

Gas Wholesale Supply and Pricing

AUSTRALIAN INSTITUTE OF ENERGY SEMINAR

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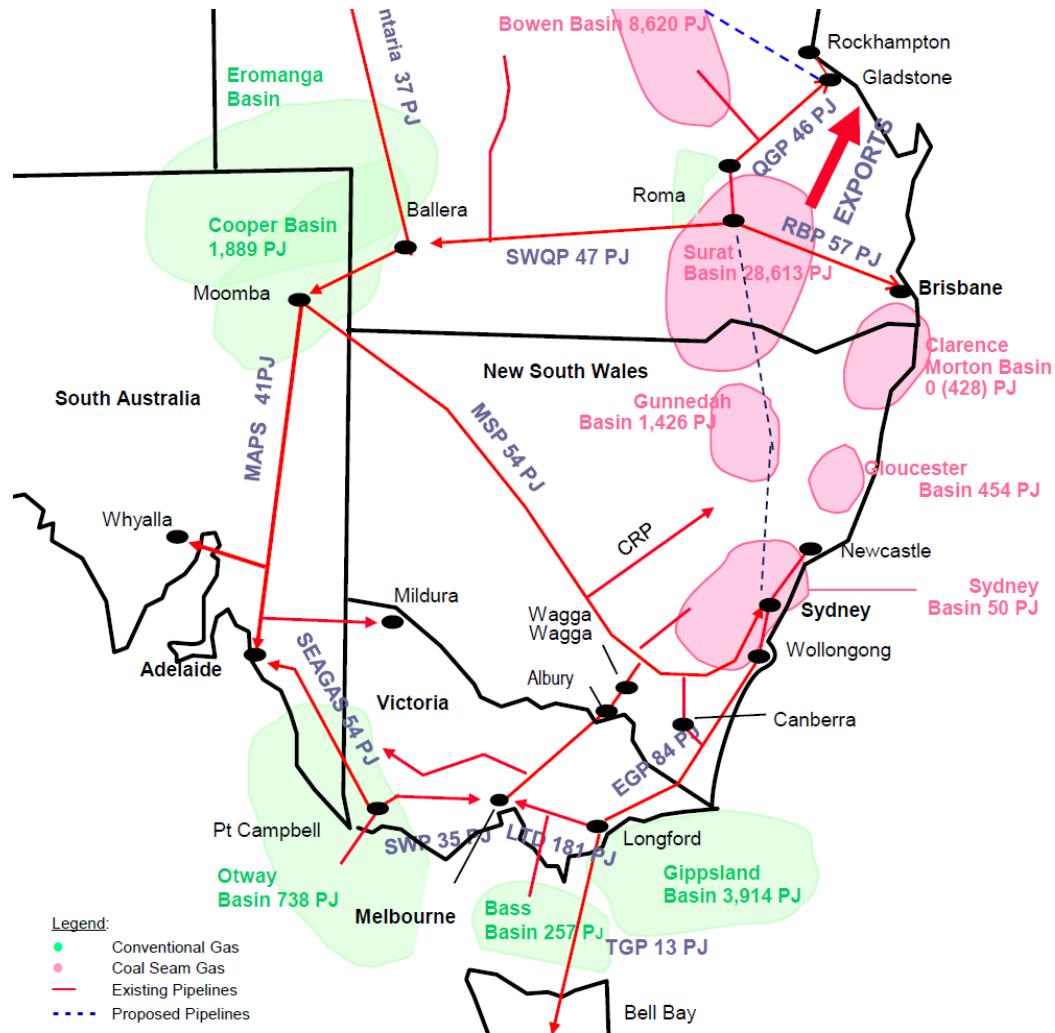
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Scope

1. Demand overview – domestic & LNG (eastern Australia)
2. Gas reserves
3. Production capacity
4. Gas market-recent contracts and price outcomes
5. Longer term projections
6. Victorian position
7. Market reform/development

