

# Yesterday, today and tomorrow in the Australian gas industry

The gradual evolution of Australia's gas markets and pipeline access arrangements

CSES - ERI, 9 September 2010

Bruce Mountain  
Director

## Outline

---

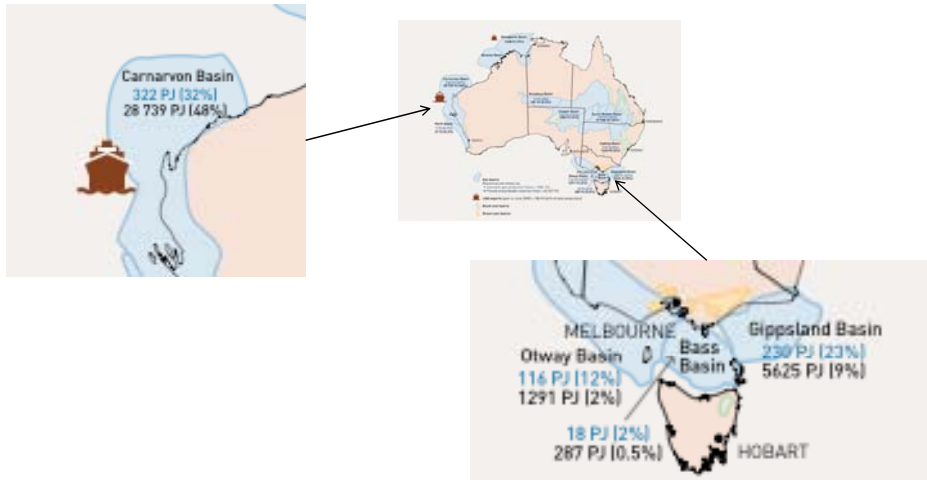
### Factual background

Yesterday (1960 –  
1994): the  
development of the  
natural gas industry

Today (1994 – 2010):  
the gradual shift to  
open markets

Tomorrow:  
Coming  
challenges

Australia has abundant “conventional” natural gas resources, particularly offshore

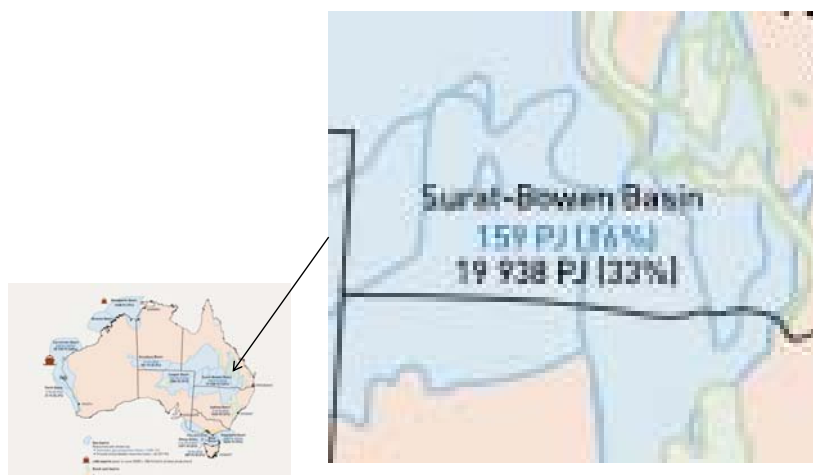


Source: AER, State of the Energy Markets, 2009

3

carbon market economics

Major coal seam methane resources have been proved in Queensland and are expected soon in New South Wales

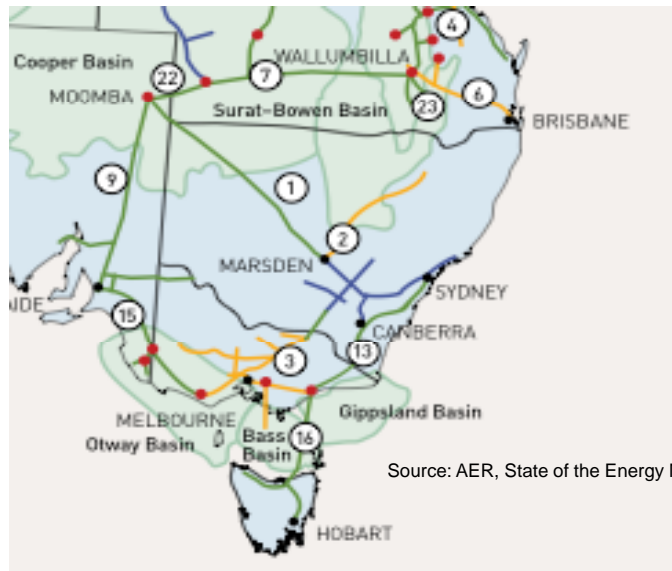


Source: AER, State of the Energy Markets, 2009

4

carbon market economics

The major gas basins and demand centres are now all inter-connected, with long pipelines. On most major pipelines, significant capacity expansion is possible through compression and looping.

