

Creating financial value with operational flexibility

📍 Australia

South Australia has one of the highest renewable energy penetrations in the world with 72% of electricity coming from solar and wind in 2024. During times when renewable output is high, the state produces more electricity than it needs, so the surplus is exported to neighbouring states. On the contrary, when there is too little renewable energy, gas firming power plants and interconnection capacity form the backbone of the region's power system.

South Australia is connected to the National Electricity Market (NEM), which is one of the longest electricity transmission systems in the world. The NEM is also a real-time wholesale market that is settled on 5-minute intervals to provide more accurate pricing signals, as the share of renewable energy keeps increasing. Given the high share of renewable energy in the South Australia NEM, energy prices vary considerably between lowest and highest of NEM regions.



The 211 MW Barker Inlet Power Station

Barker Inlet Power Station is a 211 MW engine power plant that has operated in the South Australia NEM since 2020. The plant features twelve Wärtsilä 50DF engines that have better operational flexibility and efficiency compared to other gas firming assets in the state. Based on an analysis of NEM data by the Australian Energy Market Operator (AEMO), the engine power plant, compared to other gas firming power stations in the region, has:



450 starts per engine: runs more frequently outside morning and evening peaks



2,500 running hours: 2-5 times more running hours than open cycle gas turbines (OCGTs)



20% higher operating profit based on dispatch revenues

As the energy transition in South Australia continues with the state aiming for 100% net renewable target by 2027, the trend towards more flexible and resilient power system is expected to continue. Given that authorities are considering to introduce a capacity mechanism, the business case for flexible assets continues to improve.

Average quarterly prices in South Australia and the NEM

