



Winter energy prices 2016

Wholesale energy prices in eastern and southern Australia were unusually high in the first two months of winter 2016. In June, reduced availability of low-priced coal generation capacity contributed to tighter supply and high electricity prices in mainland regions of the National Electricity Market (NEM), while a confluence of local factors raised South Australian prices in July.

Spot gas prices also rose from the third week of June 2016 in response to higher local demand (including for gas powered generation to meet the shortfall in coal plant capacity and for residential gas heating on colder days) and to meet LNG export obligations. Supply issues, including depleted gas storage levels and production outages also contributed to higher gas prices.

This communication highlights key drivers of high winter prices. We will publish more detailed reports covering three days on which electricity prices reached extreme levels, and separate reports on significant spot price variations in gas.

The AER's role

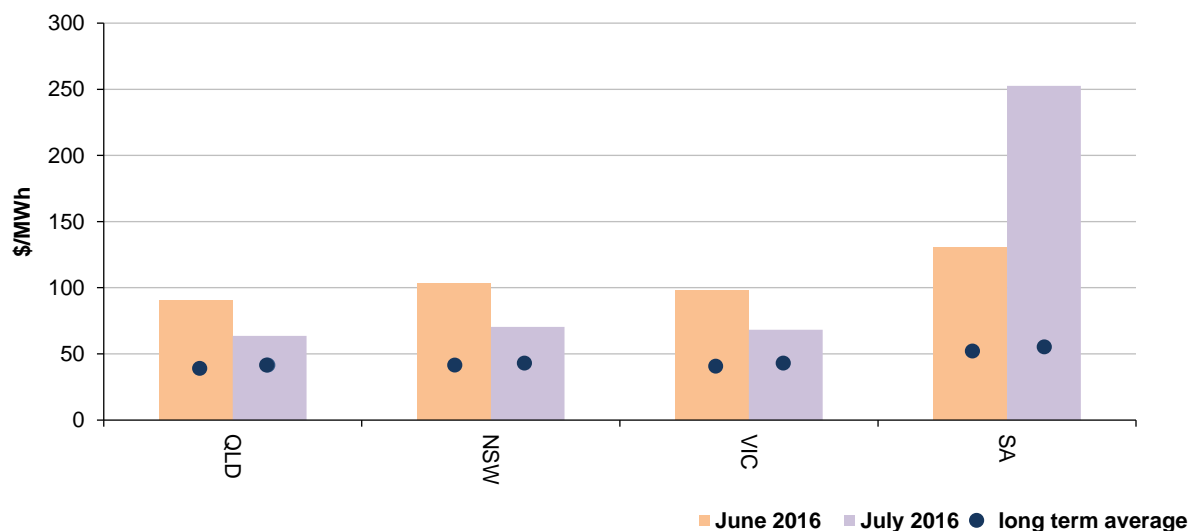
As the national agency responsible for monitoring and enforcing compliance in wholesale electricity and gas markets, the AER tracks market outcomes (including prices) and the factors driving them. We report weekly on market activity and in more detail on extreme price events. We also provide longer term analysis in our annual *State of the energy market* report. The AER is likely to soon acquire a new role in monitoring and reporting on the effectiveness of competition in the wholesale electricity market.

We monitor energy markets to ensure participants comply with underpinning legislation and rules and to detect irregularities and wider harm issues. We report on these issues to strengthen market transparency and confidence. Our analysis also contributes to policy reviews on the market's effectiveness.

Drivers of high winter electricity prices

Wholesale electricity prices were unseasonably high in June 2016. In mainland NEM regions, prices were around 2.5 times the long term monthly average for June (figures 1 and 2). These prices were the highest since summer 2013–14 (when carbon pricing was in place). Prices generally eased in July, though remained above long term averages. But prices continued to rise in South Australia, to 4.5 times the long term average—approaching levels not seen since February 2011.

Figure 1: Spot electricity prices—winter 2016 and long term averages



Note: Volume weighted monthly average prices.

Source: AEMO/AER.

The high June electricity prices were mainly driven by supply issues; electricity demand was similar to the previous year. Nor did transmission congestion (including on interconnectors) play a significant role during the month.