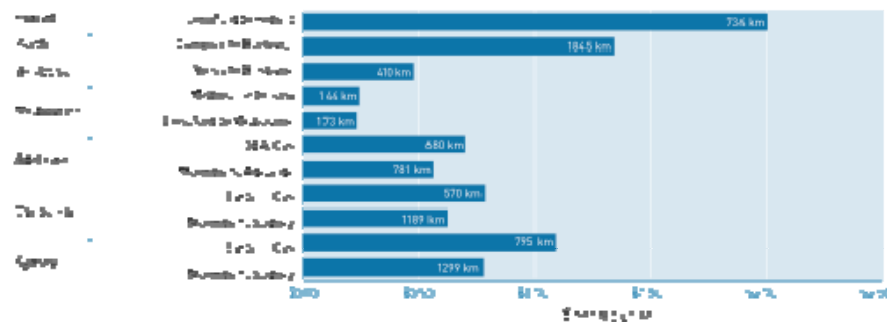


5

nomics

Pipeline charges for bulk shipping are in line with international norms

**Indicate pipeline tariffs to major centres**



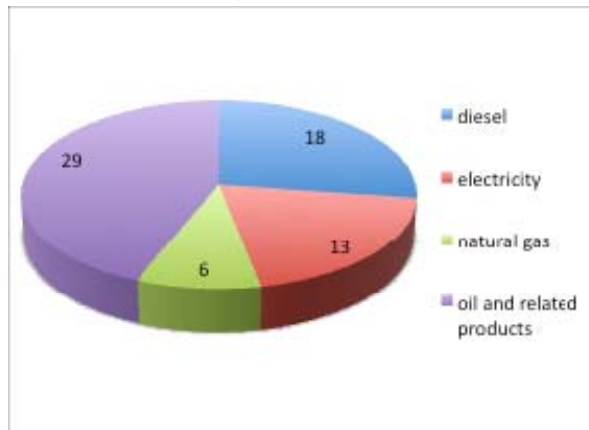
Source: AER, State of the Energy Markets, 2009

6

carbon market economics

Annual gas demand in Australia is around 1000 PJ. But gas is a relatively small part of Australia's energy mix

Value of energy products in Australia (2009 - \$bn)

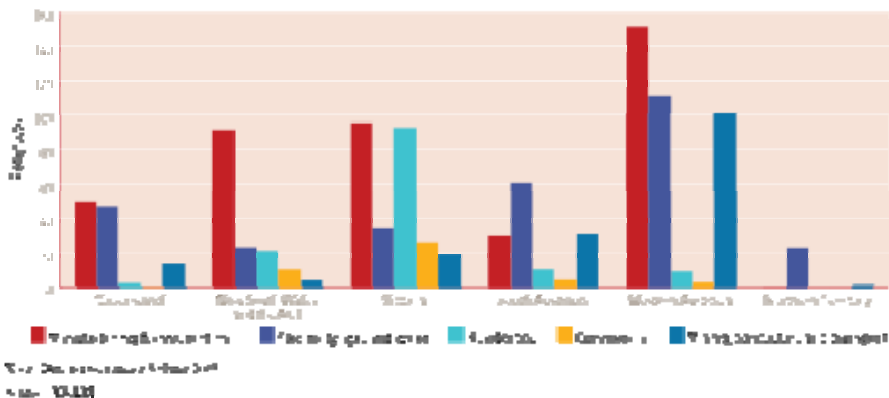


7 Source: Abare, 2010



Gas currently plays a small role in electricity generation, other than in Western Australia and South Australia

