

A Feasible Renewable Alternative to the Woolooga-Cooroy Transmission Line & Cooroy South Substation Project

The Powerlink Proposal

The Project entails construction, operation, and maintenance of a 275 kV double circuit transmission line and substation in order to provide high voltage reinforcement of the northern Sunshine Coast and Gympie regions. Powerlink proposes to commence construction in 2012 if their proposal is approved.

One Feasible Alternative

The load forecasts predict an estimated deficit of 70MW starting to emerge in 2013/2014. This is a large capacity upgrade and Sanctuary Energy's proposed approach is to work with the Sunshine Coast Regional Council, the local community, Energex and Powerlink to simultaneously pursue two complementary opportunities. These are:

1. Large scale renewable solar thermal and
2. Broad based demand management and distributed energy¹



By 2014, the project aims to deliver 30MW of Large Scale Solar Thermal renewable generation coupled with 10-20MW demand side response; this would be more than sufficient to offset the immediate peak capacity requirements in the area and would be scalable over time (with the construction of additional solar thermal dishes) to meet projected peak capacity requirements in 2024.

The approach is to start deploying small scale demand management whilst planning and land acquisition begins for the large scale solar thermal plant. Once the demand management process is underway, it is likely that demand can be reduced further in the area than currently anticipated due to increased familiarity with and uptake of the process by local businesses and residential communities.

This solution can meet demand locally and offset other higher greenhouse gas emitting energy sources. The Powerlink proposal only delivers a transport mechanism but does not ensure the generation capacity will be available to the community when required. A Large Scale Solar Thermal plant that delivers 100MW generation capacity would require 220 hectares of available land (75MW is the projected peak capacity requirement by 2024). The availability of suitable land and proximity to Energex's 132kV distribution network will be considered when selecting the location for the solar thermal plant.

Large Scale Solar Thermal Renewable Technology

Solar thermal generators harness the power of the sun to collect thermal energy (heat). This thermal energy generally heats a liquid, such as water, and uses the steam from this process to run a steam turbine. There are three main types of solar thermal technology:- Towers, Troughs and Dishes. The advantage of a dish system is that it can achieve much higher temperatures due to the higher concentration of light than other

technologies. Higher temperatures lead to better conversion to electricity and the dish system is very efficient in producing such temperatures (1,200+ degrees). A dish system uses a large, reflective, parabolic dish (similar in shape to a satellite television dish). It focuses all the sunlight that strikes the

¹ Distributed energy refers to any forms of demand management including generation sources which are embedded within the local distribution network

dish up on to a single point above the dish, where a receiver captures the heat and transforms it into a useful form. For this reason, dish technology is generally the most cost effective and has a lower footprint than other forms of solar thermal. Increased efficiency can also be achieved by using the residual steam for small scale desalination, secondary steam generation, heating and reverse cycle refrigeration

An energy storage solution

The other advantage of these high temperatures is that the heat can be used to crack other materials, such as ammonia, that can be used to store energy – this is vital to provide generation when there is no direct sunlight such as overnight. Large scale solar thermal projects are generally scalable, in blocks as small as 1MW and the size can be incrementally increased as required.

This solution was arrived at from a full day workshop facilitated by Sanctuary Energy on 17th September 2008, involving representatives from PAGE, Sunshine Coast Regional Council, Energex, the Environmental Protection Agency, and independent energy industry consultants plus subsequent meetings with the DME, Powerlink, Energex and the community. A variety of alternatives were reviewed and this solution considered the most appropriate given the time constraints for delivery and the scale of the solution required.

Sanctuary Energy

Sanctuary Energy is an energy retailer/wholesaler providing competitive end consumer rates and renewable infrastructure. We are a community and environment conscious company with a great focus on our carbon footprint and those of our customers. Sanctuary Energy is already committed to working with the Sunshine Coast Community to deliver a clean energy transition as demonstrated by our existing projects and the local engagement processes we have undertaken to date. Sanctuary Energy is keen to collaborate further with the Council to help the community to achieve its energy transition objectives.

Benefits to the Sunshine Coast

- Innovative renewable energy technology which aligns with Council's long-term renewable and sustainability goals.
- Local jobs created in construction, supply and ongoing maintenance.
- Cost competitive community energy.
- Aligns with incoming State Government goals.
- Provides a secure and reliable source of power as required by the Minister for Mines and Energy.

Next Steps

- Engage with council and community to identify sites.
- Engage with Energex and Powerlink to:
 - Confirm requirements and costs to integrate facility into current infrastructure.
 - Ensure placement of plant will alleviate the need for network augmentation.
- Engage the community in Sanctuary Energy's Renewable Energy supply arrangements

For more information

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