Seeking a smooth transition in the Australian National Electricity Market

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Study Committee C5; PS 3 Question 4:

> "What is the impact of the current energy transition on reliability and cost? What market structures should be put in place to ensure a smoother transition to the market of the future to support a fully decarbonised grid?"

The Australian National Electricity Market NEM is in transition from one which was highly dependent on coal fired power stations for the provision on energy, capacity and system services to a decarbonised market. All state jurisdictions in the area of the NEM, and now the Australian national government, have a target of net zero carbon emissions by 2050. A national interim target of a 43% reduction in emissions over 2005 levels by 2030 has recently been legislated. Consistent with that target for overall emissions, the government plans to increase the proportion of renewable generation to 82%.

The transition has been progressing over the last decade which has seen strong growth of wind and solar generation at utility scale and distributed rooftop solar. The NEM has reached instantaneous levels of variable renewable generation in excess of 60% at times with instantaneous levels in excess of 140% in the South Australian region. The growth of variable renewable resources has lowered emissions and lowered spot market prices in many dispatch periods. The transition has not, however, always been smooth and there have been negative impacts at times on incumbent generators, new generators, and customers. The experience through the transition in the NEM has included:

- Wholesale market price spikes

  Existing coal fired generators have been forced into a role to which they are not well suited, increasing their costs. Some have retired with little notice. This has threatened reliability, although not caused it, and has led to price spikes.

- Inadequacy of network capacity and the availability of system services

  The utility scale wind and solar plants entering the NEM are usually located in new renewable away from the load and existing generation resources in weak areas of the current system. This has led to increased network congestion and delays in commissioning plant. This has increased costs for investors in renewable generation.

- Deterioration in the performance of thermal generators

  The reliability of thermal generators has reduced as a result of their technical and commercial operating environment.

Actions have and are being taken to adapt the market design and rules to better manage the transition going forward.