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Industry roundtable: Primed for pumped hydro

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EcoGeneration

Pumped hydro could solve a lot of problems in the electricity market as variable renewable energy sources replace coal-fired generation. EcoGeneration asked a panel of experts how this massive form of storage can reshape the NEM and set us on track for a clean energy future.

Although not much is known about the reliability and emissions settings for the National Energy Guarantee, what role do you see pumped hydro playing if the policy is adopted?

Simon Kidston, Genex Power: Pumped storage hydro is crucial for the Australian electricity market as it provides reliable, affordable and dispatchable generation. In addition, it stabilises the grid, particularly as the penetration of renewables increases, given renewables by their very nature are intermittent and volatile.

What improvements would need to be made to the design of the National Electricity Market for Australia to get the most out of pumped hydro?

Kidston, Genex Power: Pumped storage hydro is already favoured as the dominant form of energy storage in Australia, with three large-scale projects running for a number of decades and a further three proposed for development (including the Kidston Pumped Storage Scheme). The market is transitioning from a stable, slow, carbon-based market to a more rapid, intermittent renewable market. As the penetration of renewables increases, pumped storage hydro will fit perfectly into this new marketplace, given the ability to generate almost instantly on demand and provide frequency control and stabilisation services.

How quickly can new pumped hydro facilities be built and what are the requirements for smooth project delivery?

Kidston, Genex Power: The build time of any pumped storage hydro scheme depends on the size of the facility and the location. However, as

a general rule of thumb there are about two years of technical feasibility studies and engineering reviews, followed by 3-4 years of construction time. By utilising an abandoned gold mine, Genex was able to greatly reduce construction cost and time.

Do you favour large remote facilities, smaller ones close to capitals or a bit of both?

Kidston, Genex Power: We saw the Kidston site as ideal, not only for the locational advantages but also for the infrastructure left behind, the pre-existing environmental permits and the absence of community impact. In terms of location, access to a transmission line is of great importance, however given the scale and dynamics of these projects, usually the most ideal sites are located far away from urban communities and therefore may require transmission lines to be extended, as is being done for the Kidston Pumped Storage Project.

Do you have any comments about the environmental impacts of pumped hydro and the hurdle of securing approvals?

Kidston, Genex Power: Building a pumped hydro storage facility using an abandoned mine is ideal for permitting and the approval process. The closed loop system minimises environmental impacts that are otherwise present for hydroelectric river-run facilities. In essence, we are turning an abandoned mine that is of little use into a multi-million-dollar asset.

Describe in a few words your most-favoured type of pumped hydro facility.

Kidston, Genex Power: Genex is of course biased towards the Kidston Pumped Hydro Project ... however in terms of operating projects, the Dinorwig Power Station in North Wales has a nameplate capacity of 1,728MW and was constructed into a cliff face on the coast. It's been operating since 1984 and is the main form of grid stabilisation in the European energy market given its enormous scale.