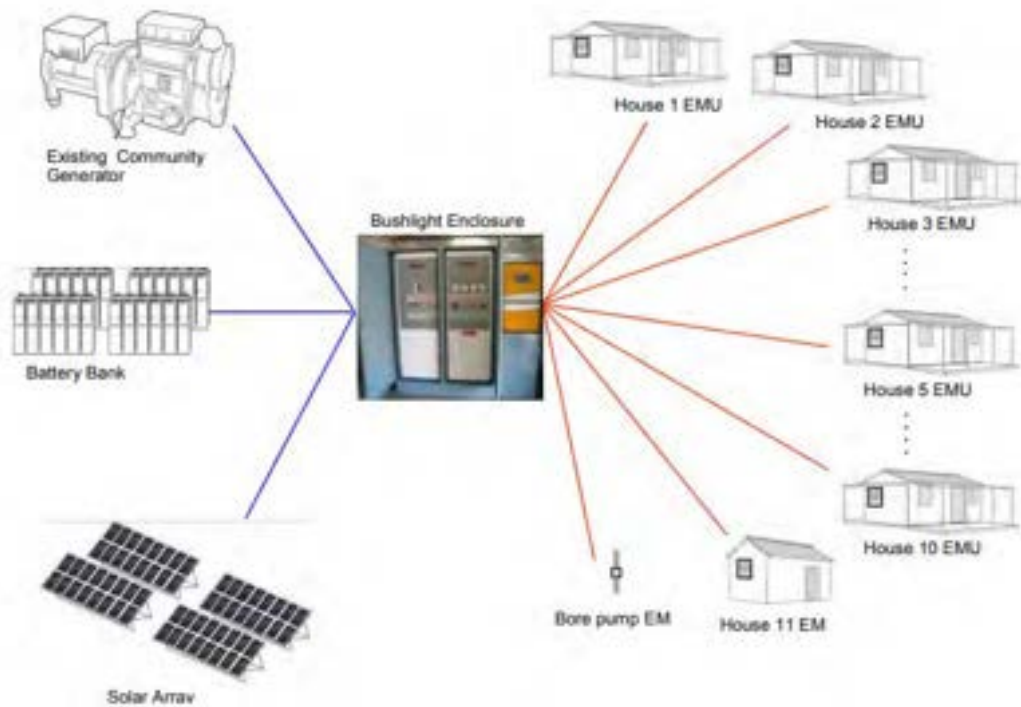


Diagram 1. Outback Power System Design

- (a) Systems typically include one or more Energy Management Unit(s) (EMU) that are connected to each dwelling. The EMU is a wall-mounted unit providing users with system status information, including a fuel gauge, power meter and timers. Green lights display the power available for the community's discretionary use, and a yellow light shows the power for the separate essential circuit for fridges, freezers and lights. The EMU has an agreed power allowance for each 24-hour period to ensure an equitable distribution of power to every dwelling in the community.
- (b) There are two main models of the Outback Power solar energy systems:
 - (i) the Household Renewable Energy model; and
 - (ii) the Community Renewable Energy model.
- (c) The **Household Renewable Energy model** features:
 - (i) A standalone solar powered system, designed to meet the energy needs of a single dwelling. The main components include photovoltaic array, a battery bank, inverter and charge controller.
 - (ii) Control via an EMU that monitors and controls the amount of energy provided on a daily basis. EMUs are located on the main switchboard on each system.
 - (iii) Non-critical appliances (i.e. fans or TVs) are supplied via "discretionary" circuits and critical appliances (i.e. lights or refrigerators) via "essential" circuits. When battery charge drops, the EMU will restrict power to discretionary circuits in order to ensure a continuous power supply to essential circuits.



- (iv) In some instances, communities may have multiple Household Renewable Energy Systems installed across various dwellings and buildings, usually where dwellings are too far apart for a centrally located power source to be effective.
- (v) High power loads (i.e. air conditioners, electric kettles) are intended to be supplied by a diesel generator.
- (d) The **Community Renewable Energy model** features:
 - (i) A centrally located solar powered system, designed to provide power to a number of dwellings within a community. Power is reticulated from the central system to each dwelling. It has the same main components as the Household Renewable Energy System.
 - (ii) Supply to individual dwellings are controlled via an EMU on each dwelling.
 - (iii) Non-critical appliances (i.e. fans or TVs) are supplied via "discretionary" circuits and critical appliances (i.e. lights or refrigerators) via "essential" circuits. When battery charge drops, the EMU will restrict power to discretionary circuits in order to ensure a continuous a power supply to essential circuits.
 - (iv) High power loads (i.e. air conditioners, electric kettles) are intended to be supplied by a diesel generator.
 - (v) Each household connected to the Community Renewable Energy System receives a daily "energy budget" via the EMU. Energy budgets will vary between households, determined by community and individual household needs.
 - (vi) If the energy budget of an individual household is exceeded, the EMU will restrict the power supply that household's discretionary circuits in order to ensure a continuous power supply to essential circuits.
- (e) The Outback Power system architecture may vary from site to site due to; differing power needs of each community, number of houses that require services, and community agreement on system configuration.
- (f) The Outback Power systems work in conjunction with a diesel generator system run by local community essential service providers. Co-ordination with suppliers and installers of generators is vital to ensure correct operation in times of excessive load, PV system outages and generally to support the health of the battery bank.

1.2 OBP Responsibility

Through the Outback Power Programme, Power Back Pty Ltd is responsible for:

- (a) Monitoring and maintenance of solar power energy systems currently in up to 176 remote Indigenous communities in Western Australia (31 active units), Northern Territory (128 active units) and Queensland (17 active units).



- (b) Power Back undertakes routine maintenance of the sites and responds to outages and system upgrade requests.
- (c) Sites identified for upgrade or refurbishment works through routine maintenance or breakdown response are referred to NIAA with recommendations for works.
 - (i) As upgrade and refurbishment works are a response to maintenance and breakdown activities, it is not possible to provide any indication as to the volume of work that may be required.
 - (ii) Descriptions below:
 - (A) Upgrade works consist generally of works to replace the existing Outback Power renewable energy system at a particular site. This would generally include replacement of with a view to increasing the site's renewable capacity.
All upgrade works will be required to bring up to the current standard any component of the system that is modified as part of the works. For example, replacement of a DC charge controller that requires the DC Coupled PV panels to be re-strung, will require that the PV panel wiring, marshalling boxes, fuses, etc. are brought to up to the current requirements of AS5033.
 - (B) Refurbishment works consist generally of works to replace failed components of an existing Outback Power renewable energy system at a particular site. This would generally include replacement of with a view to maintain the site's current renewable capacity but to improve its reliability.
Again, refurbishment works will be required to bring up to the current standard any component of the system that is modified as part of the works. For example, replacement of a DC charge controller that requires the DC Coupled PV panels to be re-strung, will require that the PV panel wiring, marshalling boxes, fuses, etc. are brought to up to the current requirements of AS5033.

1.3 Other Works

From time to time, Power Back may approach appropriately qualified businesses for quotations to perform other works at Outback Power Programme sites. This may include:

- (a) Requests for quotation to attend to emergency system breakdowns in their nominated regions; and
- (b) Requests for quotations to provide assistance to Power Back teams to complete other associated works.

2. Power Back Pty Ltd Contact Information



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