‘Making Cents’ of the Eastern Australian Gas Market

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Key issues/concerns

• Not enough tax is being paid by gas producers/exporters
• Eastern gas market is not competitive
• Insufficient gas to meet domestic (non-export) demand
• Wholesale gas prices are too high (and have risen rapidly)
• Lack of social licence for further gas developments
I. Understanding the Gas Market
Natural gas flows, Australia, 2015-16

* Unit: Petajoule (PJ)

Source: Department of Environment and Energy (2017) Australian Energy Update
Australian Gas Pipelines and LNG Plants

Source: IEA (2016), ‘Natural Gas Information 2016’

This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. © OECD/IEA (2016) Natural Gas Information, IEA Publishing. Licence: www.iea.org/t&c
Forecast gas production and demand in the East Coast Gas Market in 2018

Queensland LNG Export Gas Facilities

<table>
<thead>
<tr>
<th>Export Gas Facilities</th>
<th>Cost of build</th>
<th>Operational since</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland Curtis LNG (QCLNG)</td>
<td>USD 19.8 billion</td>
<td>November 2015</td>
</tr>
<tr>
<td>Operated by Shell in a venture with CNOOC and Tokyo Gas, QCLNG has a capacity of 8.5 million tonnes per annum (Mtpa) from two trains.</td>
<td></td>
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<tr>
<td>Gladstone LNG (GLNG)</td>
<td>USD 18 billion</td>
<td>September 2015</td>
</tr>
<tr>
<td>Operated by Santos in partnership with Petronas, Total and KOGAS, GLNG has a capacity of 7.8 Mtpa from two trains.</td>
<td></td>
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<tr>
<td>Australia Pacific LNG (APLNG)</td>
<td>USD 24.7 billion</td>
<td>January 2016</td>
</tr>
<tr>
<td>Operated by Origin Energy (upstream) and ConocoPhillips (downstream) in a venture with Sinopec, APLNG has a capacity of 9 Mtpa from two trains.</td>
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</tbody>
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Note: The three projects combined have a nameplate capacity of over 25 million tonnes per annum, larger than Australia’s entire LNG export capacity as recently as 2014.
AEMO estimates annual consumption of gas (domestic and export) between 2016-2021 at some 2,000 PJ.

Eastern Australia has 40,000 PJ of Proven and Probable CSG reserves

SWOT of Coal-Seam Gas in Eastern Australia

• **Strengths**: local employment, cheaper gas and power, royalties (where applicable).

• **Weaknesses**: increased traffic, noise, loss of amenity, water availability.

• **Opportunities**: gas exports, improved energy security, reduced greenhouse gas emissions, more competitive local industries

• **Threats**: water contamination, methane emissions, higher gas prices through export linkages, seismic events.
II. Gas Prices are High
Bargaining framework for gas supply

Source: ACCC (2016) Inquiry into the east coast gas market
ACCC views a competitive benchmark price to be either:
(1) LNG netback or (2) marginal cost of supply

Source: ACCC (2016) Inquiry into the east coast gas market
 Monthly Average Wholesale Nominal Gas Prices (A$/GJ) 2011 to 2017

(i) Wholesale Spot Gas Price Ex-Brisbane; (ii) Netback Price Ex-Gladstone based on JKM Spot Price; (iii) Netback Price Ex-Gladstone based on an Assumed Oil-Linked Contract (13.8 per cent Slope Applied to the Historical Monthly Average Brent Prices Assuming USD 3/Mbtu Liquefaction Cost); and (iv) JKM Spot Gas Price

Source: Authors’ calculations and Platts
Price Impacts: Eastern Australia Large Domestic Gas Users

<table>
<thead>
<tr>
<th>On-site Electricity Generation and space heating</th>
<th>Heat and Steam raising activities</th>
<th>Feedstock usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Various industrial complexes and processes</td>
<td>• Cement and lime production</td>
<td>• Ammonia synthesis</td>
</tr>
<tr>
<td>• Hospitals</td>
<td>• Alumina refining</td>
<td>• Fertiliser production</td>
</tr>
<tr>
<td>• Large public buildings</td>
<td>• Non-ferrous metals refining</td>
<td>• Methanol production</td>
</tr>
<tr>
<td></td>
<td>• Bricks, tiles and masonry</td>
<td>• Explosives production</td>
</tr>
<tr>
<td></td>
<td>production</td>
<td>• Polymer production</td>
</tr>
<tr>
<td></td>
<td>• Pulp and paper production</td>
<td>• Chemical production</td>
</tr>
<tr>
<td></td>
<td>• Ethanol production</td>
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</tr>
<tr>
<td></td>
<td>• Glass production</td>
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<tr>
<td></td>
<td>• Food and beverage production</td>
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</tbody>
</table>

