

# The future of natural gas in NSW, and implications for State and Local Government Net Zero strategies

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Presented at REIIF

# Gas, decarbonising NSW and Local Government

There is a price, market dynamic and supply-driven move away from the use of natural gas in NSW. This transition and the rise of EVs, and the need for carbon removal, create opportunities for NSW Local Government. LNG imports

## The loud narrative

- There is a gas crisis in NSW which was not caused in any way by the gas industry, available gas for domestic use is mysteriously declining
- Gas is a necessary and low emissions<sup>1</sup> transition fuel with a long term future need
- NSW needs new gas developments so it doesn't have to "import gas"
- LNG exports are not responsible for the current Eastern States gas shortage

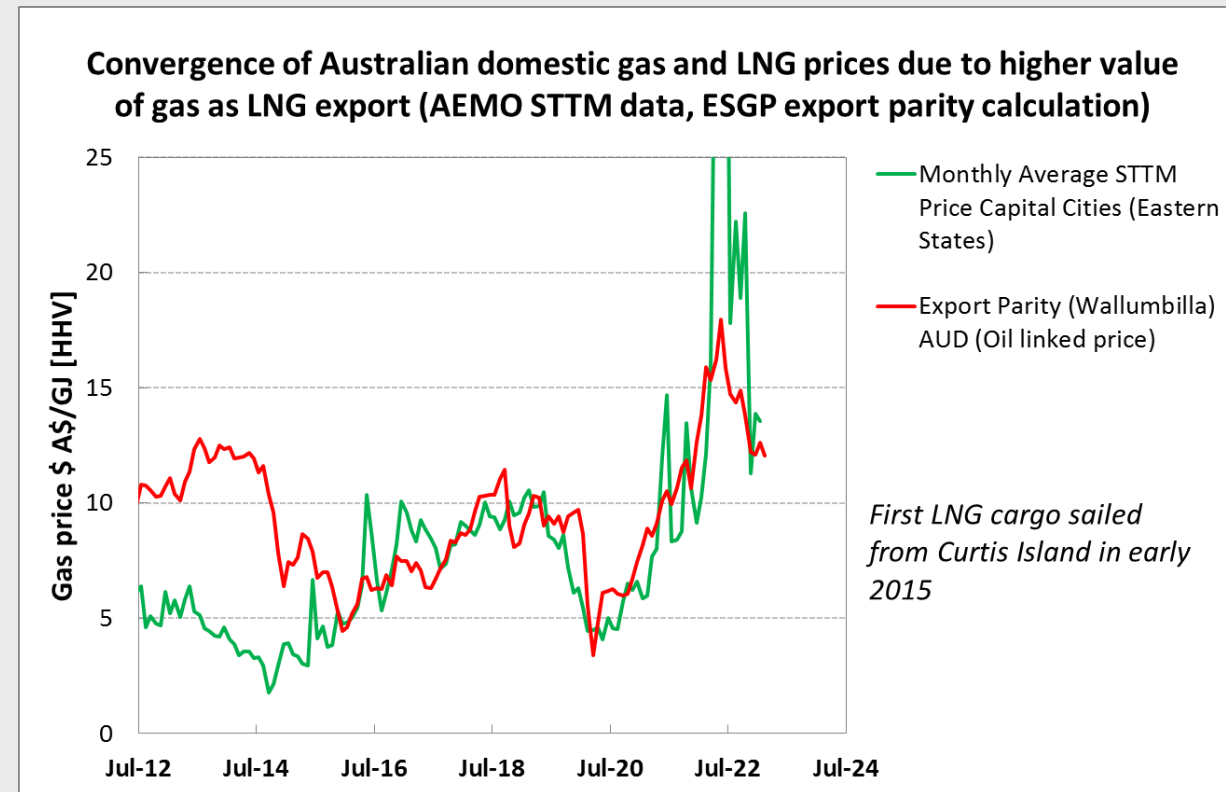
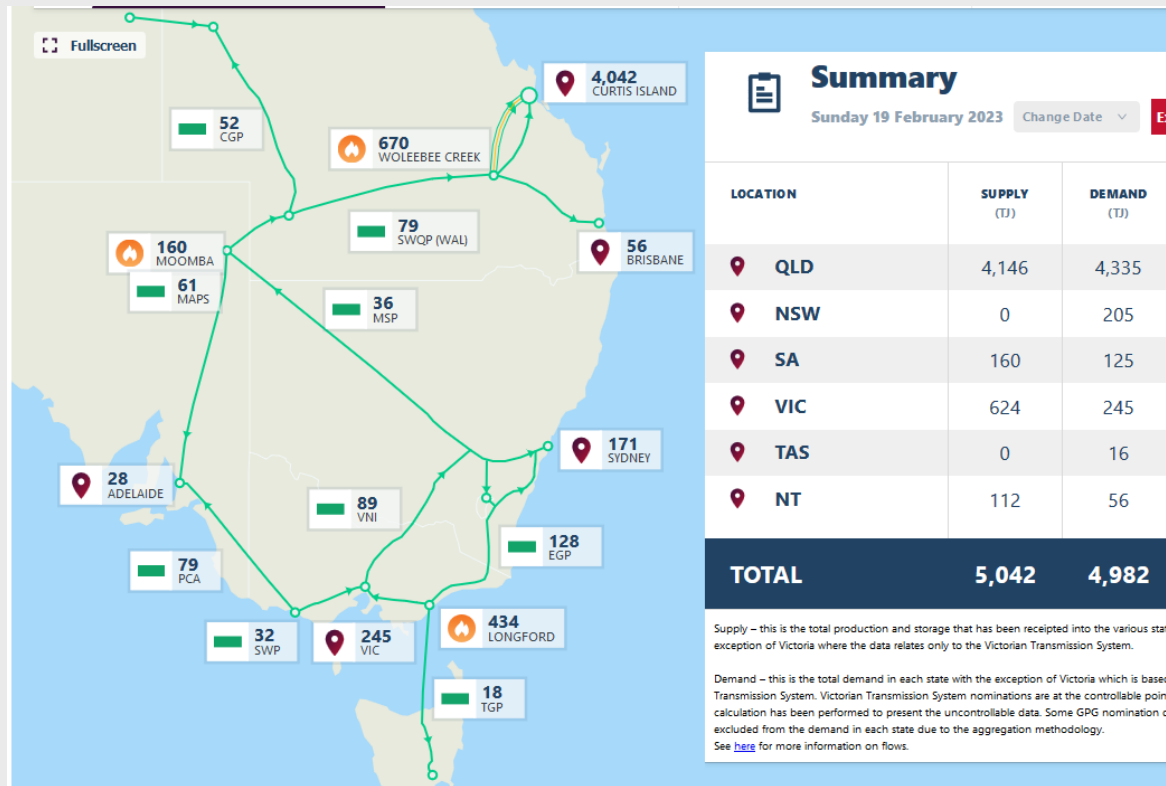
## The quiet reality