Eastern Australian Gas Infrastructure



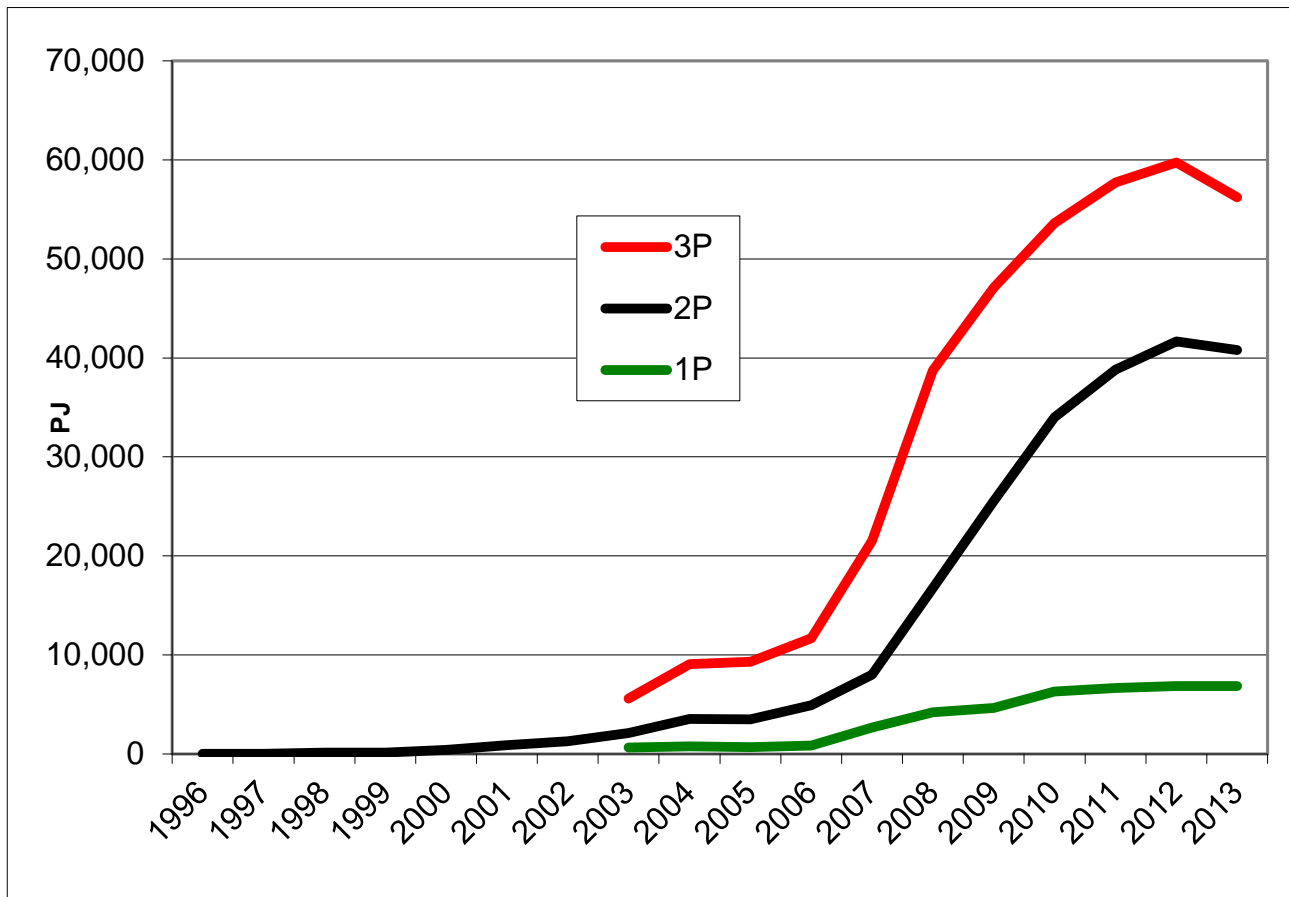
Demand-Supply Eastern Australia

- Well-developed gas market and infrastructure.
- Demand 676 PJ in 2013.
- Supply across seven basins
- almost fully interconnected transmission network.
- 2P reserves 46,170 PJ at the end of 2013
- 68 years supply
- Most proved up to support LNG exports which will triple gas demand and reduce supply to 22 years.