Primary natural gas consumption, by industry

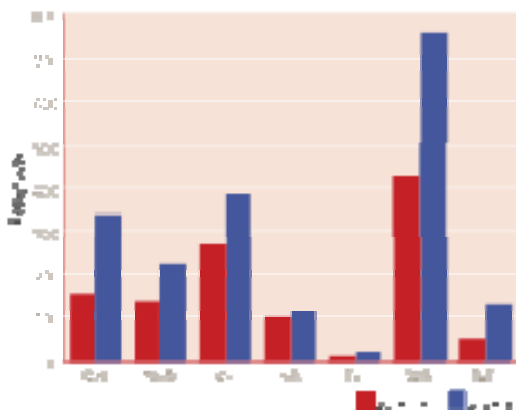


8 Source: AER, State of the Energy Markets, 2009



Australian Gas demand is expected to expand relative to other fossil sources (coal and oil) although not significantly in absolute terms

Forecast primary gas consumption



Source: Carbon Market Economics, based on the Australian Energy Market Commission (AEMC) forecast of gas demand in the National Gas Market (NGM) and the Western Australian Gas Market (WAGM) for the period 2010-2040.



### Prices

- Price transparency in Australia is poor, other than in Victoria where a mandatory wholesale spot market exists. Victorian spot prices have averaged around \$3/GJ over the last 10 years;
- Contract gas prices for large and consistent demand is understood to be around \$3-\$5 / GJ before shipping;
- Prices in Western Australia have been much higher recently in response to production limitations.



## Yesterday (1960 – 1994): the development of the natural gas industry

---

Industry structure & ownership

Commercial arrangements & regulation

Outcomes

11

carbon  
market economics

## Yesterday: Industry structure and ownership

---

➤ Before conventional gas industry established from 1960s, gas supplied through coal gasification, water gas, and petroleum refinery by-product.

➤ Resource exploration by private-sector entrepreneurs, focussed on oil. Major finds in Cooper Basin (inland) and Gippsland Basin (offshore) in 1950s and 1960s. Role of Government mainly to facilitate geological research and, in time, provide financial incentives for exploration. Until pipelines developed, gas was vented, flared or reinjected to enhance oil extraction.

➤ In 1960s state government corporations developed major pipelines from Cooper Basin to Sydney, Cooper Basin to Adelaide, and from Gippsland basin to Melbourne to establish domestic gas markets. Main driver was to replace more polluting forms of domestic gas (coal gas).

➤ Mostly state government owned distributors developed distribution infrastructure in the cities of Perth, Melbourne, Sydney and Adelaide. In New South Wales, a private entity established under state legislation was given gas supply monopoly.

12

carbon  
market economics

## Yesterday: Commercial arrangements and regulation

---

- Long term (30+ year) contracts provide revenue certainty to (private) gas producers in Gippsland and Cooper Basins – justify investment in gas exploration and production
- Retail supply on regulated tariffs – focus on industry development rather than profit maximisation
- No explicit charges for pipeline access (resource and transport in bundled service/product)
- No competition in transport and little competition in commodity
- No formalised regulatory oversight of state-government owned service providers

13

carbon  
market economics

## Yesterday – Outcomes

---

**Relatively low market penetration:** Government distributors establish the domestic industry but despite abundant resources, gas only supplies 18% of national energy, and as low as 8% of New South Wales's energy - the biggest regional economy:

- Particularly low market penetration in manufacturing and construction except in Western Australia.
- High residential market penetration in Victoria (heating in winter).

Competition of gas against electricity (at point of use) distorted by government's pecuniary interest in electricity production and distribution.

Competition of gas against coal in electricity production resolved by government-owned electricity businesses generally in favour of coal (except where coal not available or clearly not competitive – South Australia and WA).

**Unproductive distribution:** City-gate prices 10% lower in Australia than in the US, but average sales prices 25% higher.

14

carbon  
market economics

## 1994 – 2010: The gradual transition towards competition: Overview

---

Policy shift from the late 1980s: reformist federal governments introduced micro-economic reforms (“National Competition Policy”) focussed on deregulation and privatisation. Electricity and gas major focus area. Council of Australian Governments (representing Australian Government and jurisdictions) resolved to:

- remove policy and regulatory impediments to competition in the natural gas sector;
- remove restrictions on interstate trade in natural gas;
- develop a nationally integrated and competitive natural gas market by establishing a national regulatory scheme for third party access to natural gas pipelines;
- require vertical separation (ring fencing) of transmission and distribution businesses from other related businesses.

Major structural, ownership and regulatory reforms followed:

- Privatisation;
- Wholesale market development;
- Deregulation (contestable supply);
- Third party access arrangements to pipeline infrastructure.

