

# What is the role of gas in the net zero transition?

An Australian perspective

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27<sup>th</sup> February 2024



# Contents

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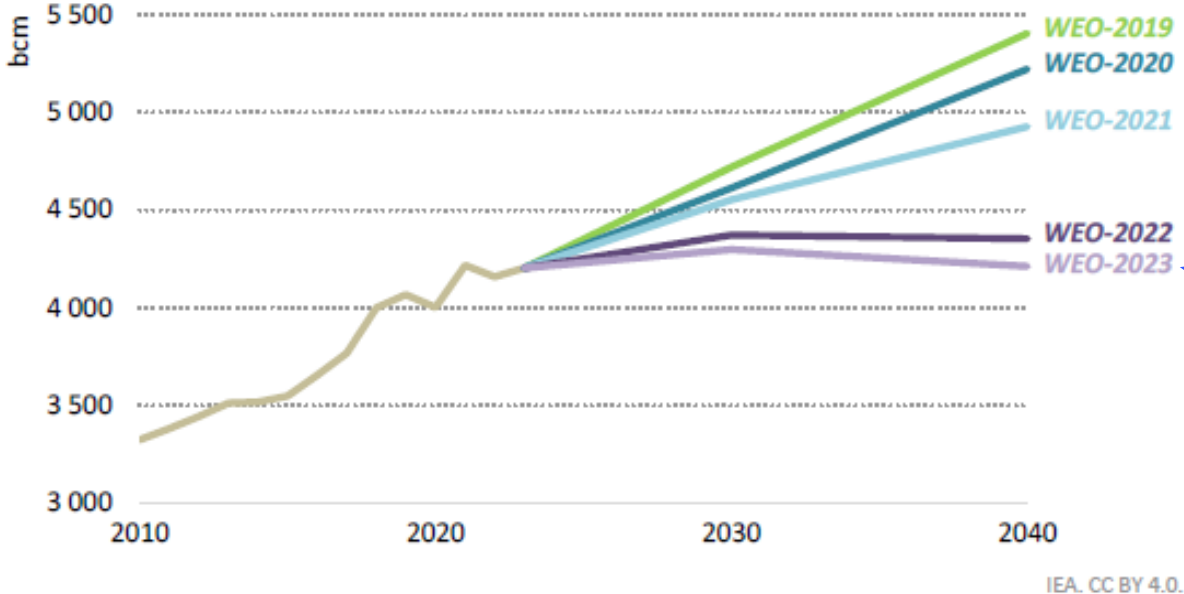
Global trends and context



The opportunity to reduce gas demand in Australia

# 1 Global trends and context

# Growing evidence gas has a very limited role in a decarbonising world



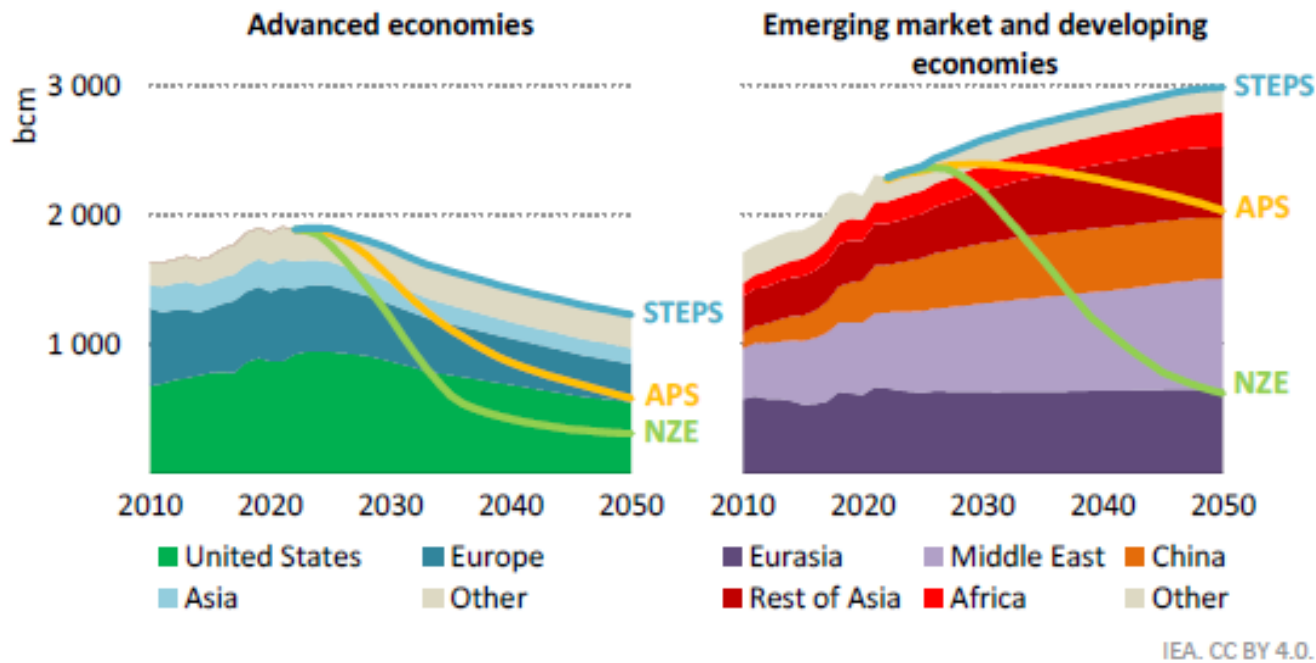
The IEA predicts that gas use will peak around 2030 even in its most conservative scenario (2.4°C aligned)