- Gas shortages and unreasonably high gas prices in NSW from 2024 onwards due to Qld LNG gas demand - caused by the gas industry
- Domestic NSW) gas production is not low-emissions
- NSW has always imported gas – additional imports ensure supply and cost competition
- Proposed gas developments in NSW (Narrabri) are high cost, high emissions, and cannot provide gas quickly or with the required sendout capacity flexibility
- **The quickest, lowest-emissions, most flexible and lowest gas price solution to the imminent critical NSW gas shortage is a tolling-based LNG import terminal accessing lower priced LNG from the US Gulf Coast, PNG and Western Australia**
- There will be a transition away from gas usage in NSW, and increased carbon removal projects, and State and Local Government can help achieve these aims

<sup>1</sup> This claim is not true for gas currently produced in Australia, and proposed developments, as the reservoir gas has a very proportion of CO<sub>2</sub>, which the gas industry has been simply venting into the atmosphere (36 million tonnes in 2021-2022)  
Source: Safeguard Emissions Data (CER)

# Understanding natural gas in Eastern Australia

85% of produced gas goes offshore as LNG. That includes gas from Bass Strait, Moomba and other sources of traditional NSW gas supply. Curtis Island LNG exports have now (and for the next two decades) linked the East Coast gas market to international LNG prices, which now set the floor<sup>1</sup> on contract and STTM gas prices in NSW and all Eastern States.

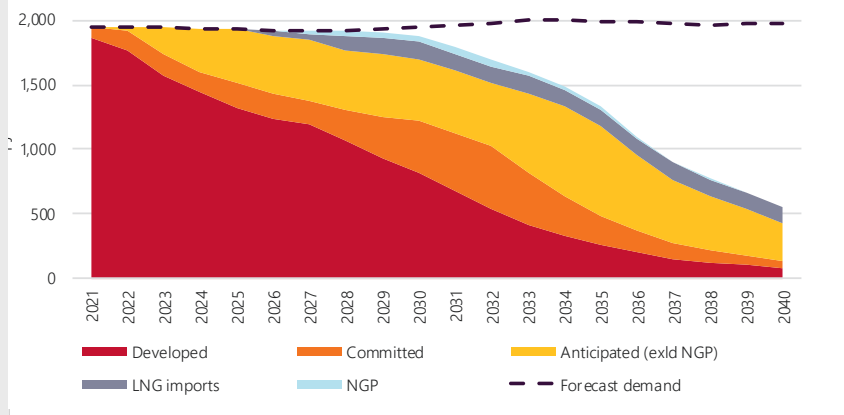


<sup>1</sup> See ACCC Gas Inquiry contract offer data vs. ACCC netback price data, ACCC Source: AEMO Gas Bulletin Board Interactive Map ; AEMP Gas Pipeline Map 2022

# East Coast Gas Market Price

Once a series of partially-full LNG facilities were built, the east coast gas market was forever linked to the international LNG price (linked to oil price)

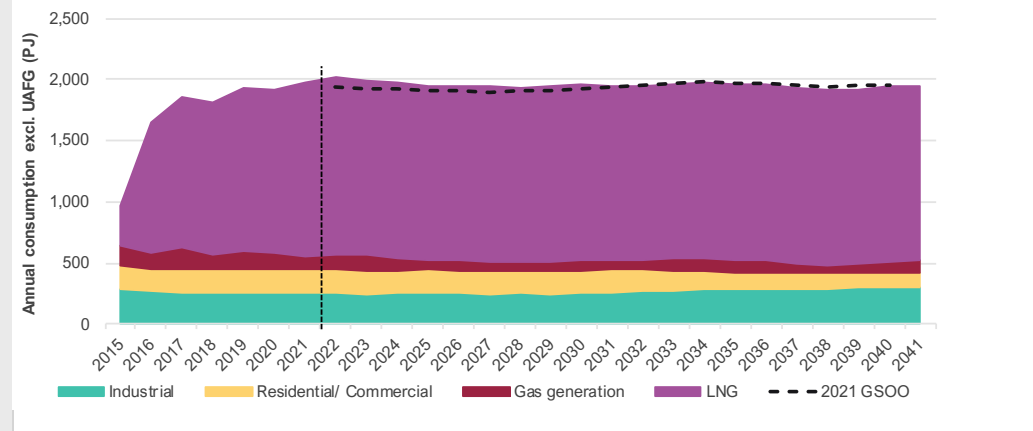
Figure 2 - Projected eastern and south-eastern Australia gas production (including export LNG), Central scenario, existing, committed, and anticipated developments, 2021-40 (PJ); AEMO GSOO 2021



Gas consumers in NSW, Victoria and Queensland are reluctant to accept the reality of this, and continue to hope that east coast gas prices can be delinked from oil price (LNG price); this is magical thinking

Realistic projections of gas production (above) reveal that the “international gas buyer” will always set the east coast gas price, as there is no excess gas above LNG+domestic demand

Figure 6 - Actual and forecast total annual gas consumption, all sectors, Progressive Change scenario, 2015-41 (PJ) (AEMO GSOO 2022)



AEMO’s forecasts also indicate that after 2028, that there will be insufficient gas for LNG exports (Figure 2 and Figure 6 above).

