

'Making Cents' of the Eastern Australian Gas Market

Professor Quentin Grafton

(Quentin.Grafton@anu.edu.au)

Crawford School of Public Policy

The Australian National University

29 November 2017

Based on co-authored paper by Quentin Grafton, Xunpeng
Shi and Ian Cronshaw published 27 October 2017 in

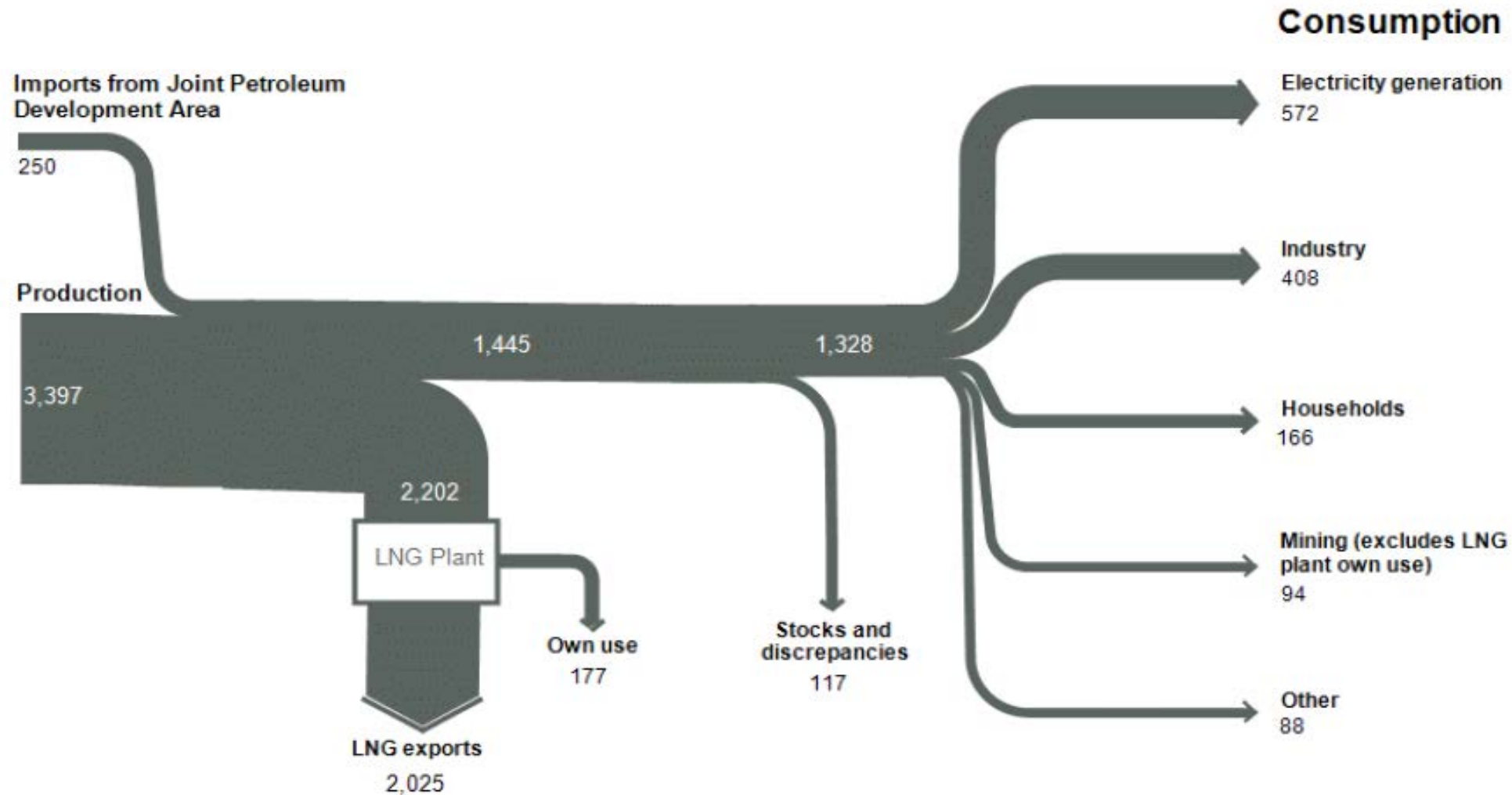
Economic Papers, doi: [10.1111/1759-3441.12194](https://doi.org/10.1111/1759-3441.12194)