Upward revisions to renewables have chipped away at long-term natural gas projections, but the sharpest reduction came in 2022 following the global energy crisis

IEA. CC BY 4.0.

Source: IEA, [World Energy Outlook 2023](#)

# Under announced pledges, gas demand reduces even in emerging markets



Natural gas demand declines in advanced economies in each scenario; in emerging market and developing economies the difference between scenario outcomes is larger

## Reducing LNG demand in:

### Japan/Korea

- LNG demand already falling materially
- Shifting to nuclear and renewables

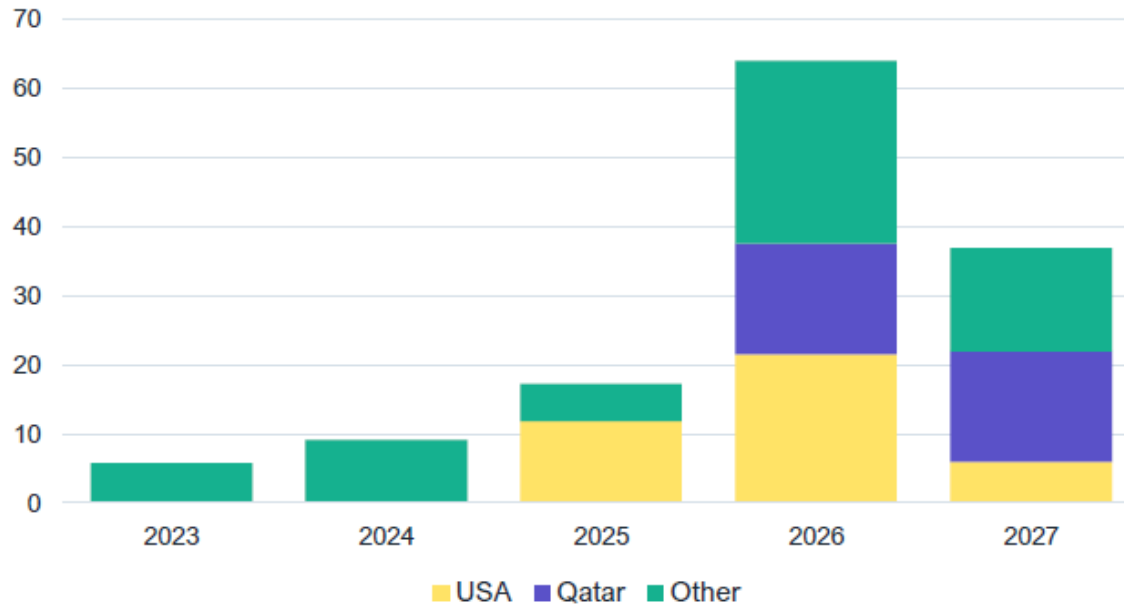
### Emerging Asia

- Focus on domestic/pipeline gas
- Long LNG-to-power timelines
- Accelerated renewables
- High cost for utilities
- Low reliability

Source: IEA, [World Energy Outlook 2023](#); IEEFA analysis

# An LNG supply glut is coming this decade

Figure 1: Forecasted Liquefaction Capacity Additions (mtpa) 2023-27



*Projects that have started construction or taken FID =*

**Nearly 50% of today's global LNG supply**

The US pause on LNG approvals is for additional developments

Source: IEEFA estimates from S&P Global Commodity Insights, International Gas Union, news reports and company announcements.