- This inconsistency is startling
- This means even greater domestic gas shortages and higher prices

The only certain and low-cost solution to domestic gas supply is therefore multiple import gas terminals

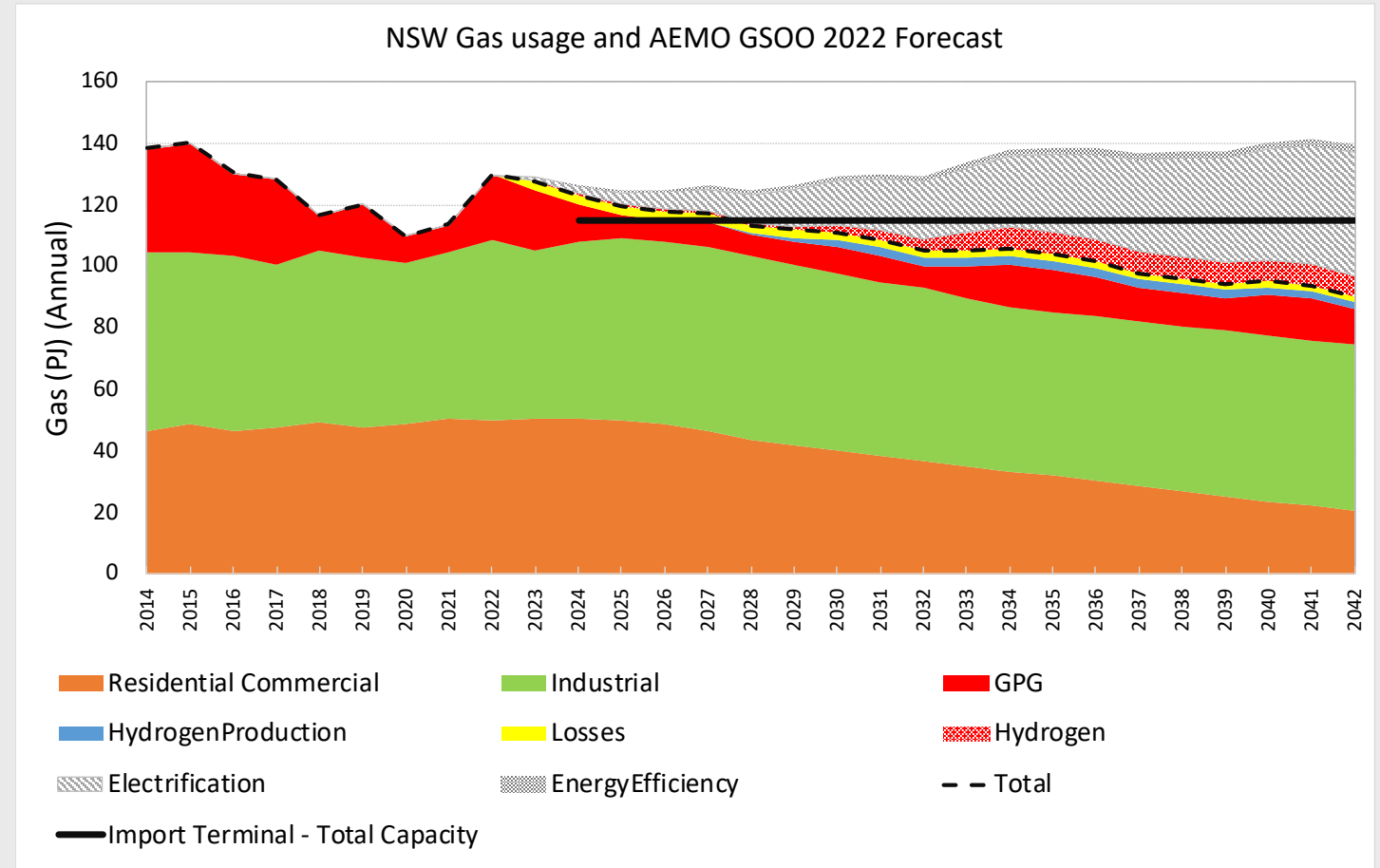
# Recent history and projections

Eastern States and NSW Gas usage is declining and will continue to decline, albeit at a slower rate than supply is declining. An import terminal can supply all NSW's gas requirements.

It is important to note that NSW is part of an integrated East Coast Gas Market (SA, Vic, NSW and Queensland) and the entire market needs to be considered for volume forecast analysis, particularly the SA/Vic/NSW market

In terms of NSW alone, there is a large demand destruction forecast in residential use, with a move to electrification for hot water and heating. This is only cost and emission effective if tied to user PV generation with battery storage

In terms of grid generation, the previous cost-competitive nature of gas GPG vs PHES and batteries has been eroded by post-Ukraine high gas prices in the LNG markets and therefore in Australia



<sup>1</sup> Gas generation increase in 2022 appears linked to generation issues at Liddell power station, now retired  
Source: Department of Industry, Science, Energy and Resources, Australian Energy Statistics, Table O, September 2022 ; [http://forecasting.aemo.com.au/Gas/Annual\\_Consumption/Total](http://forecasting.aemo.com.au/Gas/Annual_Consumption/Total) ; Orchestrated Step Change Scenario

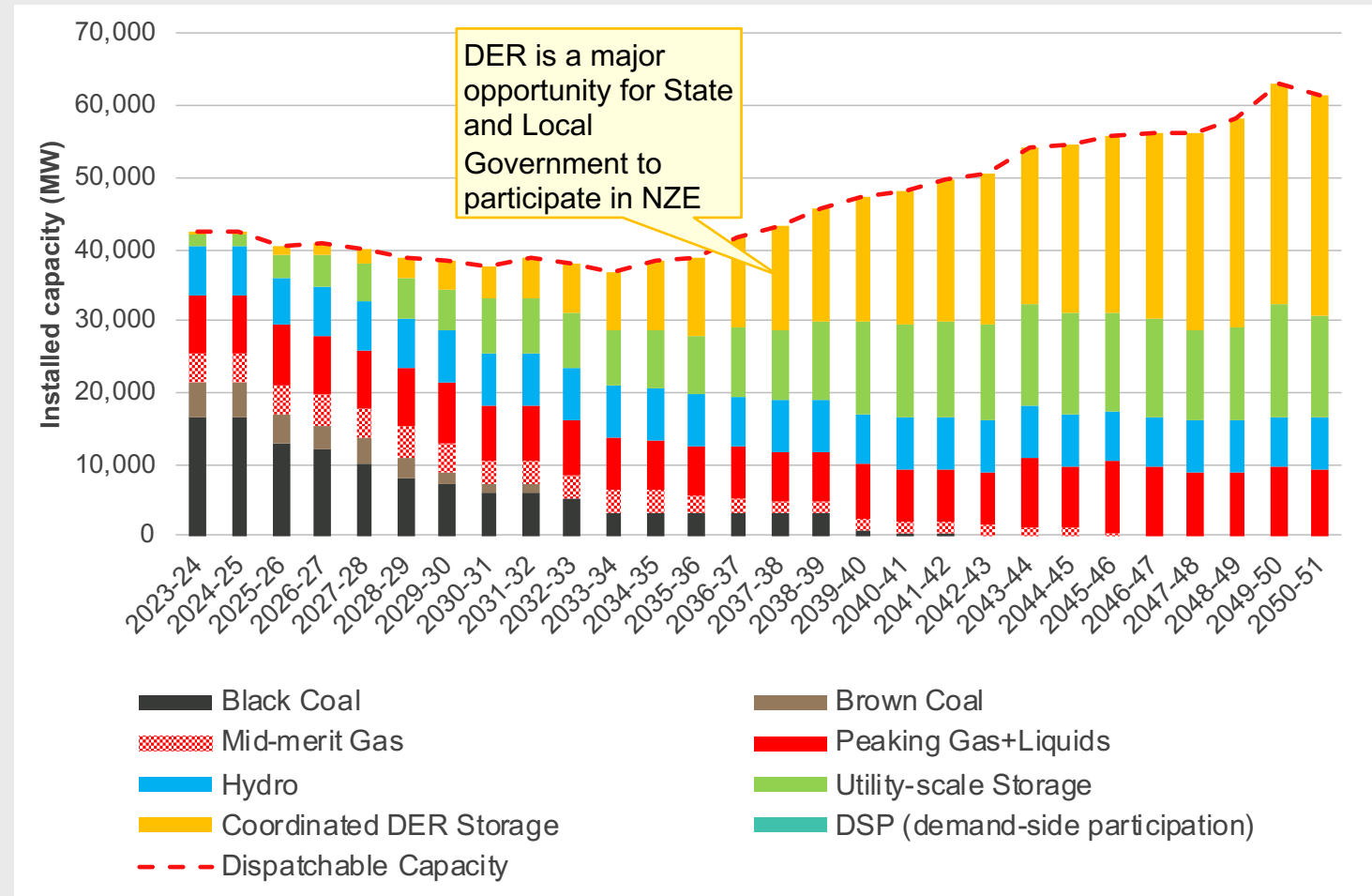
# AEMO's clean dispatchable energy sources are growing

