



## Kidston Renewable Energy Hub – A Renewable Goldmine

5 July 2017  
Engineers Australia

The Northern Regional Forum, held on Thursday 24th August 2017, will focus on the topic "Regional Sustainability and Resilience". We asked Simon Kidston, Executive Director of Genex Power, and speaker at the Northern Regional Forum, to tell us about his latest project, and its implications for renewable energy.

Australia is in the midst of a nation-wide transition toward a low-carbon economy. The business-as-usual approach to energy production, epitomised by the historical use of fossil-fuels, has now become redundant, replaced with innovative, cost-effective renewable technologies.

As of 2017, the levelised cost of energy for new build technologies in Australia is lower for solar and wind in comparison to that of coal (refer Figure 1.)

## THE COST OF PRODUCING ENERGY

### 2017 LEVELISED COST OF ENERGY FOR NEW BUILD TECHNOLOGIES IN AUSTRALIA (AUD/MWH)

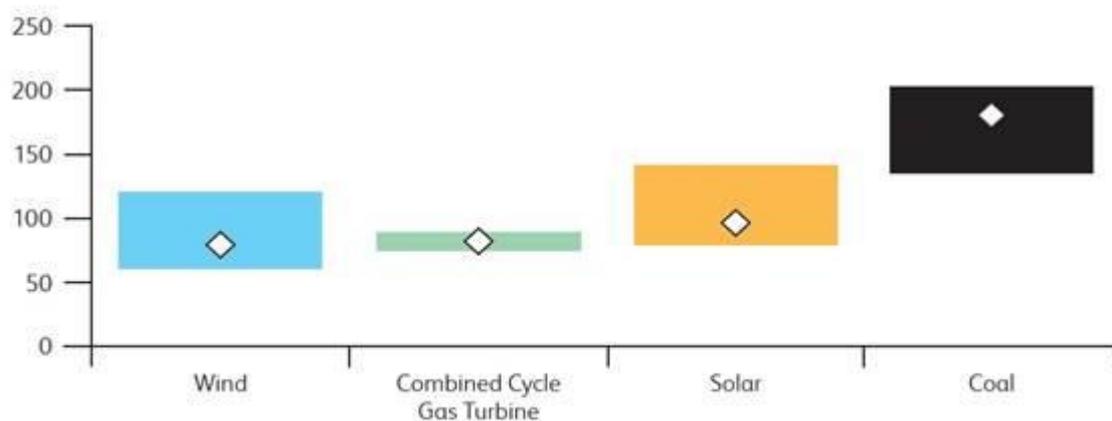


Figure 1. Clean Energy Council 2016 Report.

Strong government policies as well as worldwide technological advances in renewables have assisted with this declining cost and changing energy mix.

This transition, whilst beneficial, has presented further challenges, particularly the growing need for energy storage to compliment the development of renewables. Renewables by their very nature are intermittent. When the sun is not shining or the wind is not blowing renewables are ineffective. In order to match energy supply with demand, large-scale storage is a necessity.

Genex Power was established to address these two movements; the transition towards a low-carbon economy and the resulting need for large-scale energy storage.

The Kidston Renewable Energy Hub ('Hub'), being developed in far north Queensland by Genex Power, will address these two movements through the integration of large-scale solar and pumped storage hydro technologies. Once complete, the Hub will consist of three projects, a 50MW solar project ('Phase One'), a 250MW pumped storage hydro project and an integrated 270MW solar project ('Phase Two').

Pumped storage hydro, which is essentially a 'giant water battery', is currently the most efficient and effective means of large-scale energy storage worldwide (refer Figure 2.). By storing large amounts of water in an upper reservoir and releasing this down through turbines and generators, energy can be generated instantly to meet high electricity demand during peak periods.

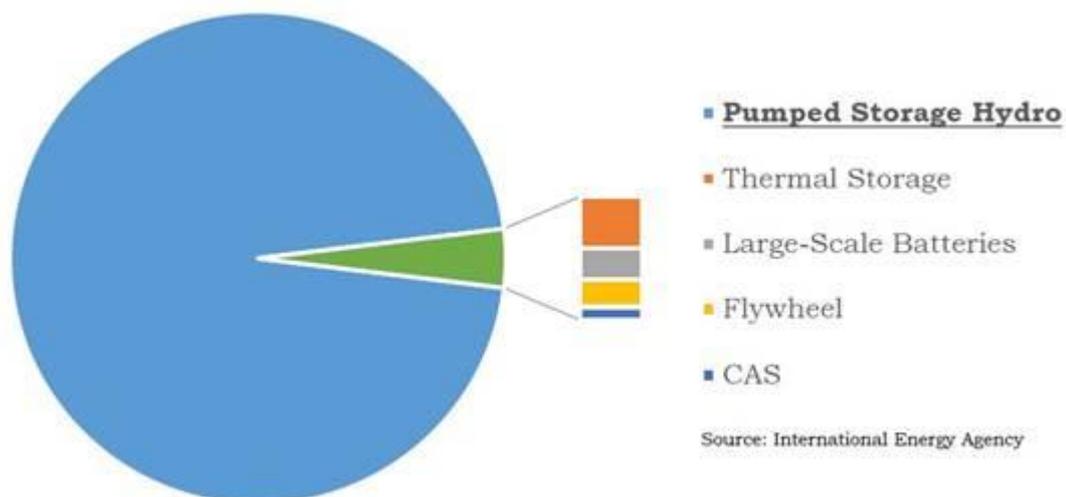


Figure 2. Genex Power Corporate Presentation, June 2017.

Phase Two of the Hub will pair the 270MW solar project with the 250MW pumped hydro scheme in order to use the solar energy generated during the day to pump the water back into the upper reservoir (i.e. recharge). This innovative design will allow the pumped storage scheme to generate electricity during both the morning and evening high demand peaks, maximising returns.

The Hub is being developed on the closed Kidston Gold Mine in far north Queensland, with Genex utilising the remaining infrastructure left behind. The 50MW phase one solar project is under construction on the tailings storage facility of the mine, utilising the consistent and flat terrain. The existence of two large mining pits filled with large volumes of water will act as the reservoirs of the pumped hydro system. An accommodation camp, airstrip, substation, transmission line and road access are just some of the other remaining infrastructure pieces that Genex will utilise to save significant construction costs and time.



Figure 3. 50MW Kidston Solar Project under construction – July 2017

The Hub has both federal and state government support. Revenues for Phase One are anticipated Q1 2017, with a 20-year Queensland Government revenue contract providing strong, stable long-term cash flows. The Hub will provide stability, reliability and affordability to the national market.



Figure 4. Kidston Renewable Energy Hub – Animation

Simon will be presenting at the Northern Regional Forum, held on Thursday, 24th August. The topic for the Northern Regional Forum is "Regional Sustainability and Resilience", which will focus on environmentally sustainable practice in Queensland, as well as best practice for resilience against environmental disaster.