



## Company Capabilities and References

### Company Capabilities

Tropical Energy Solutions Pty Ltd provides turnkey solutions for grid-connected and off-grid energy generation, energy saving and demand management applications.

*We identify, promote and implement solutions that are clean, reliable and economically viable.*

We are focussed on delivering products and services that suit tropical environments and conditions.

Predominantly servicing Regional Queensland Australia, with offices based in Townsville and Cairns, we work collaboratively with leading manufacturers and their representatives, operating in three core business areas:

- 1 - **Technical Services** - engineering, project management and operation of innovative energy solutions including the design, development and installation of hybrid and off-grid power systems for remote areas;
- 2 - **Energy Management Services** - designing Energy Management Systems, conducting Energy Audits, developing Demand Management strategies, and the provision of Certified Measurement and Verification services for commercial operations and property developments;
- 3 - **Education Services** - the training of personnel in renewable energy generation and sustainable energy management techniques.

Tropical Energy Solutions capabilities include:

- Proven experience with commercial scale, off-grid and hybrid power system design and installation;
- Tailor-made Energy Management systems for organisations, buildings and specific processes;
- Consulting Services and Energy Audits in accordance with AS/NZS 3598:2014;
- Certified Measurement and Verification Services
- Development and delivery of training programs to assist in the implementation of Energy Management Systems and recommendations resulting from Energy Audits;
- Development and delivery of education and training packages in renewable power systems and energy management;
- Technical services for the engineering, project management and operation of innovative energy solutions;
- The ability to meet the requirements and objectives of a wide range of industries and government agencies.

In all activities we combine best practice with hands-on experience and compliance with the relevant AS/NZS or ISO standards.

Tropical Energy Solutions staff have significant professional experience in the national and international marketplace including:

- Project Management;
- Engineering;
- Training and Business Development.

## Reference Projects

Tropical Energy Solutions has delivered projects to meet the needs of a diverse range of customers. These include undertakings from Far North to South East Queensland, remote areas of Queensland, Northern Territory, Torres Strait Islands and several interstate projects. We have also provided Remote Area Power Systems and training in Fiji and Papua New Guinea.

The sustained growth of our company is attributed to the recommendations by our satisfied customers. Below is a small selection of some recently completed projects.

### Commercial and Industrial Photovoltaic (PV) Solar System Design and Installation

#### Waters Abrasive Blasting Services

Waters Abrasive Blasting Services (WABS) is an abrasive blasting and industrial coating company that has operated in Townsville since the early 1990's. High energy consumption, rising power costs and overseas competition led WABS to seek opportunities to reduce operating costs. As they operate during the day, and North Queensland has abundant solar resources year round, the installation of an industrial scale PV solar system was an obvious choice. Tropical Energy Solutions was commissioned to design and install a 100kWp PV system to reduce the sites energy consumption. Working with local companies including accountants, component suppliers, electricians and industry consultants, this project proved the capabilities of North Queensland businesses to deliver renewable energy projects on time and on budget. The WABS system is currently the largest privately owned PV system in the Townsville region.



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### Education and Development

#### Townsville City Council Employee Training:

As part of Townsville City Council's Network Demand Management project to reduce energy demand through technical and behavioural changes, Tropical Energy Solutions developed a one day training package for managers and employees. The training covered the basics of how consumption and demand affect operating costs, how different load groups may be used more efficiently, behaviour change in the workplace, energy efficient building design, understanding tariffs and billing, and renewable energy opportunities. To date we have conducted seven training sessions in Townsville plus another in Port Moresby for the National Capital District Commission.



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## Energy Audits

### Burdekin Shire Council Energy Audits

This project examined the tariffs, energy consumption and demand, and physical attributes of 144 council electricity accounts. These ranged from active accounts with no consumption to sites using over 600,000 kWh annually. This was the first time that energy use had been examined in detail and we experienced numerous challenges in identifying sites, the loads within them and, in some cases, who was actually responsible for them. 12 months billing data showed a total energy consumption of 4,165,000 kWh at a cost of \$1,134,000. Many cost savings opportunities were identified, including:

- Closure of 18 accounts that have no associated energy use or limited practical value (total savings > \$11,000)
- Tariff optimisation for >70 accounts (total savings >\$50,000)
- Energy efficiency upgrades on a site-by-site basis (estimated savings >\$166,000)

Recommendations for cost savings include many initiatives at nil cost such as switching off unused hot water systems. Low to medium cost initiatives like installing timers and retrofitting lights were suggested for all applicable sites. Replacing inefficient air-conditioning plants and other higher cost initiatives were proposed for selected sites. To date Burdekin Shire Council is the first LGA that we know of that has addressed energy use and cost across the whole organisation in such a comprehensive way and may regard itself as a leader and role model in reducing energy consumption and its related costs.



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### Measurement & Verification (M&V) Services

#### Bestlan M&V

Bestlan is a privately-owned Australian-based family company, with head office located in Townsville. The Bestlan Group was first established in 1986 as a fruit processor and now has increased the scope of the business to become one of the largest producers and suppliers of processed dried fruits, value-added fruit pulps, purees and pastes to the food industry.

In 2013 Bestlan received a \$457,000 Federal Government grant to modernise its operations to reduce carbon emissions and electricity costs. A requirement of the grant was that energy use be measured before and after implementing energy efficiency initiatives to verify that the calculated savings were being achieved. Tropical Energy Solutions was engaged to provide M&V services in accordance with the International Performance Measurement and Verification Protocol (IPMVP) which provides a set of procedures and calculations that detail how to accurately measure energy savings for different conditions. M&V practitioners undergo rigorous training and testing to ensure the veracity of the reporting they provide. Bestlan will use the funding to upgrade energy intensive fruit processing equipment and lighting to reduce carbon emissions by 34%, providing annual energy cost savings of \$121,000.



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## System Refurbishment and Expansion

Boodjamulla (Lawn Hill) National Park:

The ranger station at Boodjamulla National Park accommodates around seven staff and also has workshop facilities for park maintenance. The site had a Remote Area Power System (RAPS) installed 15 years ago. This system was becoming unreliable as a number of panels had failed and the generator was required to operate continuously. We tested the existing solar panels and replaced those that were no longer working, added additional panel arrays, replaced over six tons of batteries, installed a new generator and extended the existing grid. The ranger station now has a reliable power source which is much more efficient and environmentally sustainable. Since the original refurbishment we have added an additional 14kW of PV solar capacity.



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