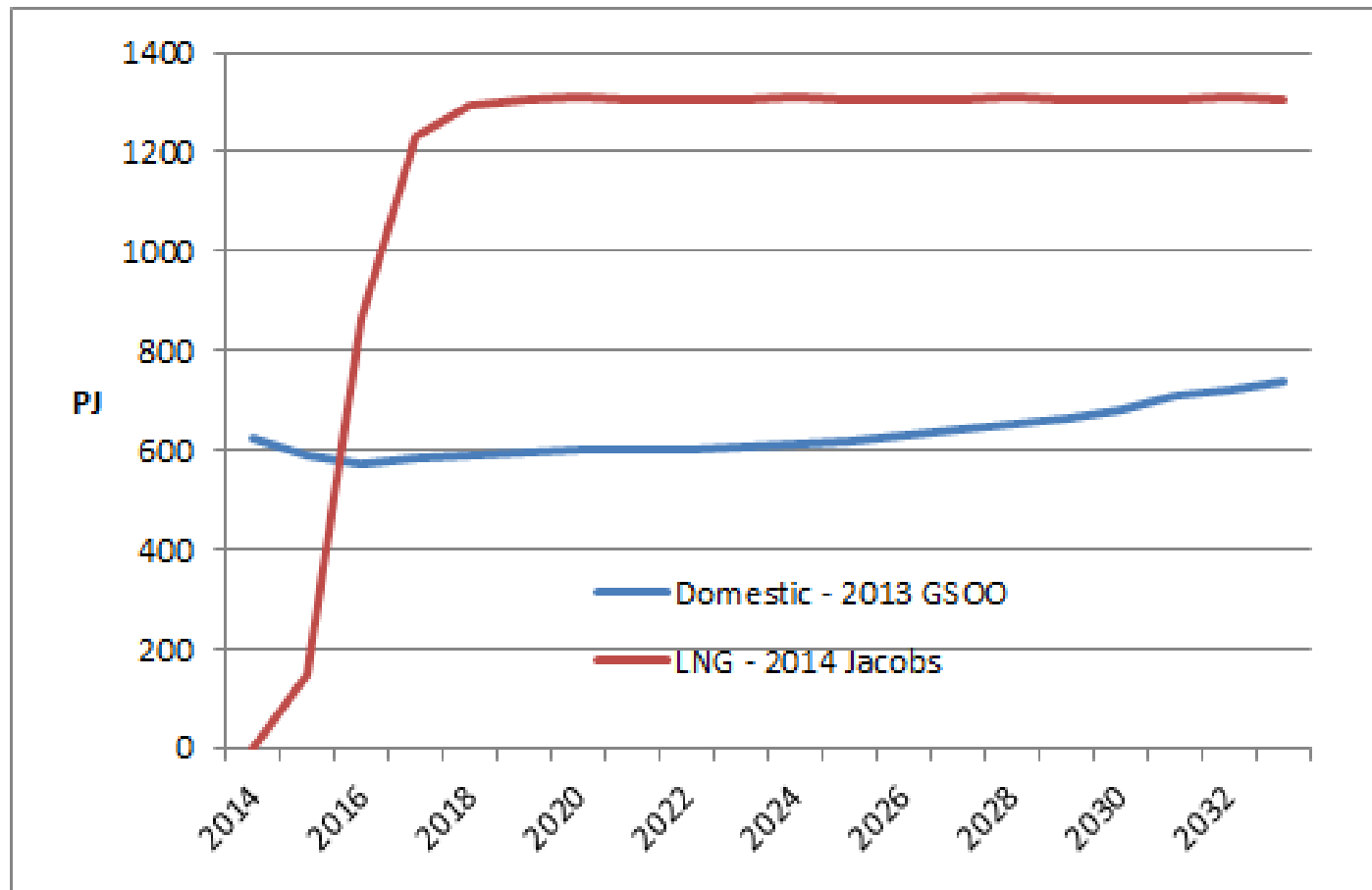
LNG project status

- Three LNG export projects are nearing completion on Curtis Island, near Gladstone: QCLNG; GLNG; and APLNG.
- Each project of two LNG trains, delivering 3.9 to 4.5 Mt of LNG per year. First deliveries scheduled from Q4 2014 to 2016.
- A fourth project, Arrow Energy, remains in the planning phase and may build a single train on an existing site.

Why LNG? – CSG reserves growth



Demand projections – base case



Gas Markets

- Bi-lateral term contracts at both wholesale and retail levels
- Organised spot markets for network imbalances.
- Spot markets provide price discovery but not any forward price indication
- Effective financial forwards markets have yet to be established.
- New contract prices, or rather estimates of them, provide the best guide to future gas prices.

LNG Impacts

- LNG exports start late-2014. Will connect gas supplies with high volume, high value East Asian market.
- Domestic gas market impact:
 - The expectation that all eastern Australian gas can be sold at “export parity” prices much higher than legacy domestic gas prices
 - Shortfall in domestic gas as LNG projects direct supply from their own acreage to LNG and have also pre-purchased third party gas.

