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Coal seam gas - blessing or curse?

The last ten years has seen the gas supply industry in Queensland turned on its head. As a major energy source, gas has become a driver of the State's economic wellbeing. The development of the industry has had strong Government policy support, specifically for the development of coal seam gas (CSG) as a source of gas supply.

While the infancy of the CSG market coincided with extensive growth of gas power generation (GPG), the rapid development of CSG resources saw a new rival market for gas use emerge: Liquefied Natural Gas (LNG). Today, the future of GPG in Queensland and potentially elsewhere on the eastern seaboard is intimately - but opaquely - tied to that of the international LNG export market. Both industries ultimately stand or fall on the input gas price. While the price sensitivity of GPG is understood in relation to other power generation technologies (and to a lesser extent, demand), the LNG price elasticity of demand will not be fully understood until new projects are locked down with longer term off-take arrangements. Also becoming apparent is that the LNG uncertainty is starting to flow, via linkages in the markets, into the GPG sector.

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CSG market impacts to date

To date, the major impact of coal seam gas locally has been to depress shortterm contract prices as individual sites commence production without an export off-take. Some gas-fired generators are presently tolling this start up gas on shortterm arrangements. As Queensland's new LNG trains come on line however, the situation is likely to change.

Not only GPG, but other industries that are sensitive to gas prices (where gas represents a high percentage of their input costs) would appear to be under threat if gas prices escalate (for example in WA). Will LNG export squeeze GPG out of the east coast gas market? Or is the future less clear-cut?

There is no doubt that at low gas prices, the short-run demand from the GPG industry could be very high with existing gas-fired generators running well above their designed capacity factor (as we are seeing). The longer-term strategic issue is whether GPG developers will be able to ensure a long-term, cost-effective gas price to underpin the development of new base-load and mid-merit plants. That depends on the cost of gas-fired electricity relative to other sources and whether the market mechanisms are sufficiently flexible and efficient to reveal the underlying economics.

Vertical integration and retail

Larger integrated energy retailers are already acquiring strong upstream equity gas positions to ensure their competitiveness and allow them to take leading vertically-integrated positions in GPG. This strategy also offers strong options should a carbon price be introduced. Yet the independent GPG on the east coast is becoming far more fragile - with some already taking integrated retail positions in response. Other independent GPG developers have also developed their own equity gas positions as a way to underpin GPG plant development.

Carbon and renewables policy

Gas demand for power generation may well be affected by policy decisions on carbon abatement - particularly whether gas generation enjoys a financial advantage over coal (and to what extent) due to its lower carbon intensity. Power price modelling is highly sensitive to assumptions about renewables and carbon abatement policy. Although some analysts are predicting that power prices will reflect new-entrant combined-cycle gas turbine (CCGT) costs in the medium term, there are a number of complicating factors. While much of the modelling to date tends to trivialise supply issues, initiatives that encourage wind development will drive peaking and mid-merit GPG - potentially taking power prices much higher than CCGT pricing.

Furthermore, demand response should not be underestimated. Already evident, escalating power prices to date (largely driven by network increases) have led to residential average demand reversing its long-term trend and declining over the last 3 to 4 years - though the figures may be impacted by other developments (such as the Government's insulation program). Such downward pressures, in places like NSW, may ultimately lead to significant electricity pricing reform.

GPG commercial issues

The structure of the gas market is predominantly contract based. Gas commodity contracts cover a range of time periods, some very short. New GPG entrants generally require at least a 10-year supply deal, which have been available and competitively priced on the east coast up to date. In principle, the advent of many new small CSG projects should assist GPG developers in obtaining supply. However, in practice the evolution of CSG has seen resources aggregated by developers of export LNG projects. GPG developers may also face increased competition for supply from their traditional fields, with Santos announcing it will supply Moomba gas to its export LNG project.

Gas producers are hedging their long-term domestic supply gas contract pricing positions with off-takers - yielding a trend towards short-term supply contracts to follow the resulting trend in LNG netback. This situation is manageable by largescale retailers, and in fact provides great scope for arbitrage opportunities for them, but is not conducive to project-financed GPG initiatives. The result will likely be less competition in the GPG space with plants being used to hedge retailer positions and optimise margins.

The future of gas supply in the southern-east coast markets will depend on the price achievable for the gas as LNG, the quantum of developed gas supply in those markets

relative to the GPG potential, and whether gas transmission and peak storage capacity is adequate for GPG supply.

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In contrast to gas commodity, transmission capacity has been predominantly sold on long-term deals dominated by major shippers; while gas storage options to support GPG in particular, are still being developed. Major new transmission development requires long-term contracts with parties that have either a very strong balance sheet or a long-term market position that is bankable. Effectively, a very small market decides on major transmission investments and it is likely to be dominated by the successful vertically-integrated retailers.

If LNG netback prices prove to be highly attractive, then getting gas to portside LNG plants may underpin major new transmission projects, potentially benefitting would-be GPG entrants within the same region. What is not known however is whether GPG could sustain netback prices and live with the contractual term requirements.

The carbon abatement saviour?

The popular perception of CCGT as a mid-term carbon abatement saviour thus presents huge challenges and potentially major price impacts, if it is a viable outcome at all. The cost to get substantive gas supplies to the southern-east coast electricity (and gas only) markets under long-term off-take and delivery arrangements may drive another wave of energy price shocks, and the barriers to entry for independent suppliers may become insurmountable.

One thing we have learnt from the WA LNG experience: when LNG netback prices do start to impact the domestic market, major price increases result across the board. Consumers of all sizes must manage their demand more efficiently, and new issues associated with energy poverty arise. And for Government, there comes the inevitable hard sell of the economic benefits from LNG export versus price shock for domestic consumers. That is surely a position no state Government on the east coast will relish.