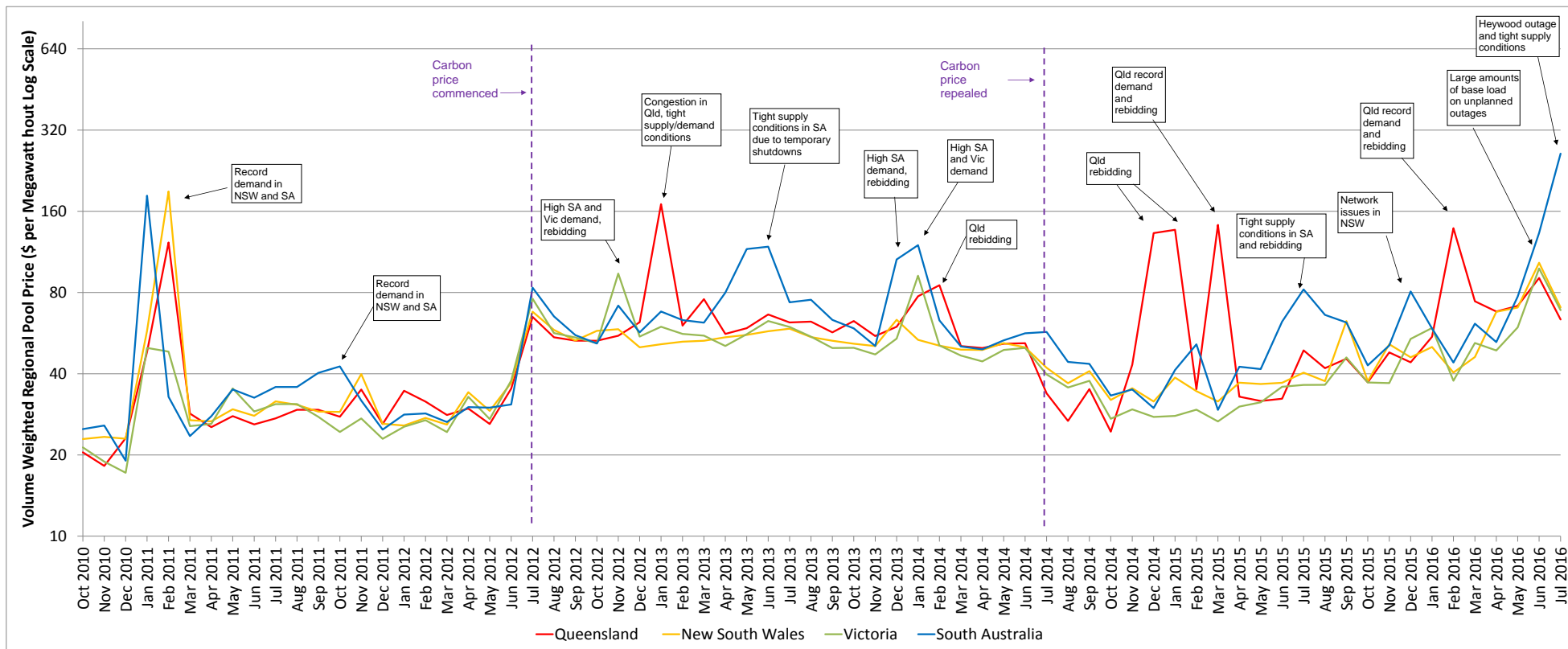
The key price driver in June was a reduced availability of electricity generators across all regions. Total coal plant capacity available to the market was around 2,200 MW less than in winter 2015, due to planned maintenance of coal fired generators (1,800 MW) and plant closures (400 MW at South Australia's Northern power station). This change in coal plant availability required the dispatch of additional gas-fired generation at a time when gas prices were high (see gas price discussion below).

Prevailing supply conditions and high fuel costs (for gas plant) led generators to shift bid offers for around 700 MW of gas and coal plant from low to higher price bands.

In combination, these changes resulted in generators offering 2,900 MW less capacity to the market at prices below \$200 per MWh than they were offering a year earlier (figure 3). This change in generator offers led to many spot prices being set in the \$250–500 per MWh range (figure 4), although prices outside South Australia never exceeded \$500 per MWh during the month.

The majority of the high prices had been forecast a day in advance, but the market was unable to respond with additional low priced capacity.