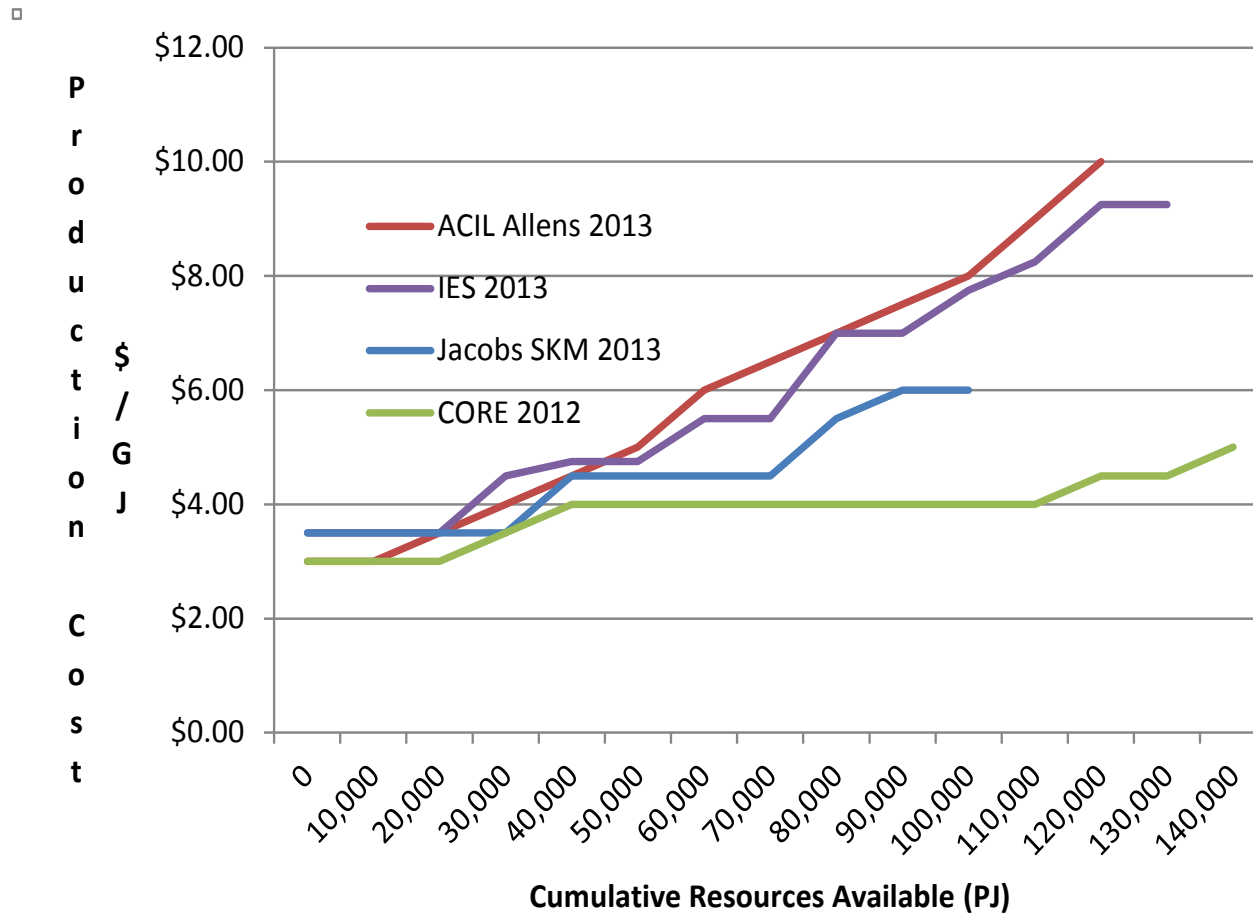
LNG Impacts (2)

- Prices of new domestic gas contracts expected to rise because of LNG.
- Wide range of price levels projected, \$6/GJ to \$12/GJ, because of uncertainty in key drivers such as future oil prices and export volumes.
- With exports now only 3 months away, some uncertainties regarding the near term have reduced.
- Since 2011 new domestic gas contracts entered for supply in the period from 2014 onwards, under the above influences.
- Uncertainty persists regarding the ability of LNG projects to ramp up production and their need for more third party gas.

Gas price factors – costs of gas production

- The cost of gas, including capital and operating costs, applicable to new gas supply, ignoring lower cost sources already committed, is \$4.50/GJ.
- This sets the lowest price at which a gas producer would sell gas in a new contract, in a very competitive market.

