

Striking a balance *Managing supply and demand pressures in the Eastern Australian gas market*

Eastern Australia's gas market is currently facing an unprecedented convergence of issues that have the potential to both transform it into one of the world's largest LNG exporters, while also presenting challenges for the security of its domestic gas supply.

With the emergence of a booming LNG export market and a Federal Government push to reduce carbon emissions by favouring gas-fired power generation there will be significant pressure on gas supply in Eastern Australia over coming decades. At the same time, conventional gas reserves in Eastern Australia have been steadily declining and the future of the region's gas supply rests largely with the coal seam gas industry, which in NSW needs to resolve the concerns over its environmental impact that have seen it face heightened community and government scrutiny.

While many of these issues are not new ones, they are creating a supply/demand dynamic in Eastern Australia that is set to challenge both the industry's ability to realise its full economic potential and the Federal Government's ambitions for a clean energy future.

Even with conservative growth assumptions, significant amounts of gas will need to be commercialised over the next 20 years if Eastern Australia is to both fulfil its domestic energy needs and meet the growing export demand for LNG.

While export demand is expected to be the main driver of growth, the Federal Government's push towards a cleaner energy future could see an increase in domestic demand if the carbon price results in gas-fired electricity generation increasing its market share against coal-fired generators.

However, as the global market for LNG swells and domestic gas prices threaten to potentially double or more, there is a chance that even with the imposition of a carbon price, coal will remain an economically viable energy alternative.

It is critical that Australia's proven reserves are able to be commercialised in time to both mitigate the risk of a domestic supply shortfall and take advantage of the enormous export opportunities. While the economic benefits of a booming LNG export market should not be underestimated, these benefits could be reduced if our domestic market fails to supply gas in a quantity and at a price that maintains our economic competitiveness.

There are lessons to be learned from a number of countries that have strongly expanded their LNG export businesses then subsequently built LNG import terminals in order to meet domestic demand. The UAE both imports and exports LNG. The world's third-largest LNG exporter, Malaysia, will begin importing LNG this year after declining local output and rising demand from power generators began to erode export supply. The consequences of such an outcome in Australia would extend well beyond the oil and gas sector.



¹ 'Energy in Australia 2011', ABARES

A thriving and competitive domestic gas industry is critical to ensuring the competitively priced energy that is a key economic driver of growth. This is evidenced by the role of cheap domestic gas supply in the recent manufacturing-led upswing in the United States' economy. If the importance of a secure and affordable domestic gas supply is underestimated, ultimately it is Australia's trade exposed productivity and competitiveness that will be compromised.

The establishment of a large scale gas industry on the east coast is crucial to meeting both domestic and international market demand. An uncertain regulatory environment and rising extraction and production costs could deter the ongoing investment required to secure that future.

Australia is poised on the edge of an incredible opportunity, but much depends on acting sooner rather than later to address these challenges. If that can't be done, it won't only be the future of Australia's gas industry that will hang in the balance.

There are no easy answers, but industry and government need to address some difficult questions or risk missing the opportunity to create a sustainable gas industry that will secure Australia's economic, environmental and energy security for decades.

1. Meeting production demand as new LNG projects come online

Since November 2010, more than \$50bn of investment has been sanctioned for the development of five LNG trains around the port of Gladstone. Collectively these facilities will produce approximately 22mtpa of LNG, equivalent to annual natural gas demand of 220PJ per 3.5mtpa train, or 1,100 PJ in total. In addition, there are feasibility studies in progress for up to six more Gladstone LNG trains and additional LNG export facilities are also proposed for South Australia, New South Wales and Queensland.

The requirements of getting those LNG trains operating in the initial stages could see 'ramp up' gas being pushed into the domestic market with a corresponding drop in domestic gas prices. However, given the speed at which these projects are coming on line, supply constraints may mean there is no 'ramp up' gas and, in fact, gas may be directed out of the domestic market – presenting challenges for domestic supply and pushing up prices significantly.

At what price, and at what pace, can the industry bring on supply to meet both domestic and committed LNG needs?

2. Increased regulation of the coal seam gas industry

Coal seam gas has transformed the gas supply outlook for Eastern Australia just as conventional gas reserves have begun to decline, and it is expected to feed both domestic power demand and the booming LNG export market for the foreseeable future. Despite this, in NSW coal seam gas remains dogged by controversy and there is growing evidence of significantly increased activity around government scrutiny and regulation of the industry.

While it is too early to know how the regulatory process will be implemented, it is likely to result in additional costs and time delays.

Rising prices can be alleviated by increased supply. Could increasing community concerns, particularly in NSW, expressed through additional government and regulatory pressure, have the unintended effect of limiting the supply response?

