



Case Study: First Capital Solar project - Far North Queensland

November 2018

ISMAPNG Sustainable Living Policy Objectives

- Energy
- Infrastructure
- Procurement

ISMAPNG Goal

- Reduce energy costs
- Reduce carbon dioxide emissions
- Renewable Energy

The Issue

Energy is one of the major themes identified in the IMAPNG Sustainable Living policy that was launched by the sisters in November 2016. In keeping with that theme, renewable energy is a key aspect and following the successful procurement process through a Power Purchasing Agreement for the solar project at Adamstown in New South Wales in August 2017, solar continues to be a priority goal for action. Following on from the learnings identified below, it was decided that a capital approach would provide a more favorable procurement outcome and in late March 2018 a small capital budget was approved to test the viability of capital investment across 4 North Queensland properties.

Background in regards to Power Purchasing Agreements

Following many meetings with retailers and alternative financing companies it became apparent that with low volume consumption through geographical dispersed residential properties, ISAMPNG is unable to generate the necessary energy load that makes a Power Purchasing Agreement (PPA) a viable option.

While a PPA does have the advantage of being capital free, there is a timeframe of up to 10 years required and this means the actual energy savings are not fully realized by ISMAPNG until this contract period finishes. With a capital purchase, pay back can be achieved in 3 - 6 years and then the savings are fully allocated back to ISMAPNG to be used on other mission related activities. There is also concern about the ownership of all of the properties for the 10 years of a PPA given the ageing population of the sisters and the different care needs that may require a change to the ongoing ownership of properties should these needs change during this period.

Other work involved investigating the opportunity for sharing of solar across our properties through a balanced distribution network. Unfortunately the energy load of ISMAPNG properties also makes this non viable at this point in time.

Sustainability Strategy Implemented

Within the budget allocation for the remainder of the 2017/2018 financial year, 4 North Queensland properties were selected in consultation with the property team and the community leader, Sr Helen White. The payback for these properties was expected to be between 2.5 and 4 years. Far North Queensland was chosen because there is only one electricity retailer (ERGON) and the current rates are higher than the majority of other properties across Australia and with the high level of sunshine available in far north Queensland, it made these properties ideal for the first project.

Implementation Process

The energy data for these 4 properties was sent to two solar companies for quoting and following a review of system sizes and cost, Enervest were selected as the preferred supplier. It should be noted that there are a huge variety of solar providers in the market at present, however the needs of ISMAPNG was for only Tier 1 products to be used and the customer service aspect and the project management capabilities of the solar company were also project requirements.

The Sisters were also very keen to have local installers on site as they wanted to keep the business within their local community. Enervest were able to facilitate the sub contracting of the solar equipment to local businesses and they ensured that the conduct and workmanship was at a very high standard.

The actual installation on all properties was completed in one day in mid June and from that day the Sisters were using solar produced from their system. Paperwork was then lodged through Enervest with the relevant retailer and after a wait of nearly 2 months, the change over for the new meters occurred in August 2018 to allow for unused solar to be exported back into the grid so a solar rebate could be credited onto future invoices.

Progress Achieved

The photos showcase the solar panels and the sisters who reside in each of the properties. The feedback from the sisters was very favorable (refer Quotes below) and they were all very happy with the sub contracted solar companies that were on site.

Since the grid connection has been in place for these four North Queensland properties, there has been a notable change in the billing structure and charges now come monthly on a consolidated invoice. Further analysis has been undertaken and a comparison has been made between the September 2018 invoice and the September 2017 invoice. The results have been very positive:

- Before the change the cost of electricity per day for these 4 properties was \$20.96. Post solar this has now dropped to \$5.08 per day.
- The total cost for a 3 month period for mid August to mid November 2017 (94 days) was \$1,958.91. This cost extrapolated out on the recent post solar 30 day invoice to 94 days will be approximately \$477.70.
- kWh per day were 59.72 from the electricity retailer, but have now reduced to 28.18 per day
- One of the properties did not incur a cost at all – It was 0.83 cents in credit for the month!
- Based on these figures, these solar installations should pay back in approximately 3.7 years.
- Carbon emissions will reduce by approximately 10 Tonnes a year from these properties.