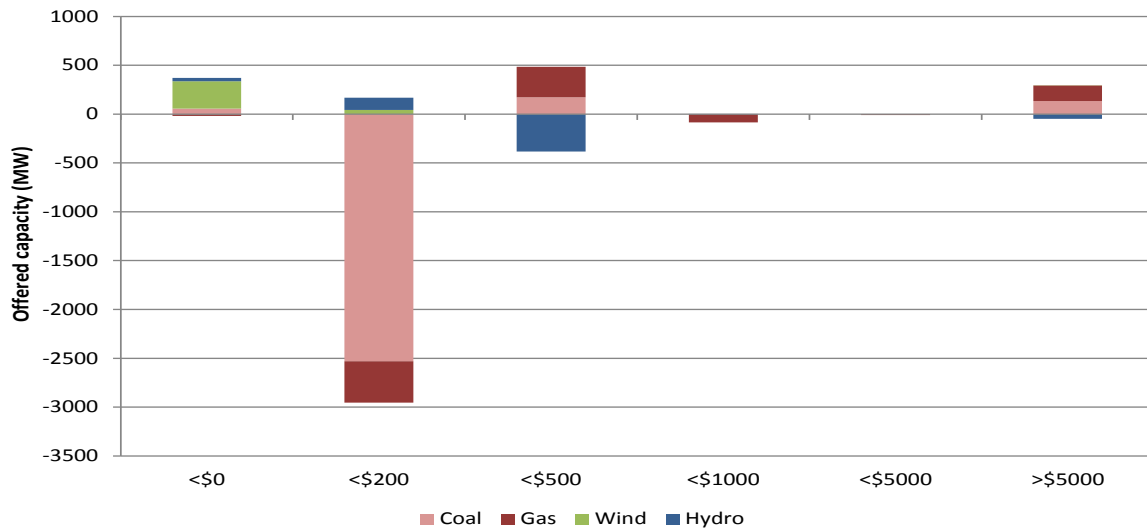
Figure 2: Monthly spot electricity prices



Note: Volume weighted monthly average prices.

Source: AEMO/AER.

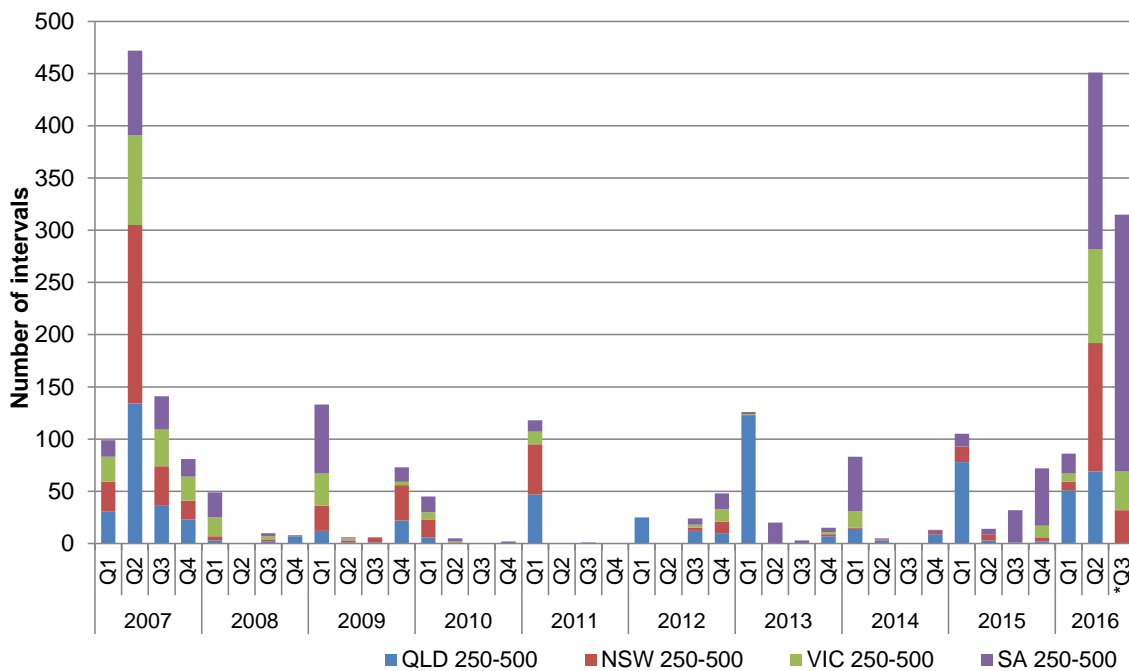
Figure 3: Variation in generator offers by price band in June 2016 from June 2015



Note: Difference in capacity offered by mainland generators by fuel type during peak times (7 am – 10 pm).