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

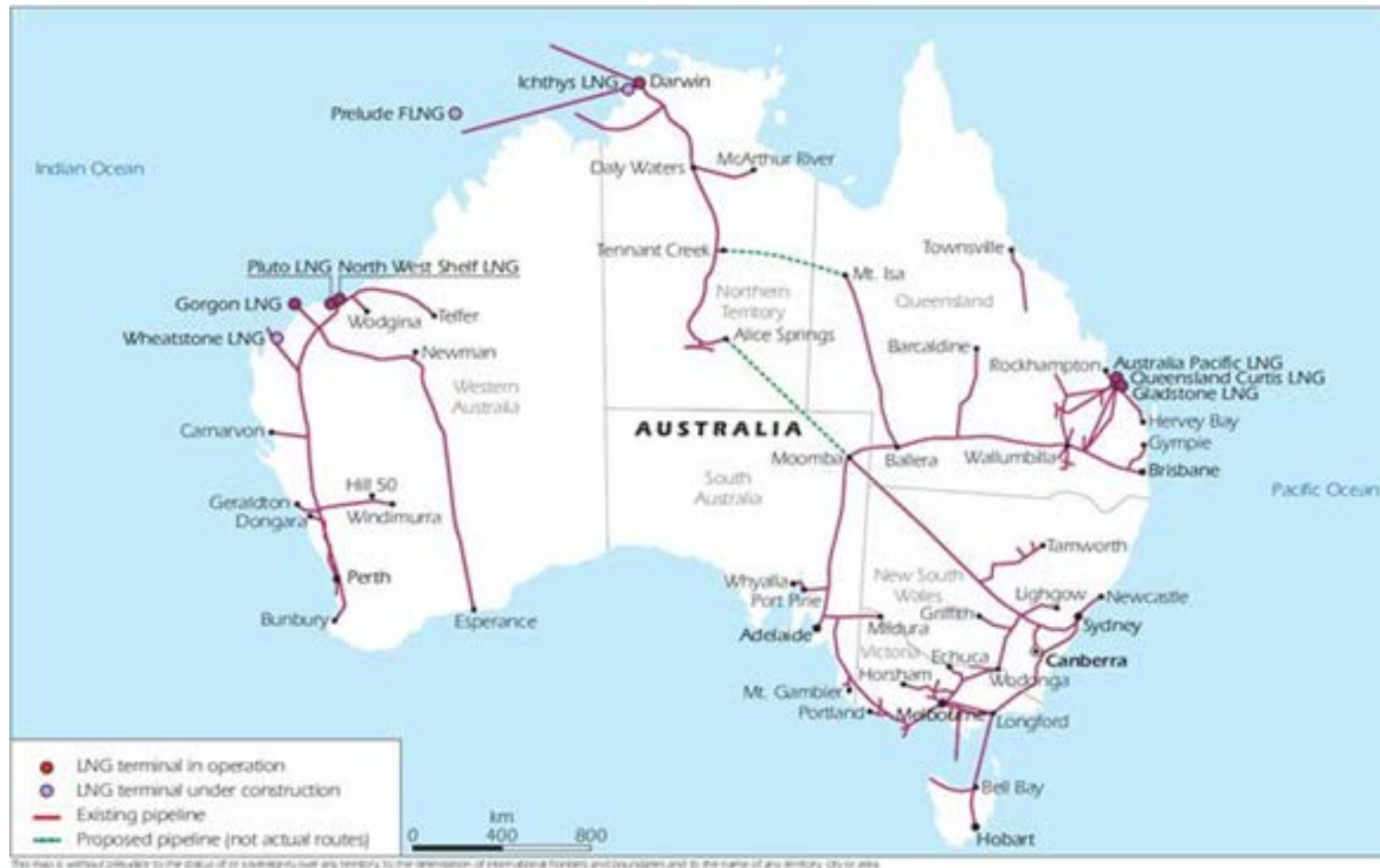
Natural gas flows, Australia, 2015-16



* Unit: Petajoule (PJ)