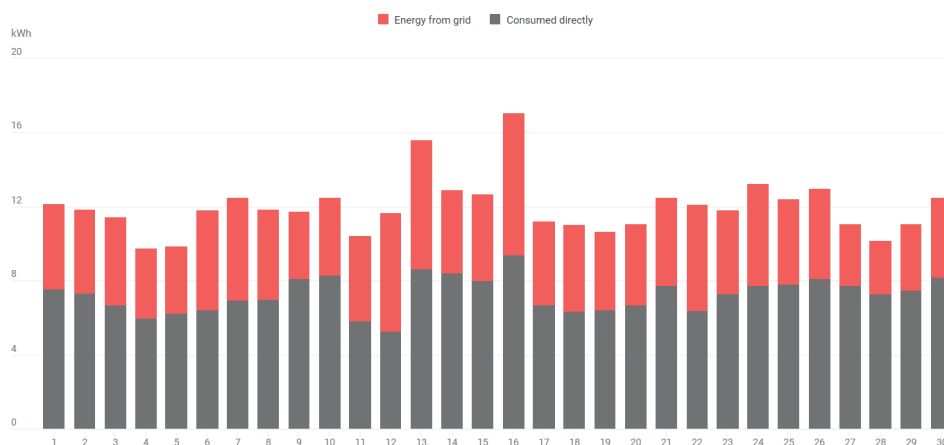


Tracking Progress

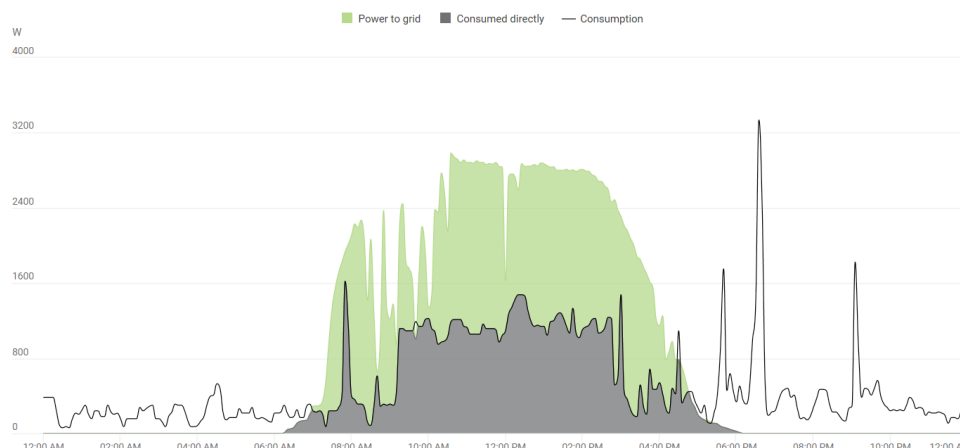
In line with the guiding principles within the Sustainable Living policy, it is intended that ISMAPNG will measure and monitor the initiatives that are implemented against all of the objectives. Tracking for the 4 North Queensland sites and for future solar installations will be measured through Fronius Solar web.

Information on their own property is available to the Sisters living in these properties so they can also monitor their energy consumption and production. The Environmental Sustainability Manager has access to a consolidated view of all properties as well as the more detailed information for individual properties. The front page highlights different aspects of the system in real time and shows – current production, consumption, percentage of self sufficiency and Watts being fed back into the grid. There is also information in regards to CO2 savings and the dollar cost earned from the export rebate back into the grid. The system can also showcase this data on a daily, monthly or YTD basis since the meters were installed in August 2018.

The below graph shows the daily energy over a month for the amount of energy consumed from solar and the amount used from the grid.



The following graph highlights the daily energy produced in green and the energy consumed during this time in grey with the line portraying the energy use throughout the day.





Challenges and lessons learned

There were no real issues identified other than uncontrollable waiting periods with the retailer for pre approvals before commencement and then also for the new meters to be installed post installation.

The milestones from this project were used to create a Timelines and Milestones document in conjunction with Enervest that will be used to communicate with sisters for future solar projects. Setting realistic timeframes and constant and regular communication with the sisters was key to the success of this projects and a similar model will be employed for new projects.

Next Steps

Since this project was completed, a larger allocation was approved for the 2018/2019 financial year to install additional solar installations. A Decision request form was approved at the September 2018 ILT meeting and a new project for a further 31 properties across all 6 communities with a combined 92.2 KW commenced in October 2018.

Pending a successful roll out of this project, continued investigations with the property team will identify other properties that may be eligible for solar pending further funding being approved in future financial years.

There is scope for a future project to roll out LED lighting and then in coming years the possible inclusion of Batteries onto the properties that already have solar.

Early investigations have commenced to look at a Power Purchasing agreement to buy energy from a renewable energy provider (either solar or wind or a combination) as part of enhanced green energy options.

Batteries

At the present time, batteries are still an expensive investment and unless a specific property is identified as meeting relevant thresholds to make it financially viable then this is seen as a future opportunity. All solar panels and inverters being fitted will be compatible with future battery installations should we decide to implement batteries. Current industry expectation is that battery costs will halve over the next 4 years.

Demographic information

The Institute of Sisters of Mercy of Australia and Papua New Guinea (ISMAPNG) is a community of Catholic Religious Sisters in Australia, Papua New Guinea and further abroad. Whatever and whenever our ministry is, we are part of the one Mercy mission, part of the ongoing mission of the compassionate Jesus. In furthering our charism, we partner with thousands women and men as employees, associates and volunteers. Together we have a proud and continuing history of serving people suffering from injustices related to poverty, sickness or lack of education.

- 15,000+ people
- 750+ Sisters of mercy
- 134 Institute staff members
- 11,000 ministry partners
- 3,000+ ministry volunteers
- 350 Mercy associates
- 32 Young Mercy links
- Assisting 210,000 persons annually



Links

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Quotes:

“Sincere thanks to Chris and the team for this great work in organising the solar panels for our home. Berneice and I will be looking forward to monitoring and measuring our property energy.” Margaret Dixon RSM

“I feel very privileged to be living in one of the first of our ISMAPNG houses to be fitted with solar panels funded through a dedicated capital budget. It is a good feeling to know that a great deal of the electricity we are using is coming from the rooftop. Of course sunny days are the norm here in Central Queensland so we produce a good bit, and it is nice to know that we are able to sell the excess production back to the grid. The knowledge that this is happening serves to remind me about the other things I need to be doing to be a good steward of the environment. I hope and pray we will get better with every day that passes. The most recent reports on climate change make it all very urgent.” – Sr Berneice Loch RSM

“This morning I ‘entertained’ my brain... and my sense of humor (amused at myself) while doing the washing keeping an eye on the PC screen noting 1) how long it took the screen to respond to the cloud cover, 2) how much cover caused the current stream to reverse. 3) What effect the different phases of the washing cycle had on the size of the current flow ‘dots’” – Sr Therese Masterson RSM

Keywords / topics: Solar / Energy / Infrastructure /Procurement

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