Source: AER.

Figure 4: Frequency of spot electricity prices in \$250–500 per MWh band



Note: Q3 2016 covers only the first 6 weeks of the quarter

Source: AER.

Regional issues in South Australia

Coal-fired generators out for planned maintenance began returning to service from late June, with most capacity back online by the second week of July. The return to service eased pressure on electricity prices in Queensland, New South Wales and Victoria. But regional issues caused prices to remain high in South Australia during July. The key drivers were interconnector outages and a lack of wind generation at peak times.

Planned work to upgrade the Heywood interconnector between Victoria and South Australia, which began in September 2015, frequently reduced South Australia's import capacity during July 2016. While this major upgrade was flagged to the market, its impact on Heywood's operating capability was at times not clear.

South Australia's reduced ability to source low price electricity from other regions coincided with low wind generation. While reasonably consistent with market forecasts, wind output in July was only 270 MW—57 per cent below the historical average for that month. In combination, these factors required the dispatch of local gas powered generation to meet demand, at a time when gas fuel prices were high. With the closure of the Northern power station in April 2016, South Australia's generation stock consists primarily of gas and wind plant.

As a consequence, South Australian prices diverged materially from other regions for around 60 per cent of the time in July 2016, with gas plant typically setting the spot price at these times. As in June, many spot prices were set by capacity offered in the \$250–500 per MWh range. But many prices settled above \$500 per MWh, and three prices exceeded \$5,000 per MWh—the trigger for the AER to publish a detailed report.

Drivers of high winter gas prices

Spot gas prices have steadily risen and become more volatile since 2015, with the continuing expansion of Queensland's LNG industry drawing greater volumes of gas from the market. Five LNG trains were operating in winter 2016, compared with only one in 2015. There is limited transparency on the volume of gas being diverted by LNG participants from the domestic market for export, although the Santos GLNG project has announced purchases of substantial volumes of gas from third parties in the eastern market to meet a shortfall of reserves for its LNG trains. QCLNG has also announced purchases of some gas from third parties.

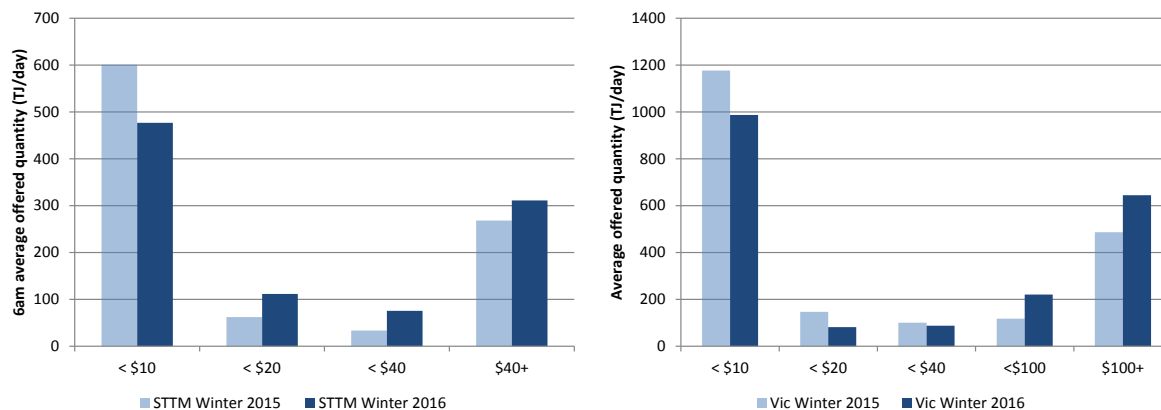
Along with LNG demand pressures, a rise in gas powered generation impacted on gas prices during winter. The rise in gas powered generation was most evident in South Australia, in the wake of a coal plant closure, below average wind generation and interconnector outages (see above). Across June and July, gas-fired generation in the region was 32 per cent higher in 2016 than during the same period in 2015.