Source: Department of Environment and Energy (2017) Australian Energy Update

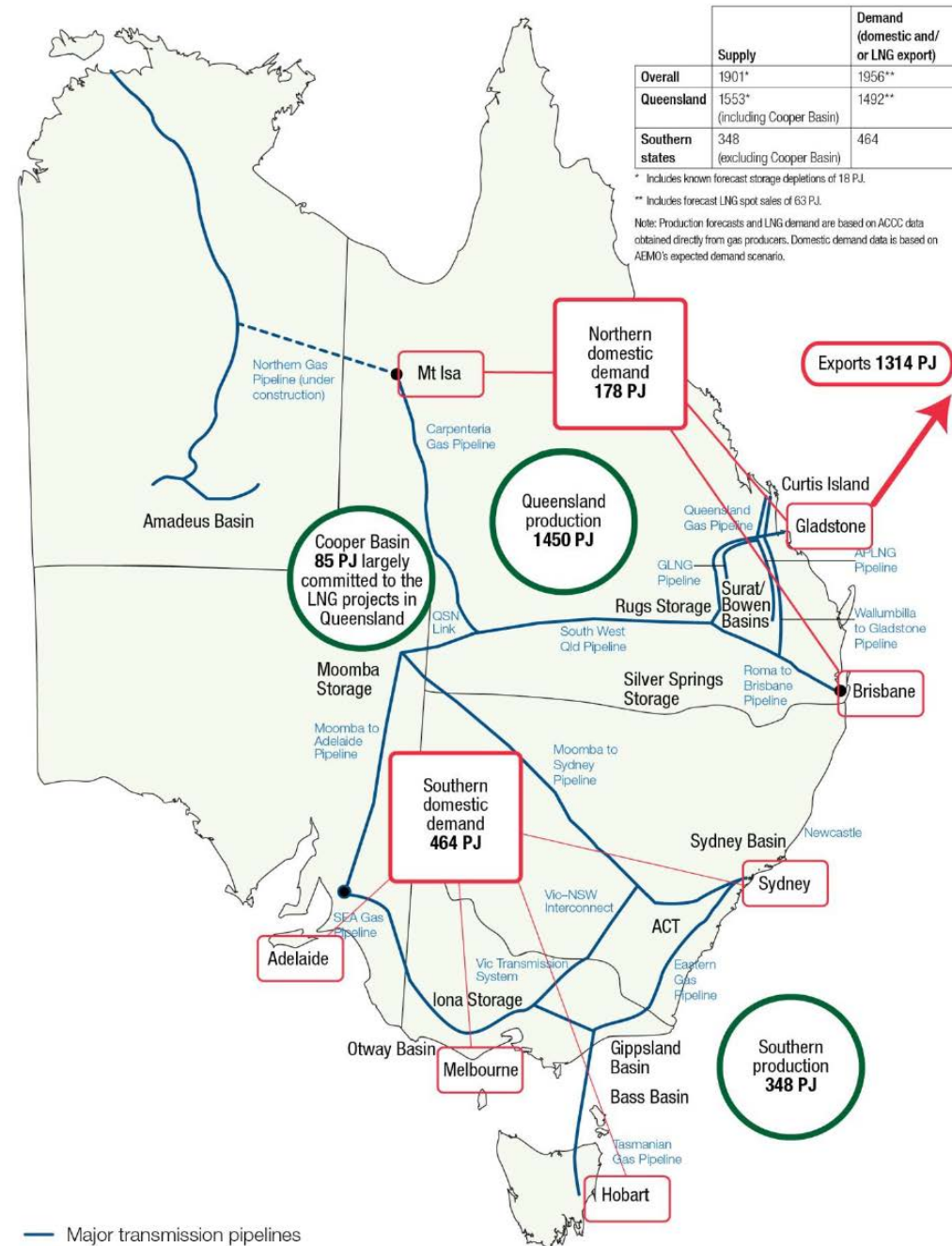
Australian Gas Pipelines and LNG Plants



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



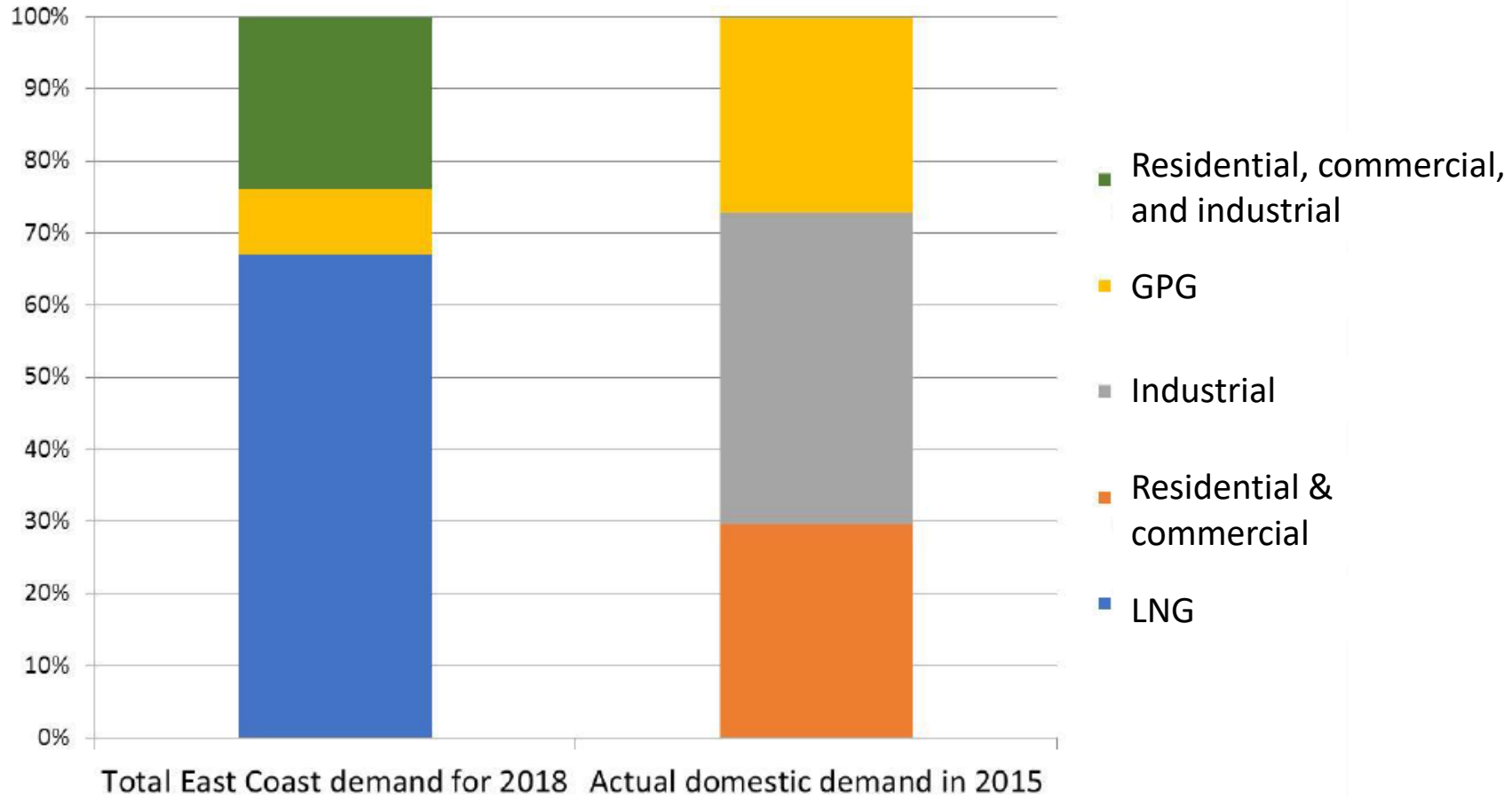
Source: ACCC (2017) Gas Inquiry 2017-2020: Interim Report

Queensland LNG Export Gas Facilities

Export Gas Facilities		Cost of build	Operational since
Queensland Curtis LNG (QCLNG)	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.	USD 19.8 billion	November 2015
Gladstone LNG (GLNG)	Operated by Santos in partnership with Petronas, Total and KOGAS, GLNG has a capacity of 7.8 Mtpa from two trains.	USD 18 billion	September 2015
Australia Pacific LNG (APLNG)	Operated by Origin Energy (upstream) and ConocoPhillips (downstream) in a venture with Sinopec, APLNG has a capacity of 9 Mtpa from two trains.	USD 24.7 billion	January 2016

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.

Eastern Australia Gas Market Demand, 2015 and 2018



AEMO estimates annual consumption of gas (domestic and export) between 2016-2021 at some 2,000 PJ.