There appear to be legacy policy-maker 'attachments' to gas as a firming fuel which do not take into account current and future-expected high gas prices

AEMO forecasts steady GPG (gas powered generation) use in the Eastern States to 2050, while at the same time showing forecasts that have orders of magnitude more system peaking from PHEs and batteries and DER<sup>1</sup> storage:

- Rooftop PV and solar
- Small utility scale PV+BESS
- Utility scale battery / PHEs
- VPPs
- EVs

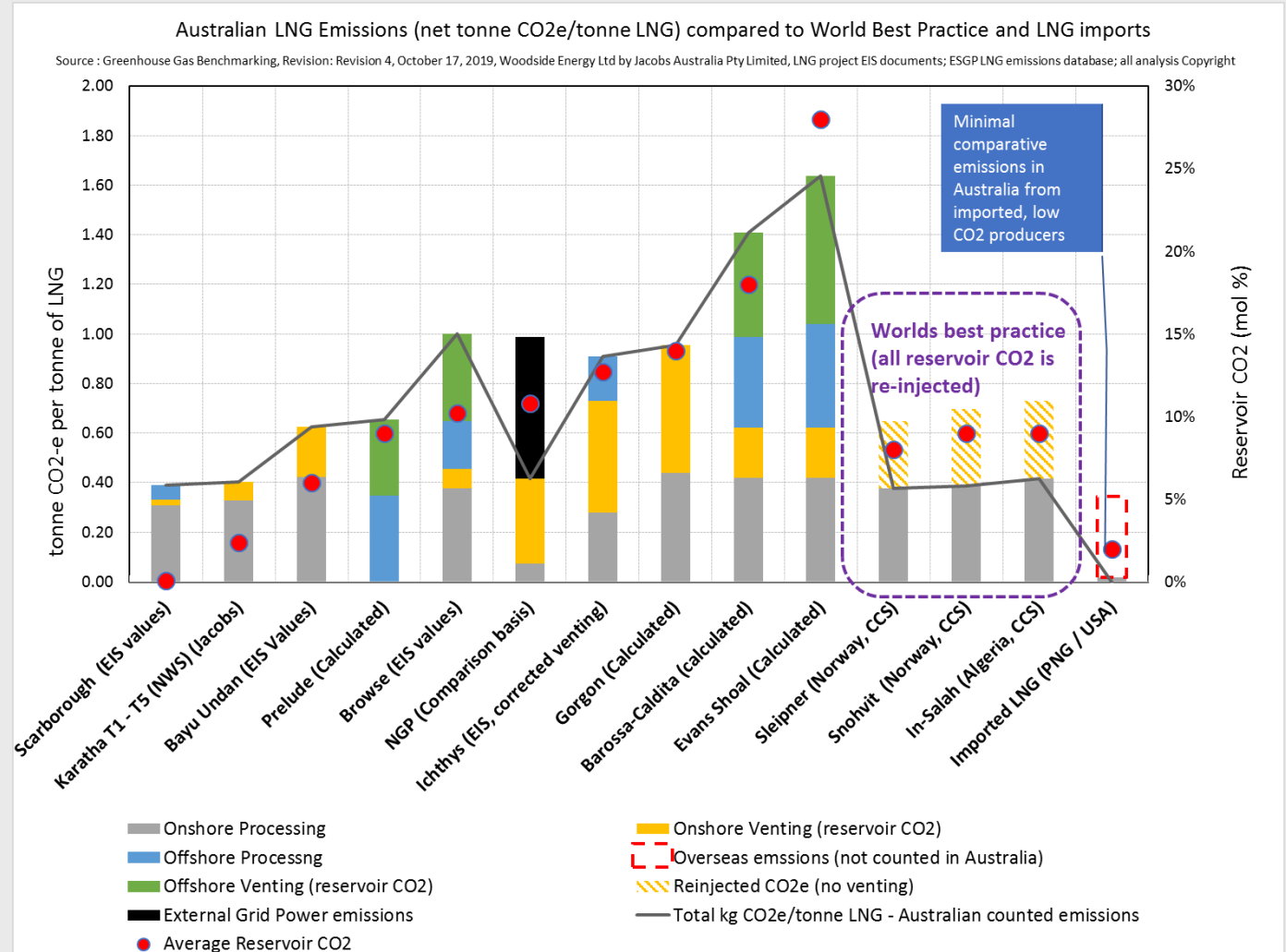
ESGP expects that GPG for firming generation will actually diminish slowly over time as high gas prices have made gas "firming" uncompetitive with storage