Residential gas demand also rose, as is typical in winter for heating purposes. While residential demand was not significantly above previous winter levels, it coincided with generally tight market conditions that increased competition for gas.

In combination, these conditions meant gas production facilities were operating close to full capacity in winter—as high as 99 per cent at Longford and 100 per cent at Moomba. Additionally, stored gas and higher marginal cost LNG was being called on more regularly. In response, wholesale market participants shifted gas offers into higher price bands (figure 5).

Short-term outages at some production facilities and pipelines forced some participants to seek additional gas from the market, placing further upward pressure on prices. Spot gas prices of close to \$20 per GJ in southern markets led to QSN pipeline flows changing direction as participants sought gas from the Wallumbilla Gas Supply hub.

Figure 5: Average daily offers in spot gas markets by price band



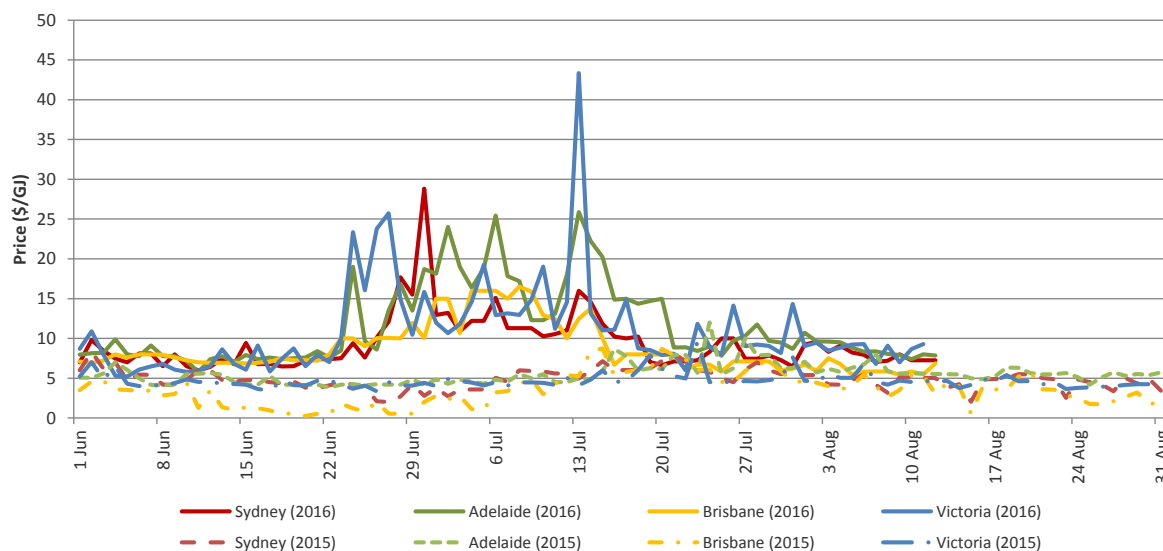
Source: AER.

As a result, domestic spot gas prices rose sharply above trend in late June 2016 and remained high in July (figure 6). Our preliminary analysis indicates the high spot prices reflected the prevailing tight supply–demand conditions and the resulting high value of gas in this period.

The impact translated through to electricity markets, especially in South Australia where gas fuel is a major generation input cost.

The majority of high prices were consistent with market forecasts. But very steep supply curves meant that small rebids of gas volumes and/or small changes in demand forecasts led to some prices settling well above forecast. We will analyse significant price variations in forthcoming reports (see below).

Figure 6: Winter gas prices, 2015 and 2016



Source: AER

Forthcoming AER reports

The AER is required to publish pricing reports for the gas and electricity markets if certain price thresholds are reached.

In electricity, we publish a detailed report analysing any spot prices that settle above \$5,000 per MWh, as occurred in South Australia on 7, 13 and 14 July. These reports will be published in September.

In spot gas markets, we report on significant price variations. Gas prices reached reporting thresholds 23 times across June and July. We will publish two analysis reports, for June and July respectively, in late August and late September.

**Australian Energy Regulator
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