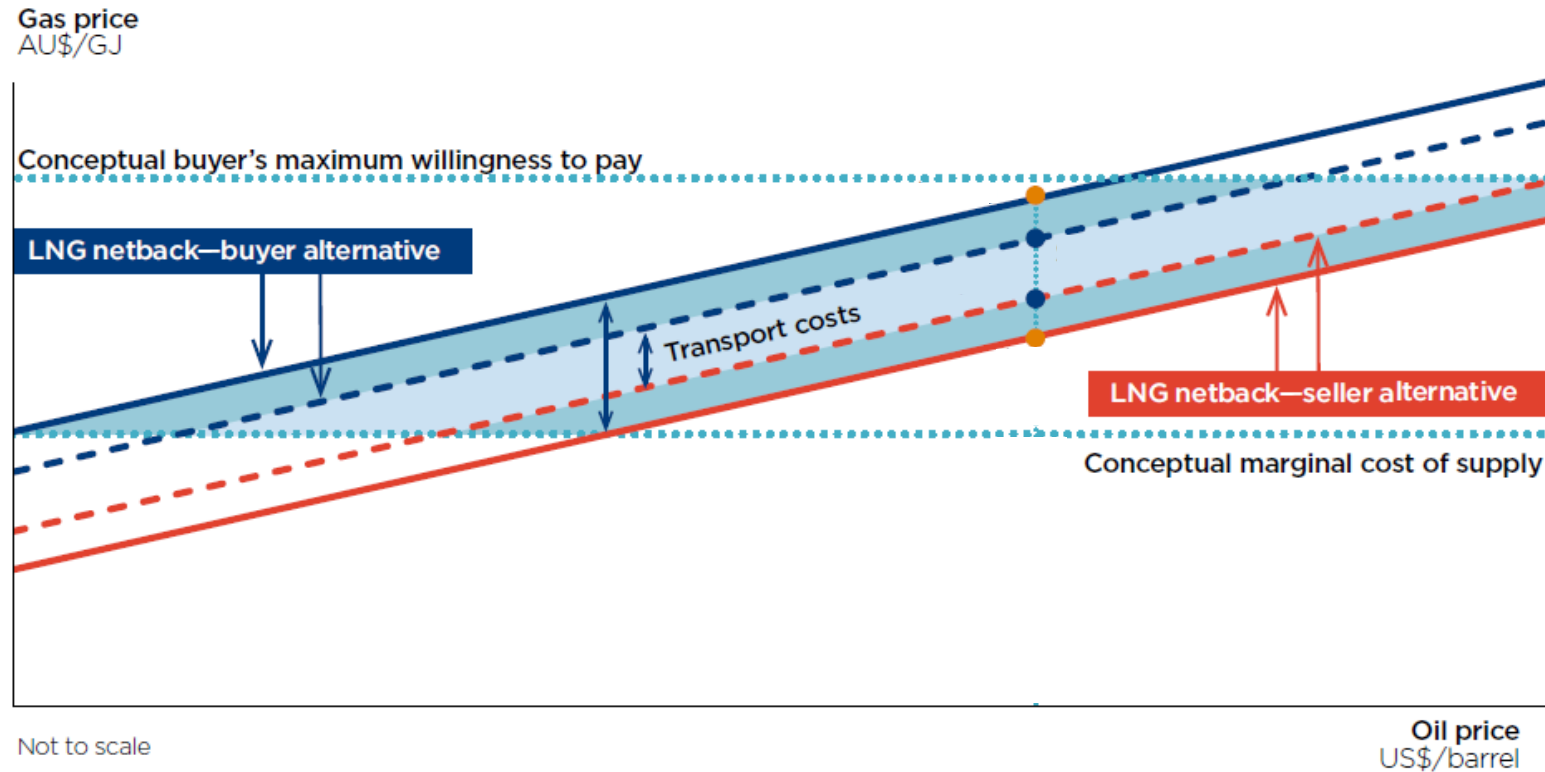
Eastern Australia has 40,000 PJ of Proven and Probable CSG reserves

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.

