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Big spinning machines arrive in South Australia to hasten demise of gas generation

The arrival of a massive piece of electrical infrastructure would not normally be an event worthy of much note. But the 175 tonne machine making the road trip to Port Augusta on behalf of South Australia's main transmission network owner ElectraNet marks another important step in the state's and the nation's clean energy transition.

The machine delivered this weekend is the first of four spinning machines – known as synchronous condensers – that provide system strength and other important grid services. But their arrival will also hasten the exit of most gas generators in the state as the local grid surges towards the Liberal government's target of net 100 per cent renewables by 2030.

Two synchronous condensers, or syncons, will be installed near the Davenport sub-station near Port Augusta, and two others will be installed near Robertstown, where a major new transmission line is planned to link South Australia's renewables-dominated grid with NSW.

The syncons are considered essential because they will help solve a "system strength" shortfall declared by the Australian Energy Market Operator in 2017. The immediate impact will be on gas generators, which AEMO will no longer have to direct online when there is excess wind and solar.

Over the medium to longer term, even the syncons will likely be replaced by other technologies such as big batteries, with several – including the [newly expanded Tesla big battery at Hornsdale](#) – testing their ability to deliver inertia and other grid services.

Essentially, these syncons – which are also being installed in Victoria, NSW and Queensland, and have already been in Tasmania – are seen as an interim measure as the grid transitions from one dominated by large synchronous machines (coal, gas and hydro) to one dominated by inverter based technologies (wind, solar and batteries)

The main difference between syncons and the coal and gas machines that preceded them is that the syncons don't burn either coal or gas. They will get

paid to operate, but ElectraNet says it will deliver savings to consumers because of the reduce costs.

“Currently the Australian Energy Market Operator (AEMO) has to direct generators to operate at certain times to maintain adequate levels of system strength in South Australia. These directions are costly and add to customer electricity bills,” ElectraNet CEO Steve Masters said in a statement.

“By comparison the synchronous condensers are estimated to deliver a net saving to customers equivalent to \$3 to \$5 per year on a typical South Australian residential electricity bill from the time of commissioning,” ElectraNet CEO Steve Masters said in a statement.

The arrival is important because the federal government and its advisors are telling consumers that gas generation is essential to support the clean energy transitions.

The new Technology Investment Roadmap specifically cites South Australia as a state that has required more gas generation to cope with the increase in wind and solar output, which now accounts for more than 55 per cent of annual generation.

“Domestically gas will play an important role in balancing renewable energy, ramping up and down to match supply and demand,” the roadmap says, citing the increase in gas generation in recent years after the closure of the state’s two coal generators.

But that assessment [ignores the fact that the share of gas in South Australia was much higher](#) when there was little or know wind or solar power, and the only competitor was coal.

It also completes ignores the recent – and repeated – [assessments by the Australian Energy Market Operator](#), which says that the arrival of the syncons, and the new link to NSW, will shrivel the market share of gas in South Australia to just 13 per cent within a few years, and to little more than 5 per cent by 2027/28.

Gas in on the way out, and AEMO’s assessment makes the gas lobby’s talking points look absurd. As proof, the owners of the main “base-load” and intermediate gas plants in the state are already planning their closure in coming years. The only generators to remain will be “fast start” machines that will be sparingly used.

The Davenport sub station is located near the two former coal fired power stations that ceased production four years ago and have now been pulled down.

It is also now the centre of a huge number of new wind and solar projects, and is in the heart of the electorate of state energy minister an van Holst Pellekaan.

“The installation of the synchronous condensers will help deliver cheaper, more reliable electricity to South Australian households and businesses,” van Holst Pellekaan said in a statement.