Cost of Gas Production



Gas price factors – LNG pricing and netback

- East Asian LNG prices are linked to the JCC (Japan Customs Cleared Crude) index. For the Gladstone LNG projects the estimated FOB price is in the range **\$US14.00-14.50/mmbtu** in 2014/15 and 2015/16, corresponding to EIA median oil prices.
- The LNG netback value is the FOB value netted back to Gladstone or the wellhead by subtracting liquefaction and transmission costs. These costs are capital intensive so long- and short-run costs are materially different.

LNG Netbacks (\$/GJ)

	2014/15	2015/16
Wallumbilla Short-run	\$12.14	\$12.44
Wallumbilla Long-run	\$8.58	\$8.75
Moomba Short-run	\$10.82	\$11.13
Moomba Long-run	\$7.26	\$7.44
Gippsland Short-run	\$9.10	\$9.40
Gippsland Long-run	\$5.54	\$5.71

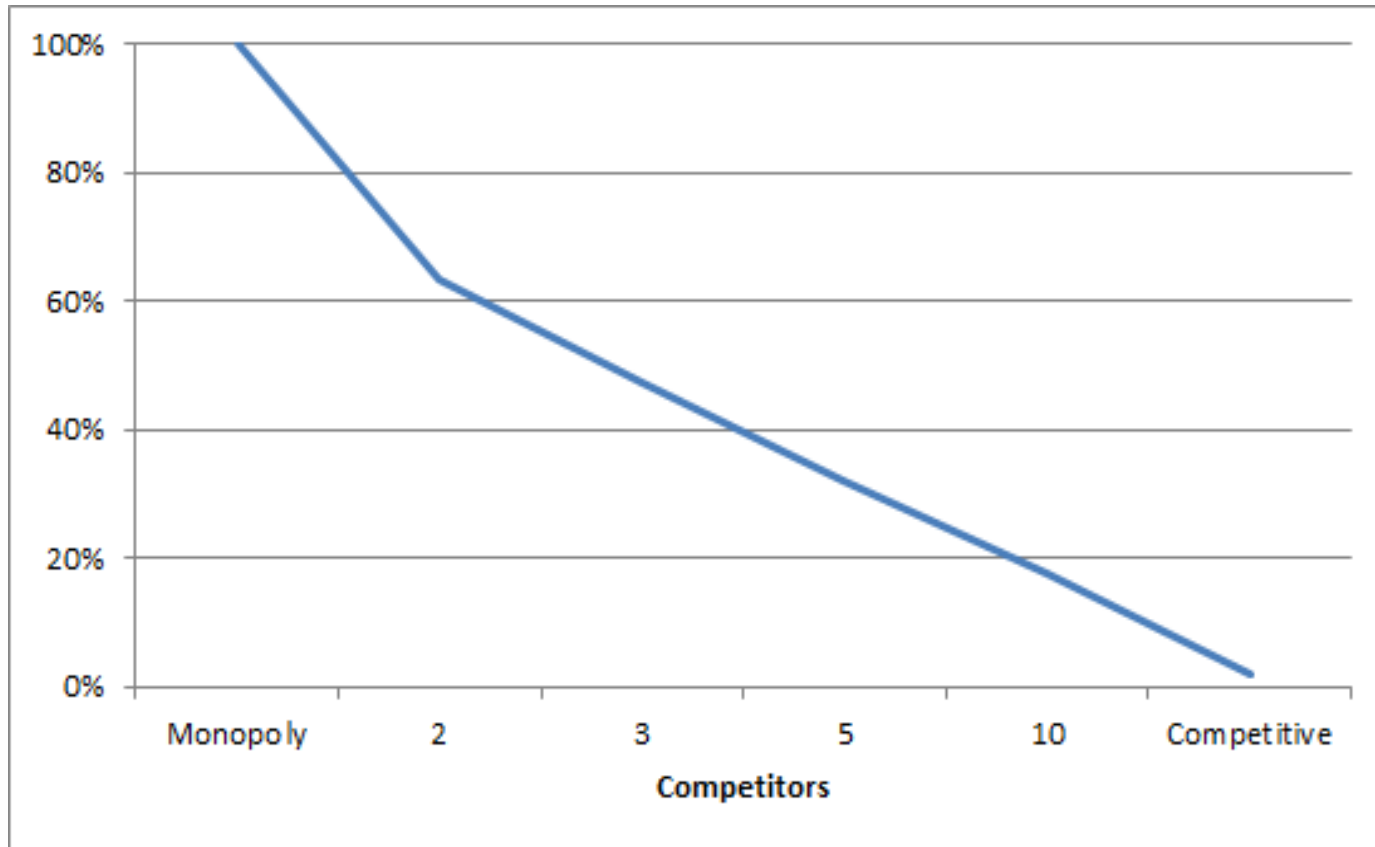
Gas price factors – LNG netback

- Netback values are the maximum values that an export project would pay for third party gas.
- What an export project actually pays depends on relative market power of exporters & gas producers.
- What an exporter pays is the opportunity value for producers.