<sup>1</sup> Distributed Energy Resources - includes small-scale embedded generation such as residential and commercial rooftop PV systems (less than 100 kilowatts [kW]), PV non-scheduled generation (NSG, up to 30 megawatts [MW]), distributed battery storage, VPPs and EVs. Source: AEMO 2022 Final ISP results workbook - Step Change - Updated Inputs (<https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp>), Orchestrated Step Change

# New Australian gas developments are high emitters

- All the low-CO<sub>2</sub> gas in Australia has now been produced and there are now major increases in the produced CO<sub>2</sub> content of existing and planned gas developments and production centres
- Domestic gas production is responsible for major “vented” CO<sub>2</sub> (LNG facilities emitted 36 million tonnes of CO<sub>2</sub> in 2022)
- Moomba and Longford are currently producing gas at 20%<sup>1</sup> and 13%<sup>2</sup> reservoir CO<sub>2</sub> respectively
- **Australian domestically produced gas is NOT “low emissions”**
- **Imported LNG is the lowest emission option**



<sup>1</sup> Based on process calculations to match 2,175,400 tonnes of Moomba emissions in Safeguard data 2021-2022 and net Production of 85.666 PJ 2021-2022; <sup>2</sup> CSIRO Report Report Number: EP155211, Prepared for Greg Wong, Geodynamics Ltd  
Source: ESGP Analysis and correction of Greenhouse Gas Benchmarking, Revision: Revision 4, October 17, 2019, Woodside Energy Ltd by Jacobs Australia Pty Limited; LNG project EIS documents; ESGP LNG emissions database; all analysis Copyright



# AEMO forecasts - corrected for realistic timing

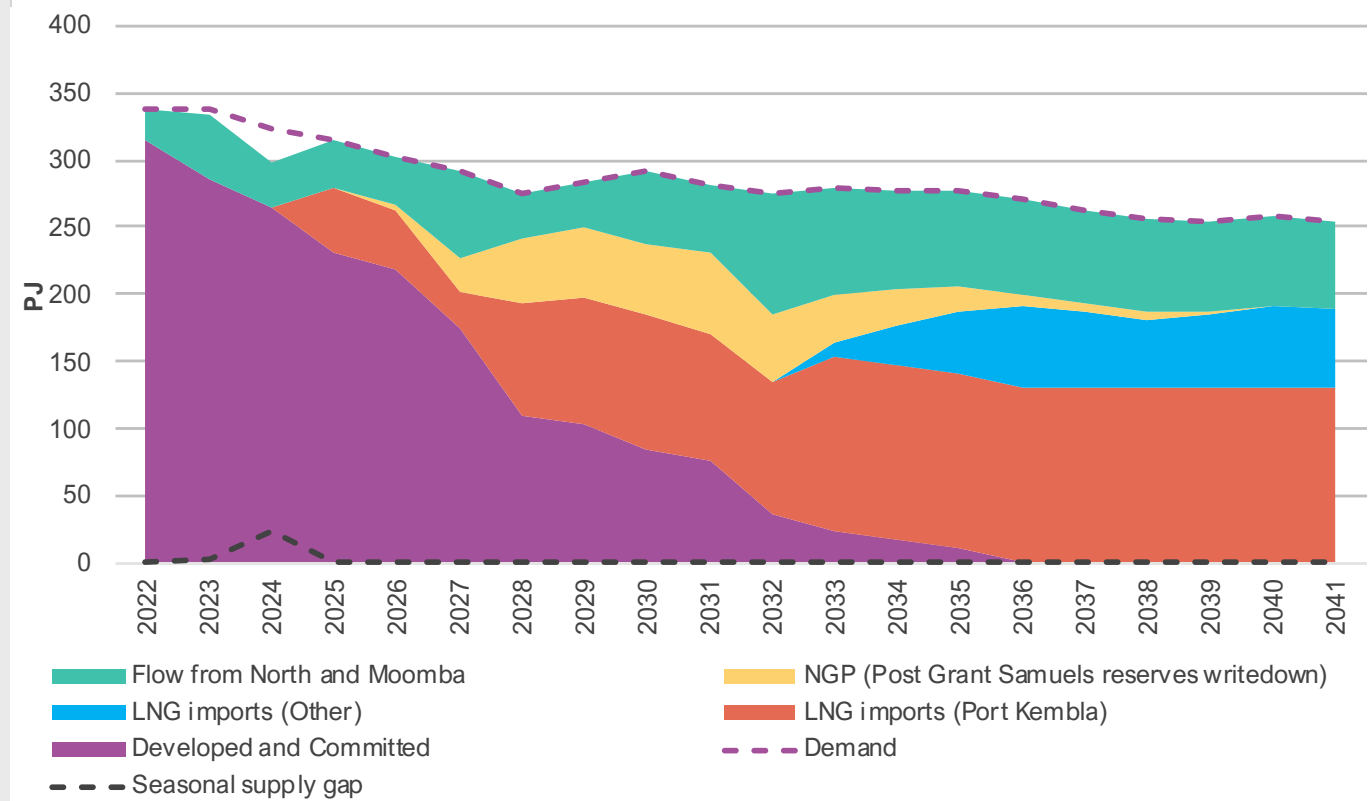
2024 will be massively short gas in Eastern Australia, so AEMO forecasts have been retimed by ESGP to bring an LNG import terminal forward to 2025

AEMO plots have been recut to show a more reasonable start-up date of 2025 for the Port Kembla import terminal  
NGP production, has been delayed until 2026

- The NGP is yet to establish any pipeline to transport gas
- Phase 1 (additional appraisal) with additional wells has not been carried out
- The cost/GJ to develop the NGP has increased considerably with the reduction in reserves<sup>1</sup>

A second LNG import terminal is required to meet long-term South-Eastern states' gas needs, this is likely to be Venice Energy in SA; this can be advanced to 2026 to meet gas needs

Figure 39 - Projected annual adequacy in south-eastern regions, *Step Change* scenario, with existing, committed, and anticipated developments, 2022-41 (PJ); import retimed to meet shortfall, NGP timing corrected)



<sup>1</sup> Santos has written off the acquisition cost for Eastern Star gas, and in 2022 an Independent certification of recoverable volumes significantly reduced the expected NGP volume to around 400 PJ.  
Source: <https://aemo.com.au/energy-systems/gas/gas-forecasting-and-planning/gas-statement-of-opportunities-gsoo>. (2022 ; analogous plots not provided in GSOO 2023)