“Over a third of the commercial and industrial gas users... are considering either reducing production or closure due to high gas prices.” ACCC (25 September 2017)

III. Insufficient Competition in the Gas Market
ACCC Perspective

• “Domestic industrial users of gas were receiving few, if any, real offers of gas”

• “Domestic suppliers were either unwilling or unable to make firm offers for gas supply for 2016 onwards”

ACCC (December 2016)

“...where genuine offers for supply have been made, they are generally on a ‘take it or leave it’ basis with no scope for further negotiation...Most users said that they had been given very short deadlines for responding to offers, generally ranging from 2-5 days. “

ACCC (September 2017)
Gas prices and supply offers from 2012 to 2018

* For 2018, the prices refer to two offers, with previous years referring to contracted prices under gas supply agreements.

IV. A Gas Supply Shortfall?
### Gas supply/demand outlook in Eastern Australia 2018

<table>
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<tr>
<th></th>
<th>Expected domestic demand (PJ)</th>
<th>Upper band domestic demand (PJ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td>1901</td>
<td>1901</td>
</tr>
<tr>
<td>Domestic demand</td>
<td>642</td>
<td>695</td>
</tr>
<tr>
<td>LNG demand</td>
<td>1314</td>
<td>1314</td>
</tr>
<tr>
<td>Projected shortfall</td>
<td><strong>55</strong></td>
<td>108</td>
</tr>
</tbody>
</table>

AEMO gas supply shortfall (power generation)

V. Policy Options
Australian Domestic Gas Security Mechanism

• Allows for control of gas exports when the Minister responsible believes there will be a domestic gas shortfall the following year.

• Stated intent is to ensure adequate domestic gas supplies by requiring gas exporters to limit exports or to find offsetting sources of new gas.

• On 27 September 2017, Prime Minister Turnbull announced an agreement with three largest gas exporters from Eastern Australia that commits the exporters to meet any gas shortfall in 2018. This commitment will be achieved by contracting gas supplies to wholesale consumers at fixed prices and requiring suppliers provide sale, sale offers and bids to customers to ACCC.
Impacts (2020 and 2025) of national gas reservation

* All dollar figures represent real $2011-12, deviations from reference case

Other Actions

Australian Government

• $19.6 million 2017-2021 on actions to support price transparency and gas supply
• $5.6 million to assess costs and benefits of constructing gas pipelines to link Northern and Western Australia to Eastern Australia
• $6.6 million for ACCC to undertake an inquiry into gas prices, transport and supply
• $28.7 million to increase community acceptance of gas projects

Others

• AGL has announced its intention to construct a $300 million Eastern Australia gas import facility in Victoria and to be operational by 2020-21
• Queensland released 58 km2 for gas exploration & reserved for domestic gas supply
• Northern Gas Pipeline from NT to Eastern Australia due for completion end 2018 (30 PJ/year)
Possible policy options

I. Gas market reform
II. Gas supply competition
III. Commercial and regulatory environment for infrastructure
IV. Data and transparency
V. Non-market interventions?
VI. Governance and implementation

Source: Department of Industry (2014) Eastern Australian Domestic Gas Market Study
VI. No Quick Fix

• High gas prices are a result of:
  (1) high production costs (much higher for CSG over conventional),
  (2) price floor set by LNG netback prices (if exceeds MC)
  (3) Market power exercised by gas networks and some retailers
  (4) Supply rigidities due to on-shore gas moratoria (Victoria) or ‘go slow’ (NSW).

ADGSM
• Rigidities in LNG contracts (‘take or pay’ & ‘point to point’) make ADGSM problematic and if led to renegotiated contracts would reduce incentives for ‘ramp up’ production, as much as 300PJ/year (5 times expected 2018 gas shortfall).

Policy Alternatives
• Incentives for load shedding to avoid spill-over costs to electricity market
• Non-discriminatory access to gas networks + employ ‘market carriage’ model (capacity bundled with gas purchased)
• Evaluate public-private partnerships in gas value chain to promote competition