Gas price factors – market power

- Market power has always been present in the Australian gas market
- Market power has increased since 2008:
 - LNG projects have acquired smaller producers
 - And have withdrawn from the domestic market
- In Victoria only the Gippsland JV has sold new contracts since 2008

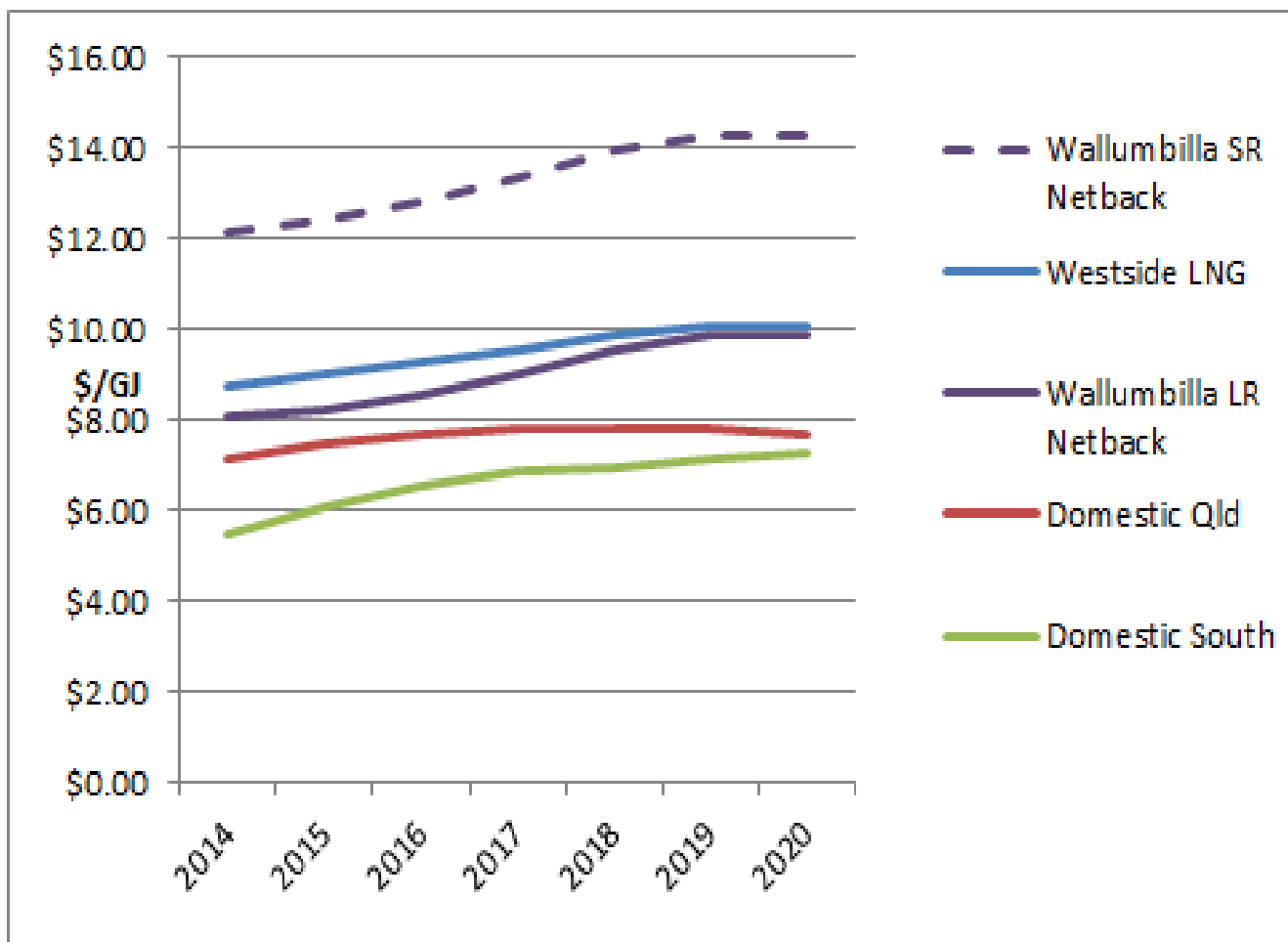
Gas price factors – monopoly margin



New domestic wholesale contract prices

- Nine new domestic contracts since 2011 under LNG influence. Price data is based on reviews of statements by seller or buyer financial analysts.
- Price estimates are uncertain but the following trends seem clear:
 - Prices have escalated and range from \$5.50/GJ to \$10.00/GJ
 - Prices in Queensland still escalating - most recent price is \$10/GJ compared to \$6/GJ in 2011.
 - Prices in southern states, for gas from the Gippsland JV, are lower than in Queensland but may be set to escalate.
 - Some domestic contracts are oil-linked but others are not.