Source: IEEFA, [Global LNG outlook 2023-27](#); IEA, [World Energy Outlook 2023](#)

# There is no space for new developments under the Paris agreement

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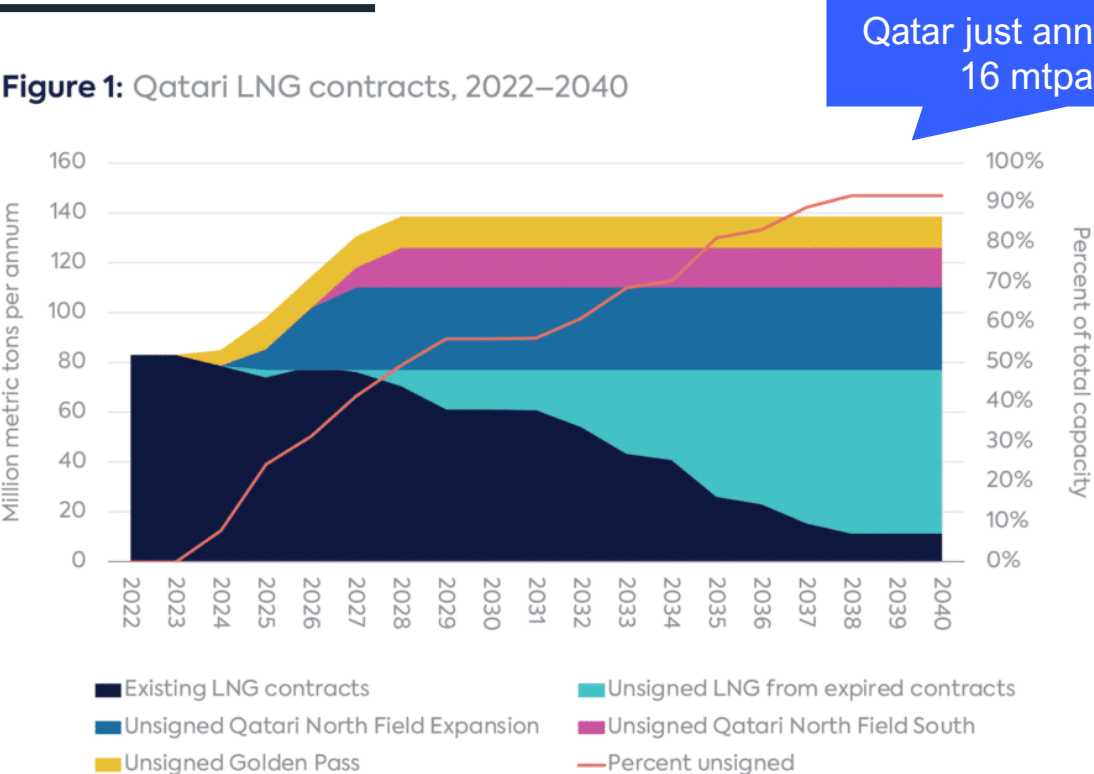
## IEA: Locked in oil and gas investment vs gas demand

- STEPS (2.4°C): **Sufficient**
- APS (1.7°C): **Significantly higher** than needed
- NZE (1.5°C): **Double** what is needed

Source: IEA, [World Energy Outlook 2023](#)

# This will coincide with a flooding of uncontracted LNG from low-cost Qatar

Figure 1: Qatari LNG contracts, 2022–2040



Contracts are also less certain

- LNG portfolio players make up about half of LNG contracts
- Take risky long-term positions with greater spot market exposure