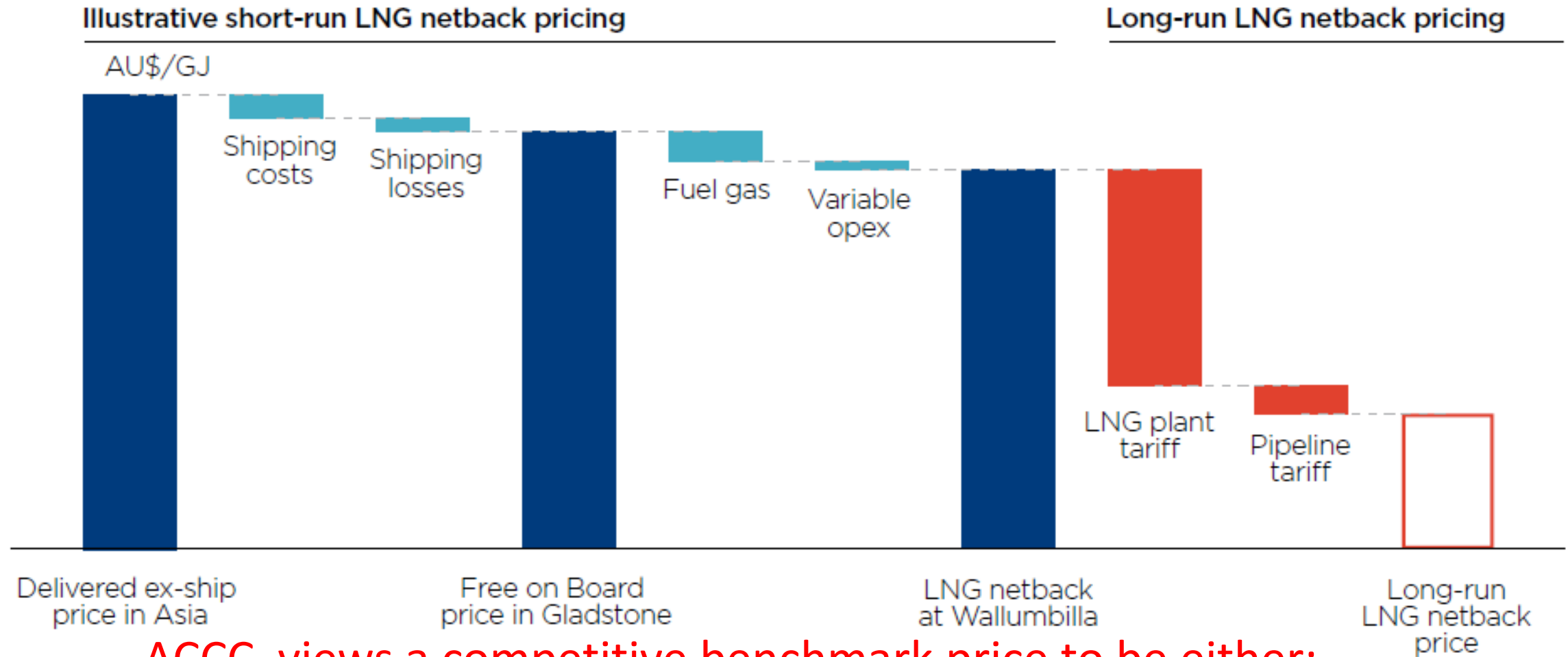
II. Gas Prices are High

Bargaining framework for gas supply



Notes: Pipeline tariffs on each of the relevant pipelines (MSP, SWQP/QSN) were reduced by 50 per cent in this illustrative example. Transportation costs under the buyer's and seller's alternative include gas losses and in the case of the seller's alternative also include processing costs at Moomba. In this example, gas losses and processing costs are assumed to be unchanged.

Calculating the LNG netback price at Wallumbilla

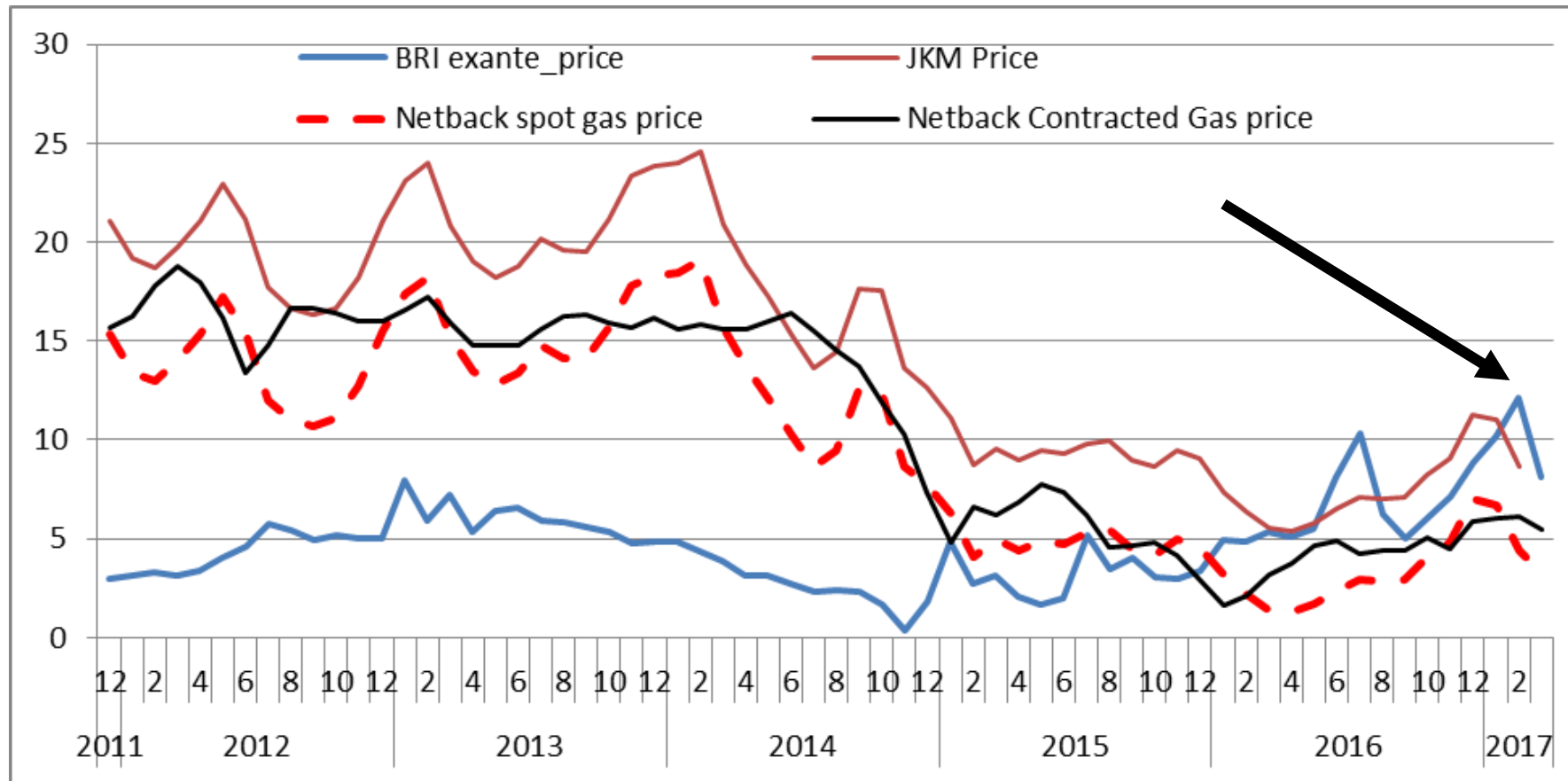


ACCC views a competitive benchmark price to be either:

(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

On-site Electricity Generation and space heating	Heat and Steam raising activities	Feedstock usage
<ul style="list-style-type: none">• Various industrial complexes and processes• Hospitals• Large public buildings	<ul style="list-style-type: none">• Cement and lime production• Alumina refining• Non-ferrous metals refining• Bricks, tiles and masonry production• Pulp and paper production• Ethanol production• Glass production• Food and beverage production	<ul style="list-style-type: none">• Ammonia synthesis• Fertiliser production• Methanol production• Explosives production• Polymer production• Chemical production

Increasing dependence on gas

Increasing potential for fuel switching

“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)

Source: Department of Industry and BREE (2014), ‘Eastern Australian Domestic Gas Market Study’, Canberra.

