Geothermal Energy Can Provide a Source of Low Emission Electricity Generation in Australia

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For Immediate Release

A recent Australia-wide census by the Australian Geothermal Association (AGA) showed that geothermal energy is already making a useful contribution to the Australian energy mix; direct-use geothermal is a successful and growing industry. Geothermally generated electricity can also play a role in Australia's energy transition, but to achieve progress it is critical that government policy acknowledges and supports this potential.

The Australian geothermal industry experienced a sustained surge in activity from 2000-2013 focussed on developing innovative technologies with huge potential. Although these efforts were not commercially successful, more conventional approaches to generating electricity with geothermal energy remain viable. For example, a new geothermal power plant was recently commissioned in Winton, Queensland. The 310 kW plant is currently the only operating project in Australia, although a similar geothermal power plant in Birdsville, Queensland provided over 20 years of reliable service until it was decommissioned recently. These two successful projects demonstrate that lingering perceptions that geothermally generated electricity is not possible in Australia are inaccurate.

The rapidly expanding role of wind and solar PV is creating issues with intermittency and maintaining system stability of our electricity networks. Geothermal energy can provide around the clock, low emission, sustainable, synchronous base-load power that will help stabilise networks as they integrate increasing amounts of solar PV and wind generation. Geothermal power generation has a small surface footprint, creates ongoing local jobs and does not require backup power or storage.

Multiple recent evaluations conclude that geothermal power – particularly Hot Sedimentary Aquifer (HSA) projects that use well established, proven technologies – can be cost competitive with conventional fossil fuel generation as well as solar PV and wind generation when energy storage costs are included. These HSA projects can utilise low-medium sub-surface temperatures (<170^{o}C) close to existing markets. Previous efforts focussed primarily on a different type of geothermal power – high temperature resources in Engineered Geothermal Systems (EGS); however, most of the potential resources identified at that time were very remote from markets or the technical, commercial and logistical challenges were substantially underestimated. Although EGS remains an area of active research internationally, significant technology advances are required before it becomes commercially viable in Australia.

Development of HSA geothermal projects generally requires the use of binary power plants. This technology has been operating reliably for many years, but recent improvements in the power conversion efficiency have greatly enhanced the commercial potential of power generation from moderate temperature geothermal sources that are present in some more easily accessible parts of Australia.

HSA geothermal energy requires a geologically and geographically favourable setting with proximity to an appropriate market (either local or network access) to ensure commercial viability; however, the market need not be large. In remote areas, such projects could provide baseload generation capacity to displace diesel generators cost effectively or improve grid performance. The Winton and Birdsville projects mentioned previously are two examples.

Multiple studies conducted in recent years highlighted that government funded pre-competitive studies aimed at identifying and quantifying Australia's geothermal sources would be an effective way to stimulate commercial investment into geothermal power.

For additional information regarding these conclusions and recommendations, the reader is referred to a white paper recently completed by the AGA. Please contact the AGA for more details:
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