# Floating Storage and Regasification Units (FSRU)

Floating Storage and Regasification Units are: fast to deploy for gas supply, suitable for existing harbours, have minimal associated emissions<sup>1</sup> and are widely deployed around the world

All advanced market economies now have FSRU import and export terminals, as they provide the necessary “close to consumer” supply and avoid pipeline costs, particularly relevant in Australia

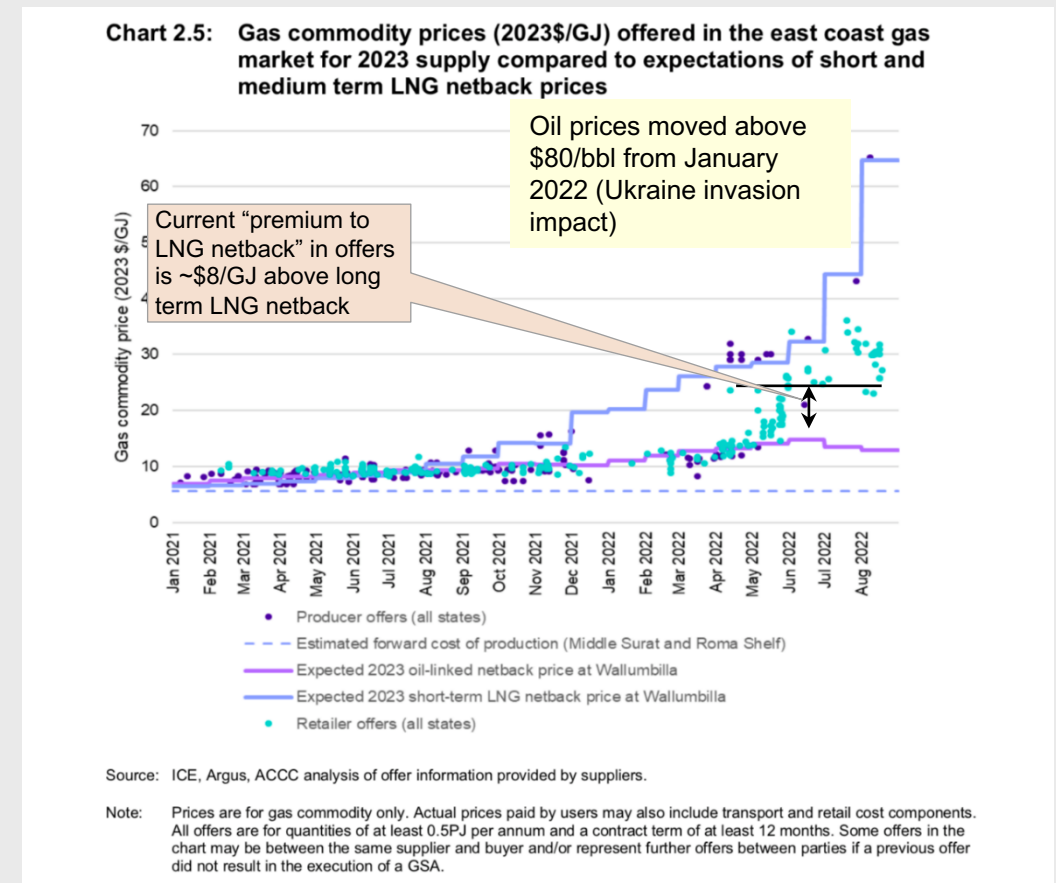
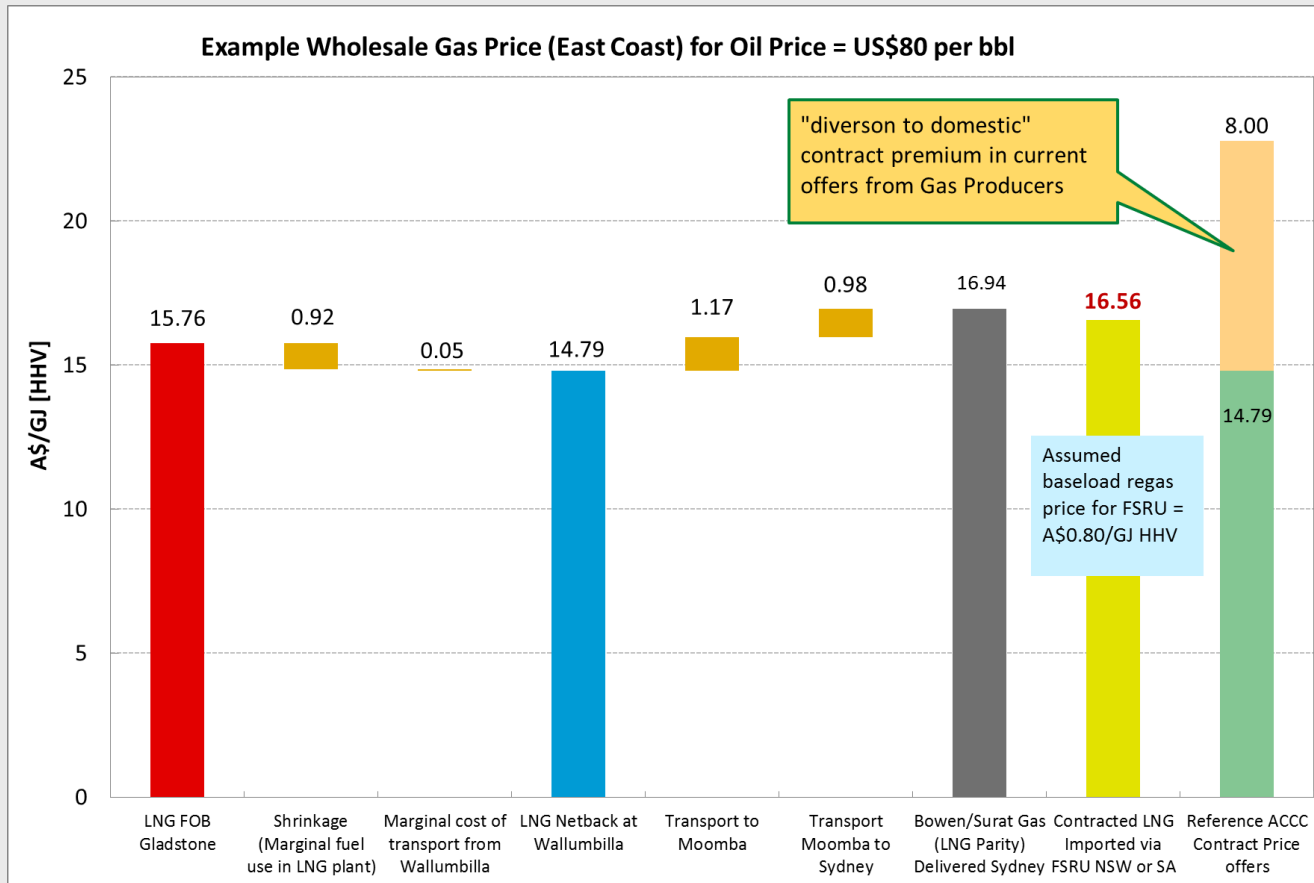
An FSRU import terminal at Port Kembla can help with NSW seasonal gas supply needs at a lower cost than APA (pipeline) storage and Iona gas storage in Victoria