15

## Privatisation, wholesale market development and deregulation

---

### **Privatisation**

Distribution networks in Victoria, South Australia, Queensland and Tasmania were privatised;  
Gas retailers in Victoria and SA were privatised in early/late 1990s, Western Australia in 2000 and Queensland in 2007

Governments sold out of all major transmission pipelines.

### **Wholesale market development**

A compulsory, centrally settled and operated wholesale gas market was developed in Victoria;

Simpler, industry-owned and operated market arrangements were developed for NSW, Qld and SA

### **Deregulation**

Full retail contestability achieved in South Australia in 2001 (the first) and Queensland in 2007 (the last)

Despite full deregulation, state regulators (except in Victoria) still cap retail prices for residential consumers

16

## Third party pipeline access arrangements were developed to facilitate competition

---

Access arrangements developed to ensure unrestricted access to natural monopoly pipeline infrastructure, in order to promote upstream and downstream competition. National Gas Access Code developed in 1997. Establishes concept of "coverage" of natural gas transmission and distribution pipelines. "Covered" pipelines subject to price and service regulation by Australian Energy Regulator.

- Coverage can be sought by pipeline owner or any person. Pipeline developer can seek exemption from coverage.
- Federal Energy Minister decides whether to grant coverage, and can revoke coverage. Ministerial decisions reviewable by Australian Competition Tribunal.
- Coverage is essentially a form of cost-based price regulation.
- Price/service regulation entails specification of reference tariffs and services by the AER. Access arrangement (for covered pipeline) to specify at least one reference service and one reference tariff for that service.
- All distribution pipelines covered (regulated) but minority of transmission pipelines now covered.
- For uncovered pipelines, no obligation to provide access.

17

But third party access arrangements were significantly revised not long after

---

The 2004 Productivity Commission review concluded that costs of pipeline regulation often exceeded benefits. Therefore coverage only to be recommended if pipeline has "substantial" market power and hence coverage needed to promote competition in upstream or downstream gas markets.



"Light regulation" option introduced: AER approves non-price access terms but does not set price for access, although it can also arbitrate price and non-price access disputes.



Over time coverage of most existing (non-distribution) pipelines has been revoked and new pipelines are typically uncovered.

18

## Outcomes

**Market growth:** Growth rate (~ 5% per annum) consistent with growth before reform, persistently disappointed optimistic forecasts. Significant market growth only in Queensland where Queensland government established mandatory gas generation scheme to spur coal seam methane exploration.

**Retail competition:** Limited customer switching. While monopoly regional retailers have lost some market share, regional markets at best are duopolies

**Pipeline development:** Reasonably significant amount of new (private) pipeline development - Eastern Gas Pipeline (2000); SEAgas pipeline (2003); Queensland South Australia (QSN Link) (2009)

**Pipeline ownership:** Concentrated ownership of main transmission and distribution pipelines by small number of firms (APA, Envestra).

**Pipeline access:** Third party access has facilitated some basin-basin gas competition. On most pipelines, average shipping charges appear reasonable. But, persistent concern about low level of competition and delays in capacity expansion (including on covered pipelines).

**Wholesale competition:** Little evidence of active wholesale competition; gas production from conventional gas basins still dominated by single joint venture (joint marketing). Actively traded wholesale markets have not developed; no established futures or forward market; no transparent spot market (except in the compulsory Victorian market).

19

Why has the gradual deregulation of gas supply apparently delivered so little ?

**Upstream concentration:** Gas production (from the principal conventional gas basins – Cooper and Gippsland) is jointly marketed. The smaller Otway basin initially had several competing producers but has since rationalised. Coal seam methane (in Queensland) has a more diverse production base, but resource holders have limited aspiration to sell to the domestic market.

**Abundance of coal:** In many energy consumption (and energy production) applications coal has been more competitive than gas, at least before consideration of capital costs.

**Electricity deregulation:** Opening the electricity industry to competition, and privatising generation assets has led to life-extension and expansion of existing coal plant as private owners have delivered higher asset productivity. This has deferred the need for investment on high utilisation plant – where Combined Cycle Gas Turbine generation could have significantly increased gas demand.

