Assisting the NT in meeting its 50% by 2030 renewable energy target

INTYALHEME
CENTRE FOR FUTURE ENERGY

Solving challenges in one of our most complex & isolated power systems

Spinning reserve in Alice Springs

All power systems need extra capacity online to cover both normal variations and unexpected events. In power systems with high penetrations of solar energy, like Alice Springs, the impact of periodic cloud cover on solar generation also needs to be considered to ensure power supply is not affected. One of the primary mechanisms used to manage all of these factors is 'spinning reserve'.

Spinning reserve describes the extra generation capacity of machines that are already operating. If a generator capable of producing 10 megawatts (MW) is operating at 8 MW, then it has 2 MW of spinning reserve available.

As changes in supply and demand can happen almost instantaneously, there is often insufficient time to start another generator, so it is important to have sufficient levels of spinning reserve available. However, this comes at a cost, as often additional generators will need to run just to provide spinning reserve.

The term 'spinning reserve' makes sense in traditional power stations, because it is typically rotating generators that are used to produce electricity. New technologies can also provide equivalent services. In Alice Springs, spinning reserve has traditionally been provided by gas-powered generators. An additional 5 MW of spinning reserve will be considered from a battery energy storage system (BESS). The BESS decreases the need for gas generators to operate while the sun is shining, which is an important outcome if the 50% renewable energy target is to be met.

Quick facts

Greater solar penetration needs to be properly supported. Batteries will play an important role in reducing the spinning reserve requirements at gas-fired power stations.

Solar forecasting can help manage spinning reserve. By predicting cloud cover, it is possible to optimise the amount of spinning reserve.

The Uterne Solar Power Station in Alice Springs

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The Intyalheme Centre for Future Energy is helping to identify and coordinate the removal of barriers to further renewable energy penetration in the Alice Springs power system.

More details: intyalheme.dka.com.au

a flagship project of dka