- The key components of an FSRU LNG import facility include:
- 1) LNG carrier vessels (for cargo delivery)
  - 2) A floating storage and regasification unit (FSRU), [often a converted LNG carrier vessel]
  - 3) Associated berth and wharf facilities including the landside offloading facilities
  - 4) A pipeline to transfer gas to the onshore gas network

# What price can an FSRU deliver gas into NSW?

An FSRU LNG import terminal with long term contracts could be expected to provide long-term base load gas to large customers at a price (cost) at least \$1 - \$6 / GJ lower than gas producers may be expected to offer NSW customers in contracts<sup>1</sup>



<sup>1</sup> Based on comprehensive economic modelling of an LNG import terminal at Port Kembla. Economics can be made available under a relevant NDA. Source: ACCC Gas Inquiry, 2017 - 2030, Interim report, January 2023

Market interventions at Federal level<sup>1</sup> are a band-aid fix; tolling-based gas from an LNG import terminal is the quickest, low emissions, most flexible and lowest cost solution to a declining and uncertain future need for gas in NSW

- NGP reserves (reduced by AEMO to 400 PJ) are neither necessary or sufficient for the NSW market
- **LNG import terminals can easily provide gas supply at a lower price than domestic gas sources, sooner, and in larger volumes and for a longer time with less emissions**
- LNG imports would reduce NSW emissions by 1.25 million - 2.0 million tonnes CO<sub>2</sub>e each year compared to other domestic sources
- LNG imports provide certainty of supply and high send-out flexibility
- Other domestic sources can be developed if and when they can compete on price with imported LNG gas prices, however no further gas developments are necessary with two import terminals (PKIT and South Australia) ; the Narrabri Gas Project is simply not needed in the short term
- As LNG imports into SA/Vic/NSW gas will free up additional producer gas exports from QLD, there are no BOP deficit issues from an import terminal

<sup>1</sup> We do NOT see the Federal Government Price Cap being effective over the longer term as LNG exporters have binding contracts to fulfil which will result in a shortage of domestic gas volume at any price  
Source: <https://aemo.com.au/energy-systems/gas/gas-forecasting-and-planning/gas-statement-of-opportunities-gsoo> ; retimed for more realistic import and other development start date timing

## State and Local Government is well placed to support a transition to NZE

### Context

- The world requires a phasing out of fossil fuels to prevent catastrophic warming
- Recent major price increases for gas, coal and oil are hastening this process
- **NSW gas use will decline as part of a NZE transition**
- Australia has land and sunshine, ideal for renewable PV generation, which can be cheaply stored in battery/PHES systems without the need for gas firming
- EVs charged with this renewable electricity can help to reduce another major source of Australian emissions (road transport) - but regional charging points are needed [range anxiety]

### Solutions

- **Local Governments have access to suitable land and facilities** for both PV generation and for carbon removal projects (high quality forestry projects)
- **High quality carbon offset (tree planting) projects** can leverage off available land areas, and provide necessary carbon removals as part of NZE
- **Council facilities** (workshops, buildings, car parks) can be utilised to provide high quality DER projects
  - Reduce State and Local Government electricity emissions from grid electricity
  - Provide EV charging for local businesses, council vehicles and “range anxious” visitors / travellers
  - **High emissions domestic gas projects should not proceed to allow NSW to meet its carbon goals**

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discussion

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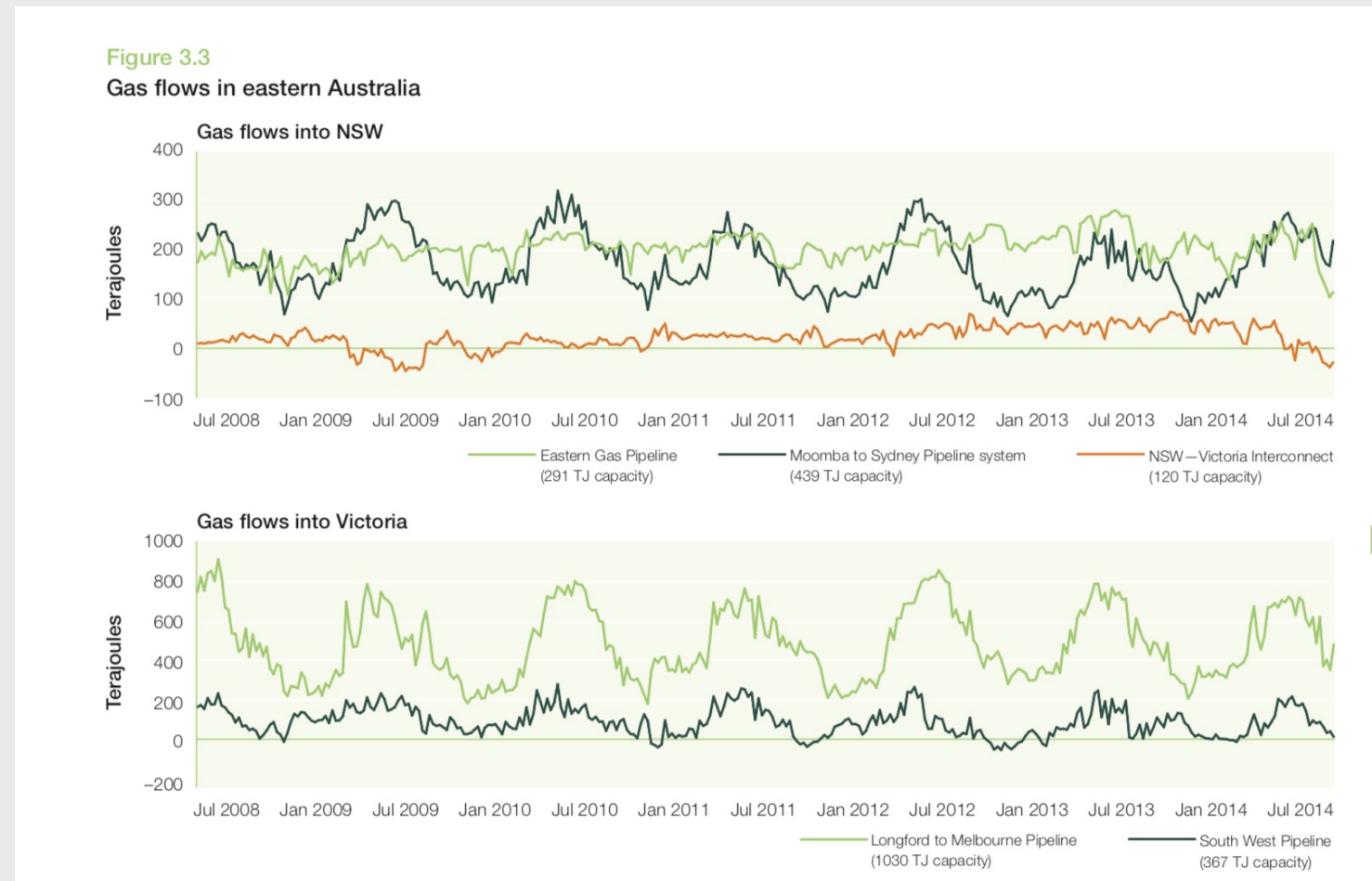
# LNG import : volume certainty and flexibility for NSW