III. Insufficient Competition in the Gas Market

ACCC Perspective

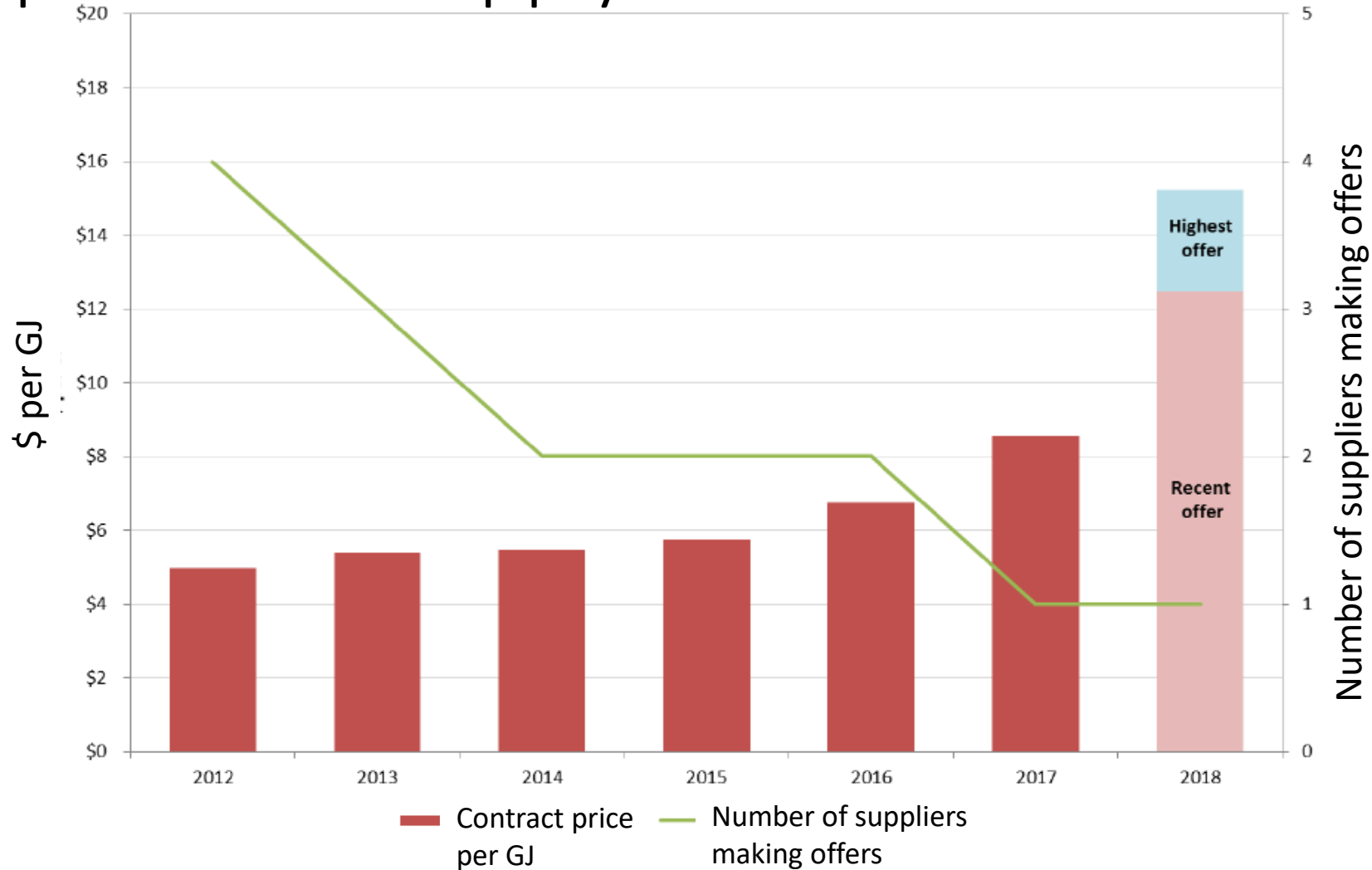
- “Domestic industrial users of gas were receiving few, if any, real offers of gas”
- “Domestic suppliers were either unwilling or unable to make firm offers for gas supply for 2016 onwards”

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.