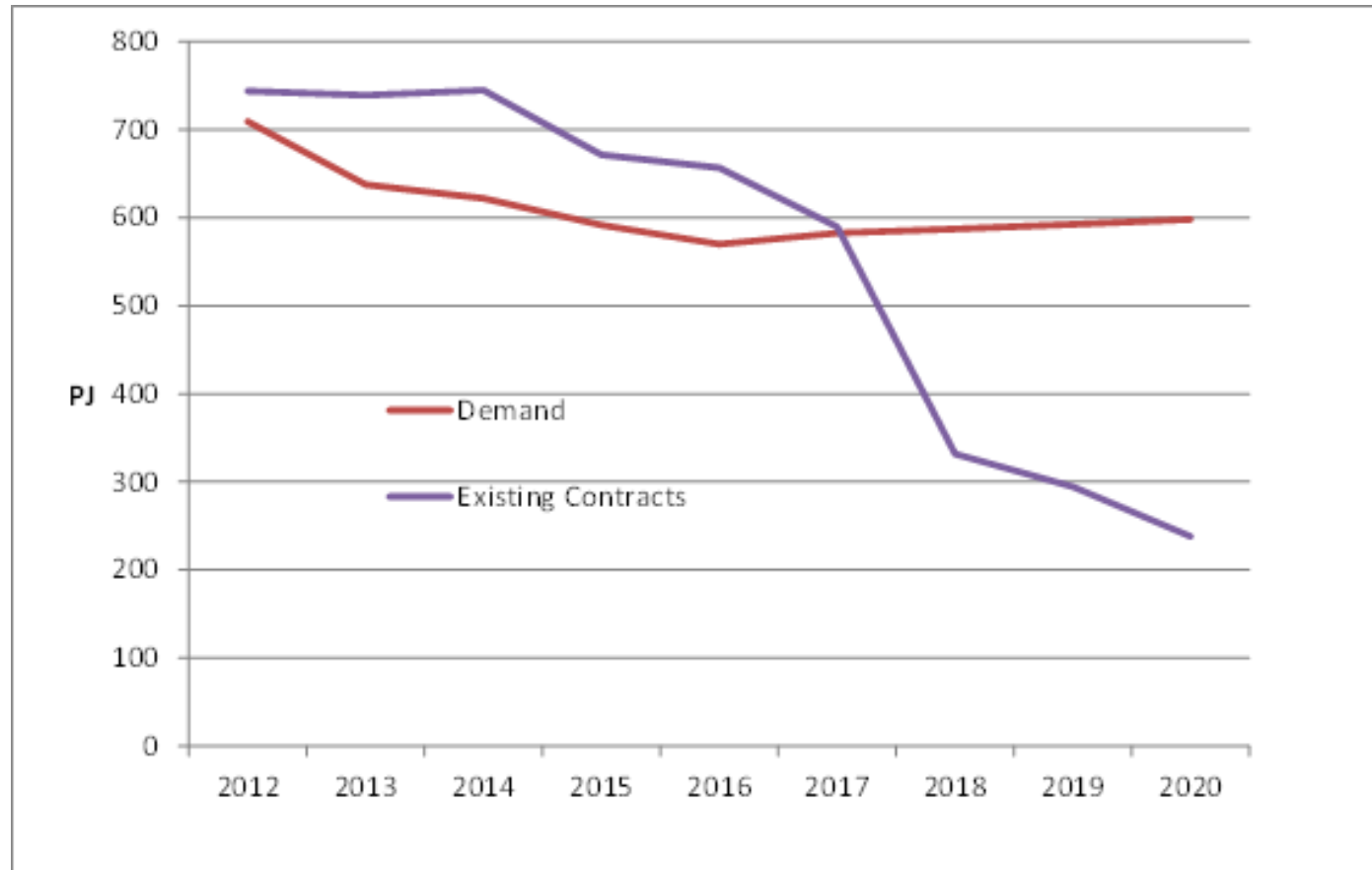
Estimated recent new contract prices (\$/GJ 2013/14)