An FSRU import terminal at Port Kembla can help with NSW seasonal gas supply needs at a lower cost than APA (pipeline) storage and Iona<sup>1</sup> gas storage in Victoria

NSW seasonal gas variation is seen in a range of 100 - 300 TJ/day (lower in summer, higher in winter)

Meeting this swing is currently a high-cost exercise, as it relies on limited existing storage in the pipeline network and use of the Iona gas storage facility

An LNG import terminal can meet this swing at much lower cost to consumers with a high send-out capacity swing factor



<sup>1</sup> Iona sale transaction analysis implies A\$3.00-6.00/GJ gas price premium for dispatch over base demand periods; range is due to AEMO dispatch and storage volume inconsistencies (ESGP analysis)  
Source: State of the Energy Market 2014, Australian Energy Regulator

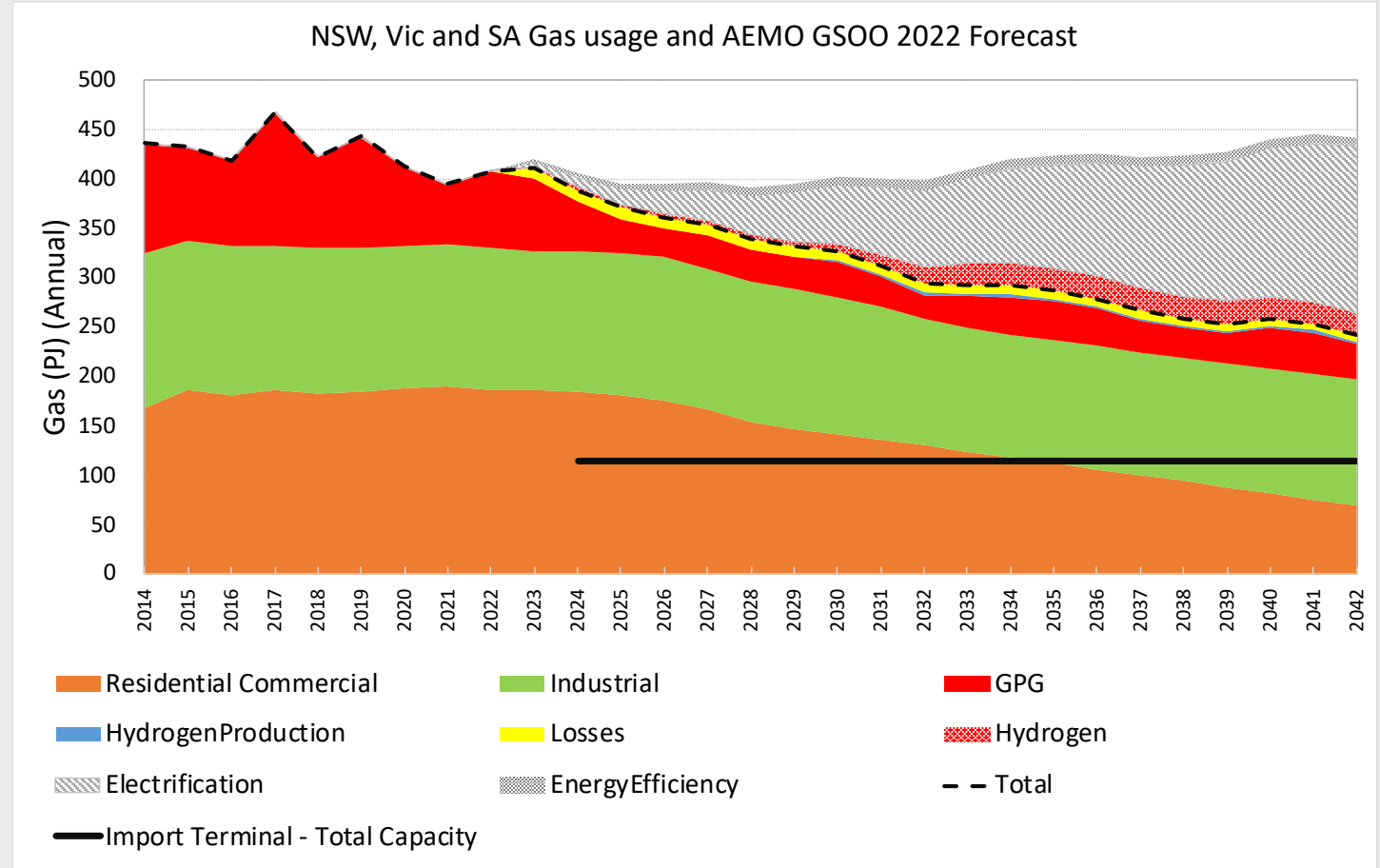
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