Source: ACCC (2017) Gas Inquiry 2017-2020: Interim Report

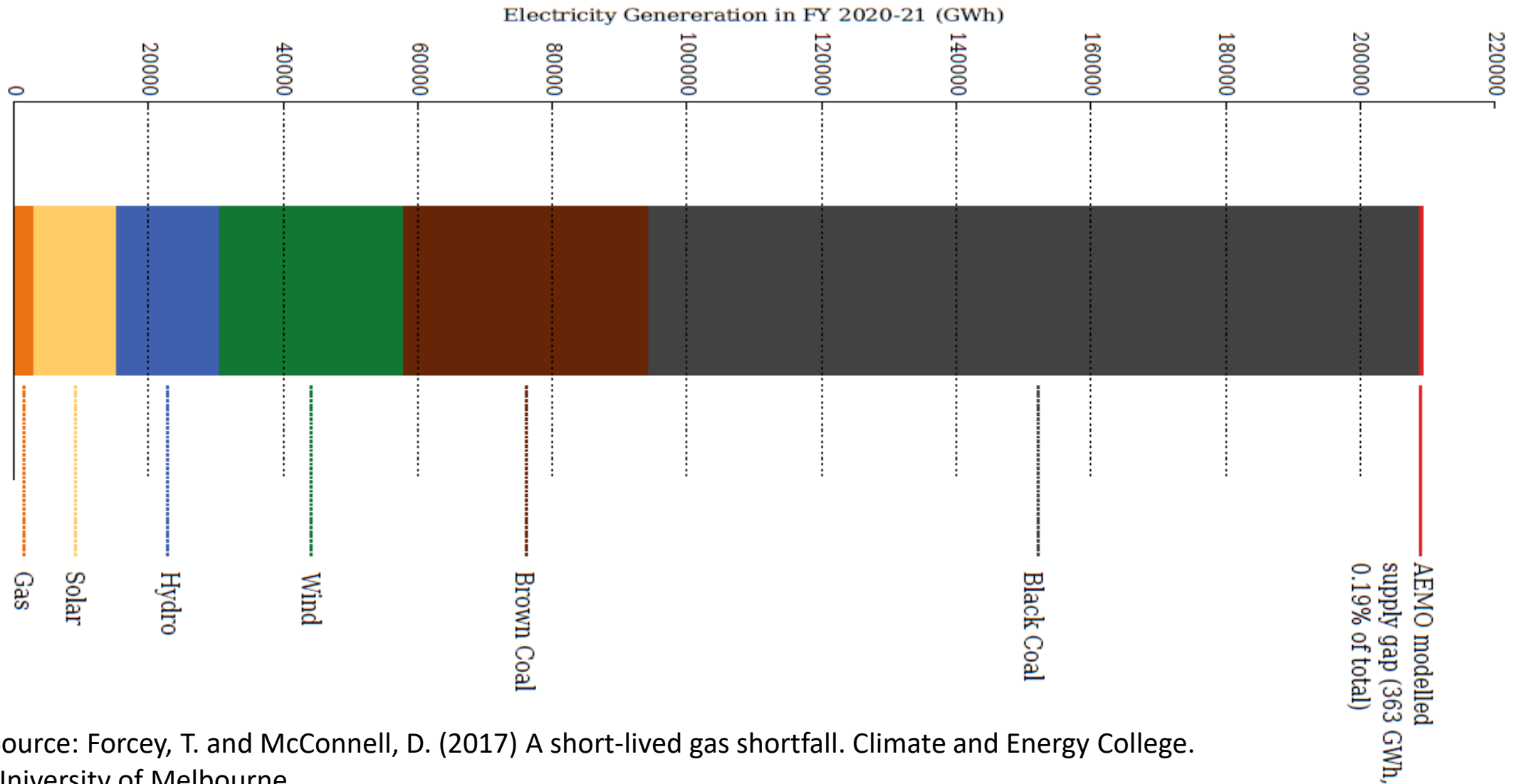
IV. A Gas Supply Shortfall?

Gas supply/demand outlook in Eastern Australia 2018

	Expected domestic demand (PJ)	Upper band domestic demand (PJ)
Supply	1901	1901
Domestic demand	642	695
LNG demand	1314	1314
Projected shortfall	55	108

Source: ACCC (2017) Gas Inquiry 2017-2020: Interim Report

AEMO gas supply shortfall (power generation)



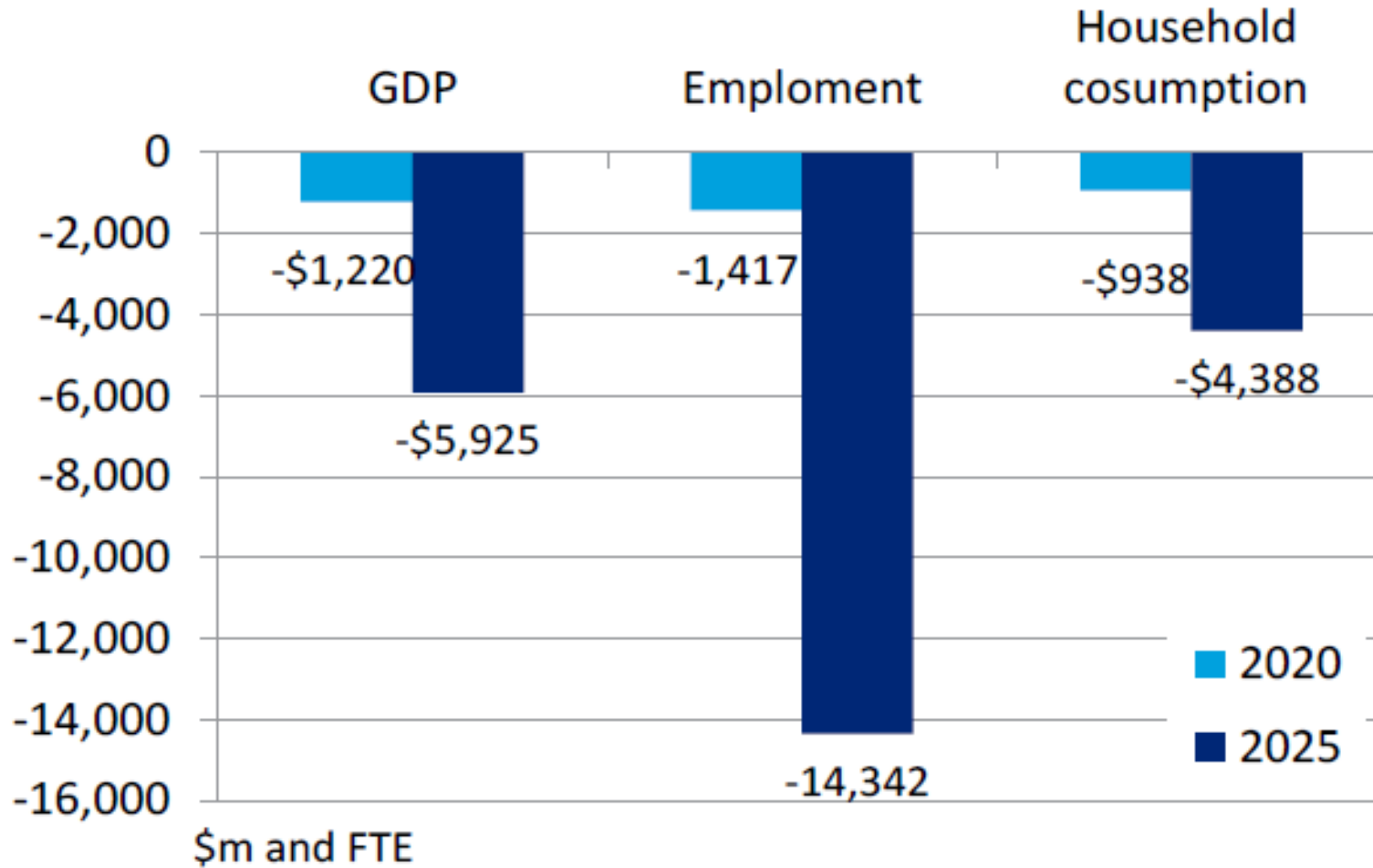
Source: Forcey, T. and McConnell, D. (2017) A short-lived gas shortfall. Climate and Energy College. University of Melbourne.