20

## Tomorrow's challenges

---

- Impact of Liquefied Natural Gas (LNG) on domestic gas markets
- Impact of rising coal costs
- Impact of emission reduction policy
- Creation of short term trading markets
- Reforms to upstream joint marketing

21

carbon  
market economics

## The impact of LNG on domestic gas markets is significant but uncertain

---

Gas production for LNG export already accounts for 700 PJ/annum - 70% of Australian domestic gas production. This will soon double for plants under construction, and double again for plants currently proposed.

The impact of LNG export on domestic prices is actively discussed. The general assumption is that prices will rise. But it is far from obvious that this is the case:

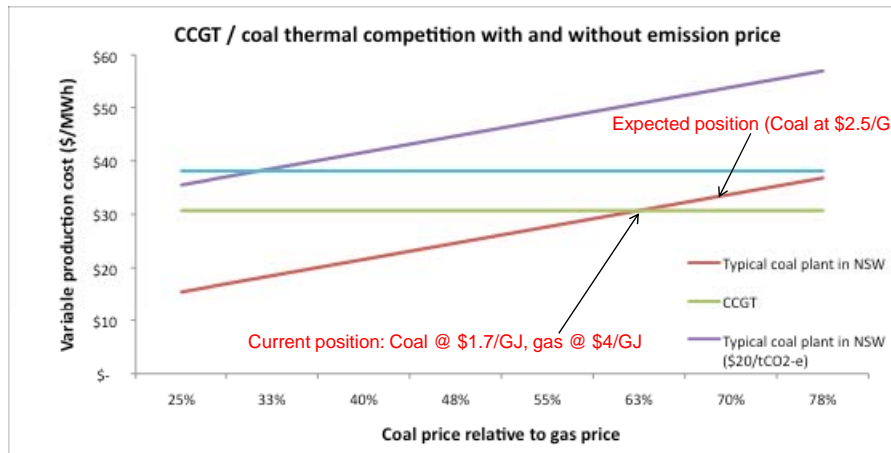
- Export price in the existing North West Shelf Joint Venture LNG contract with Guangdong Province is lower than typical domestic prices in Australia;
- Australia's gas reserves have risen sharply following further CSM exploration. Significant further increases are possible – LNG demand may not be high enough to cause significant scarcity rent;
- A competitive domestic market may result in price separation between Australia and international markets (not all gas is able to access international markets).

Jurisdictional governments in LNG-rich states (Qld and WA) have so far not intervened to protect domestic consumers from LNG-induced price impacts. But this may change.

22

carbon  
market economics

Rising coal prices means that CCGT is threatening coal generation (even without an emission price)



23

carbon market economics

Emission reduction policy is expected to drive a rapid growth in CCGT capacity, leading to expansion in gas production and pipeline infrastructure

Australia has had a long and difficult debate about greenhouse gas emission reduction. A \$20/tonne emission price is likely to make (CCGT) more competitive than 80% of the existing coal generation, and precipitate plant closure.



The rapid rise of Combined Cycle Gas Generation (CCGT) following an emission price is widely anticipated. Electricity producers have positioned themselves for the rise of gas generation. Most now actively encourage the Government to introduce an emission price – so that they can develop CCGT capacity.



Significant pipeline capacity and production development can be expected – particularly from CSM resources in Queensland and New South Wales

24

carbon market economics

Short term trading markets are being introduced to promote competition and price transparency

---

An industry-led committee has developed mandatory short-term ("spot") markets (except in Victoria where a mandatory market has been in place for a decade). The spot markets are meant to promote trade and make markets more transparent.



But, the spot markets are highly complex. Complexity and transaction costs, may result in higher, not lower, barriers to trade, strengthening the position of incumbents relative to new entrants.



The creation of spot markets is unlikely to have much impact on the weak competition attributable to very high upstream (producer) concentration

25

There is increasing pressure to reform upstream joint marketing arrangements

---

The Australian Government and competition authorities have so far continued to support joint marketing of gas reserves. The calculation has been that without joint marketing, there would have been less exploration and supply, and higher prices.



But gas penetration is low. Perhaps the competitiveness of coal explains this in part. But highly concentrated upstream production and resource ownership, may also play a role (cf. experience in Britain following gas and electricity market liberalisation).



Joint marketing (for the domestic market) may be increasingly unsustainable, if domestic prices rise significantly.

26

---

Bruce Mountain

[bruce.mountain@carbonmarkets.com.au](mailto:bruce.mountain@carbonmarkets.com.au)

0405 505 060

[www.carbonmarkets.com.au](http://www.carbonmarkets.com.au)

27

**carbon**  
**market**  **economics**