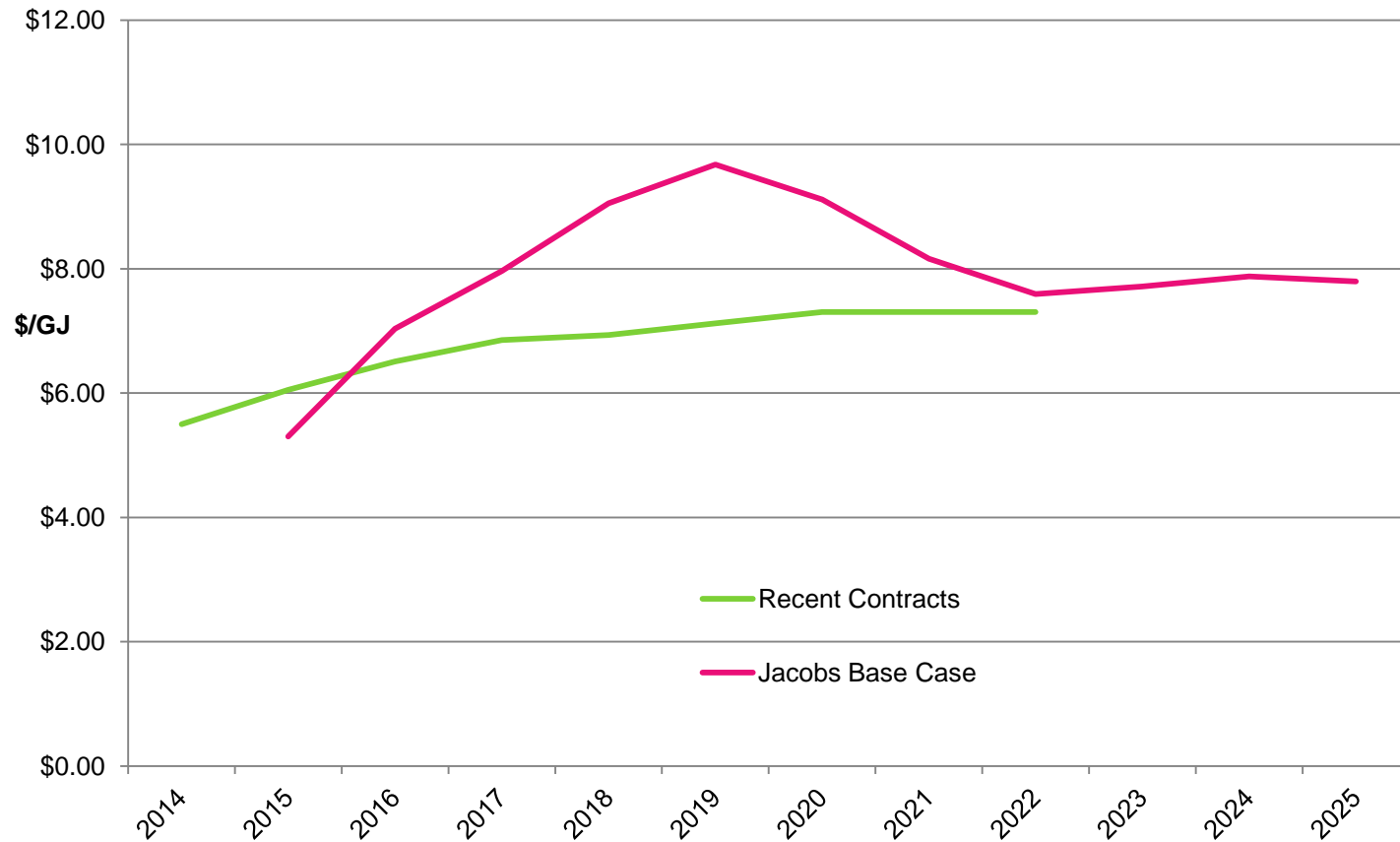
Price projections derived by modelling

- Jacobs has used its “Market Model Australia – Gas” (MMAGas) modelling tool and associated data to estimate gas prices in all market zones and well heads.
- Key assumptions cover: gas reserves; demand projections, including LNG; production costs; existing domestic & LNG contract volumes, prices and durations; transmission network structure and costs; and LNG netback values.

Domestic demand vs contracted gas



Modelled new contract prices, Gippsland Base Case



Domestic gas supply