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

Source: Deloitte Access Economics (2013) The economic impacts of a domestic gas reservation

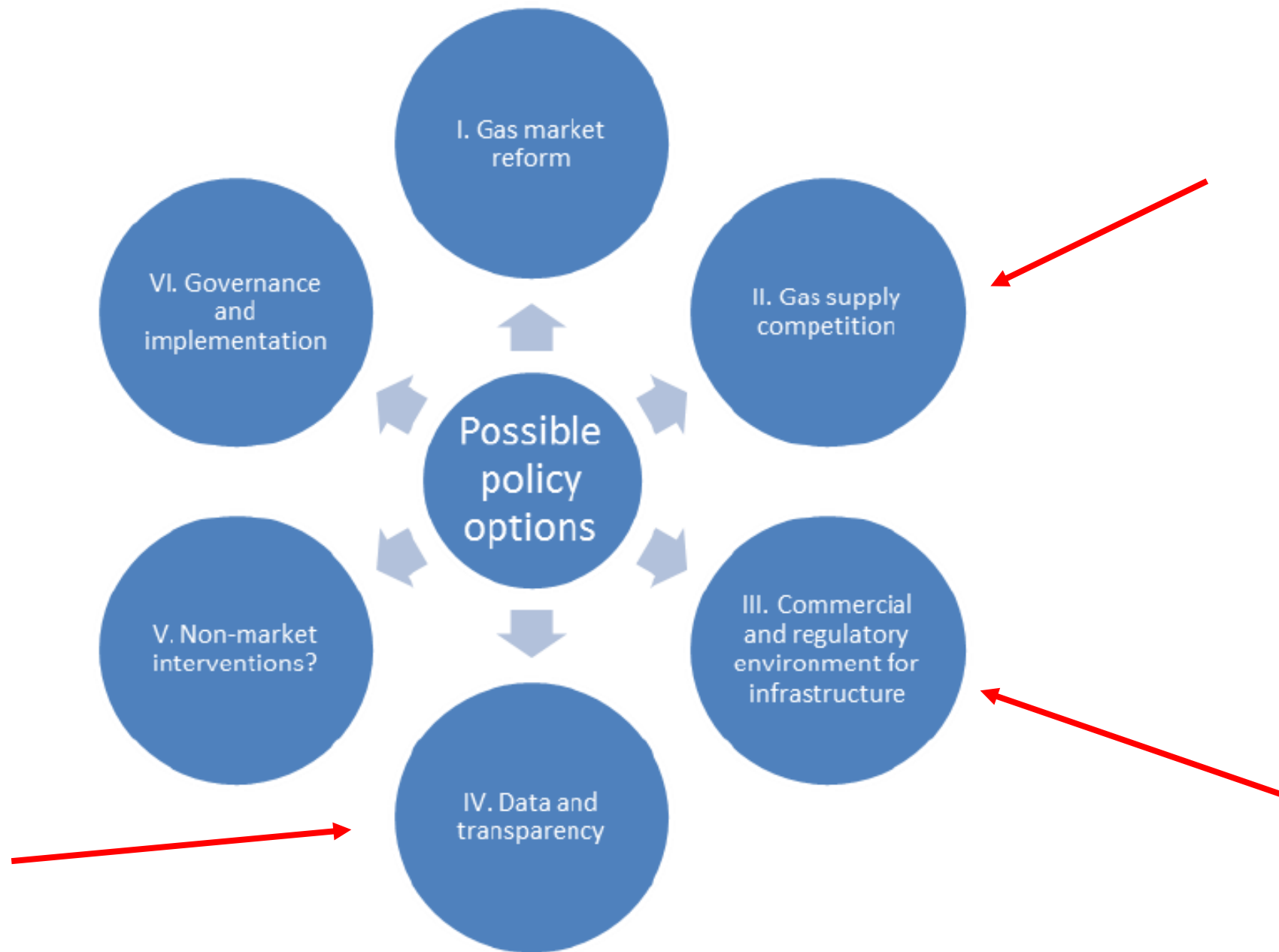
Other Actions

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)



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