3. Ensuring a reliable domestic supply stream

Around 60% of Australia's conventional gas supplies are located in the north of Western Australia and it would be uneconomical to transport these to the East Coast. Eastern Australian gas demand, both LNG and domestic, must then be met by Eastern Australian supply. However, Eastern Australia's conventional production is declining with the 2010 output from Victorian gas fields declining 30% from 2007–2008¹ and while Queensland's production has also declined 21% during the same period. Newer gas has chased the higher value LNG markets, while arguably the industry has found and drilled the cheaper gas.

Domestic supply pressures are likely to intensify as conventional production declines while exploration and production costs rise, regulation of the coal seam gas industry in NSW increases, and gas-fired power generation expands.

² “World Shale Gas Resources: An Initial Assessment of 14 Regions outside the United States”, EIA April 2011

With LNG project owners now committed to supplying LNG customers first, how can we secure adequate domestic gas supplies at reasonable prices to meet industrial and commercial customer needs?

Which trade-exposed industries will be affected most by higher gas prices and how can they respond?

4. Delivering on a carbon future in the face of rising gas prices

East Coast natural gas prices are widely expected to rise significantly, potentially doubling over the next few years. For instance, the Queensland Government forecasts gas prices will exceed \$8/GJ by 2013 and remain at that level for at least a decade. The impact that will have on the Federal Government’s clean energy future plan is yet to be tested, however gas-powered generation is anticipated to replace 2000mw of higher emission coal fired power generation if the Federal Government’s carbon reduction target is to be achieved by 2020.

The competitiveness of gas-powered generation investment is highly sensitive to prevailing gas prices and, even taking into account a carbon price, we may see the rate of that investment decline if gas prices move beyond the critical threshold. A gas price above \$6/GJ coupled with a carbon price of \$23 a tonne would result in coal-fired power remaining more economical than gas-fired and the carbon price would need to rise to over \$50 a tonne for gas-fired generation to remain competitive.

This potentially creates an energy policy dilemma for the Federal Government, requiring greater incentives on top of a carbon price to stimulate gas and other low carbon energy sources.

Will the high gas price create policy challenges for the Government in meeting its carbon reduction targets if coal fired power remains the more economical option?

5. Timing mismatch of yet-to-be-proved shale gas

There’s little doubt of the potential for a future shale gas industry in Australia – the Energy Information Agency estimates Australia has 396tcf of technically recoverable resources, making it one of the most prospective countries for shale gas development² in the world. However, even if substantial shale reserves are proven tomorrow, it could still take five to ten years to develop and commercialise those reserves.

Despite its massive potential, Australia’s ambitious short term carbon emissions targets and the gas committed to LNG projects over the coming decades, mean that time could be a premium our energy policy can ill afford.

Undoubtedly the industry has real potential to deliver supply, but will it be able to do it quickly enough?

The facts

Supply

- Around 60% of Australia’s conventional gas reserves are in the north west of Australia
- Conventional 2p gas reserves in Eastern Australia are declining with Cooper Basin reserves declining to 1,373PJ – less than half what they were in 2000
- Coal seam gas deposits account for more than 80% (36,598PJ) of Eastern Australia’s remaining 2p gas reserves – this rises to 119,550PJ if prospective coal seam gas reserves are included
- AEMO forecasts 2p coal seam gas reserves in Eastern Australia to reach 114,296PJ by 2031
- Gas production in the eastern market is expected to grow around 5% per year to 2,492PJ in 2034–35
- By 2035, almost half (45%) of Australia’s gas production is expected to come from unconventional gas
- Australia’s proven natural gas reserves are estimated to be 110tcf, the fourth largest in the world
- Australia’s technically recoverable shale gas reserves are estimated to be 396tcf.

Demand

- By 2016 it is predicted that gas demand for LNG exports will exceed 1,000 PJ and could reach 5,000PJ, a scenario that would require the construction of 20 LNG trains
- By 2020, Southeast Asia will have nearly 25 million tons of LNG import capacity, according to some analyst estimates – with countries including Thailand, Malaysia, Indonesia, Singapore, Philippines, and Vietnam expected to have import terminals
- Analysts are predicting LNG export demand to effectively triple east coast gas prices from \$3/GJ to as much as \$9/GJ, soon after LNG exports start in 2014 and 2015

- By 2030, domestic gas demand across Eastern Australia is predicted to be in the range of 1200PJ/year (41% increase) to 1,850PJ (62% increase)
- Almost 40% of advanced electricity generation projects are in the gas sector and gas-powered generation is expected to grow on average 5% per year, effectively tripling installed capacity by 2020.

Carbon Price

- The carbon price will come into effect on 1 July 2012
- The Government is planning to close up to **2000mw** of high emission coal-fired generation by 2020 to be replaced by gas-fired plants
- Treasury has modelled a 200% increase in volume of gas fired electricity by 2050.

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