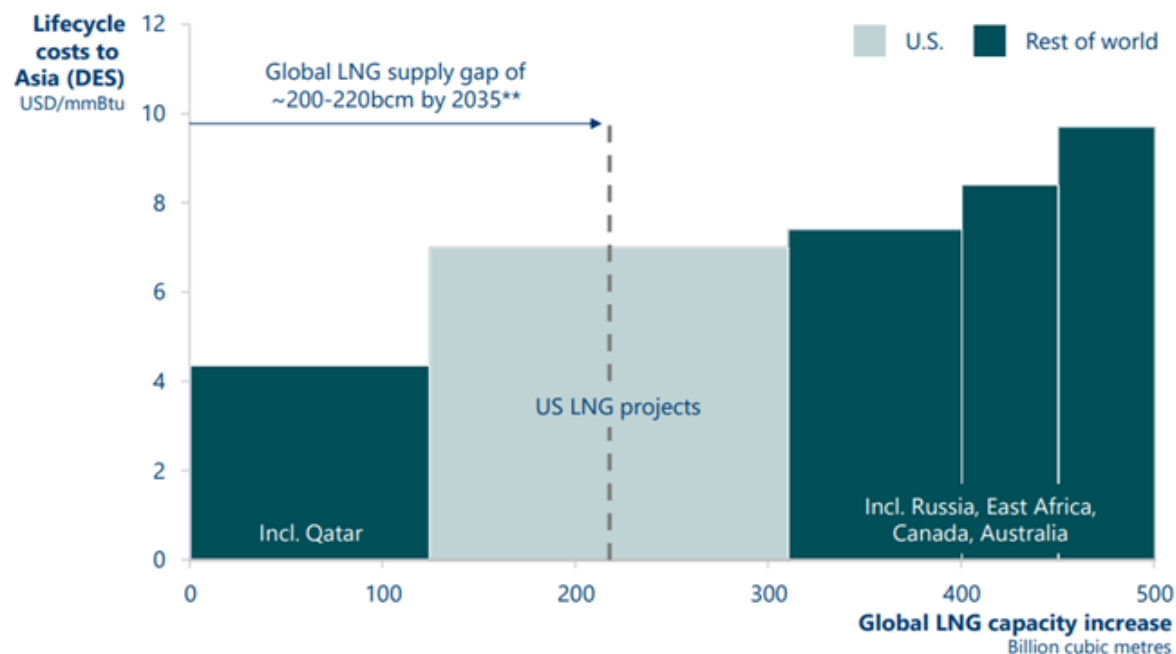
Source: International Group of Liquefied Natural Gas Importers

Source: Columbia Center on Global Energy Policy. [Qatar's Contract Quandary](#). 26 April 2023; IEEFA analysis



# Australia unlikely to be a competitive supplier of LNG in the future market

GLOBAL LNG COST CURVE OF THE FUTURE\*



\*Includes only pre-FID projects; Based on nameplate capacity halved in year one of operations and x 95% thereafter.

\*\*Based on expected demand minus available post-FID and existing LNG capacity in 2035 (reference case +/-5%).

Source: Port Jackson Partners. [Developing a robust domestic gas price marker. Chemistry Australia submission \(attachment\) to ACCC LNG netback price series review.](#)

# High CO<sub>2</sub> intensity and low reliability/high cost of CCS add to Australia's challenges

## Carbon Capture and Storage (CCS) projects' poor report card

Project	Capacity (MtCO <sub>2</sub> p.a.)	Performance
<b>Natural Gas processing</b>		
1986 Shute Creek	7	Lifetime <b>under-performance</b> of 36%
1996 Sleipner	0.9	Performing close to the capture capacity
2004 In Salah	1.1	<b>Failed</b> after 7 years of operation
2007 Snøhvit	0.7	Performing close to the capture capacity
2019 Gorgon	4	Lifetime <b>under-performance</b> of ~50%
<b>Industrial sector</b>		
2000 Great Plains	3	Lifetime <b>under-performance</b> of 20-30%
2013 Coffeyville	0.9	No public data was found on the lifetime performance.
2015 Quest	1.1	Performing close to the capture capacity
2016 Abu Dhabi	0.8	No public data was found on the lifetime performance.
2017 Illinois Industrial (IL-CCS)	1	Lifetime <b>under-performance</b> of 45-50%
<b>Power sector</b>		
2014 Kemper	3	<b>Failed</b> to be started
2014 Boundary Dam	1	Lifetime <b>under-performance</b> of ~50%
2017 Petra Nova	1.4	<b>Suspended</b> after 4 years of operation

### Two successful projects in Norway:

- **Sleipner:** CO<sub>2</sub> migrated in mass to unknown 9<sup>th</sup> layer
- **Snøhvit:** Had 18 months instead of 18 years capacity
- Demonstrate **material ongoing risks**

### Gorgon:

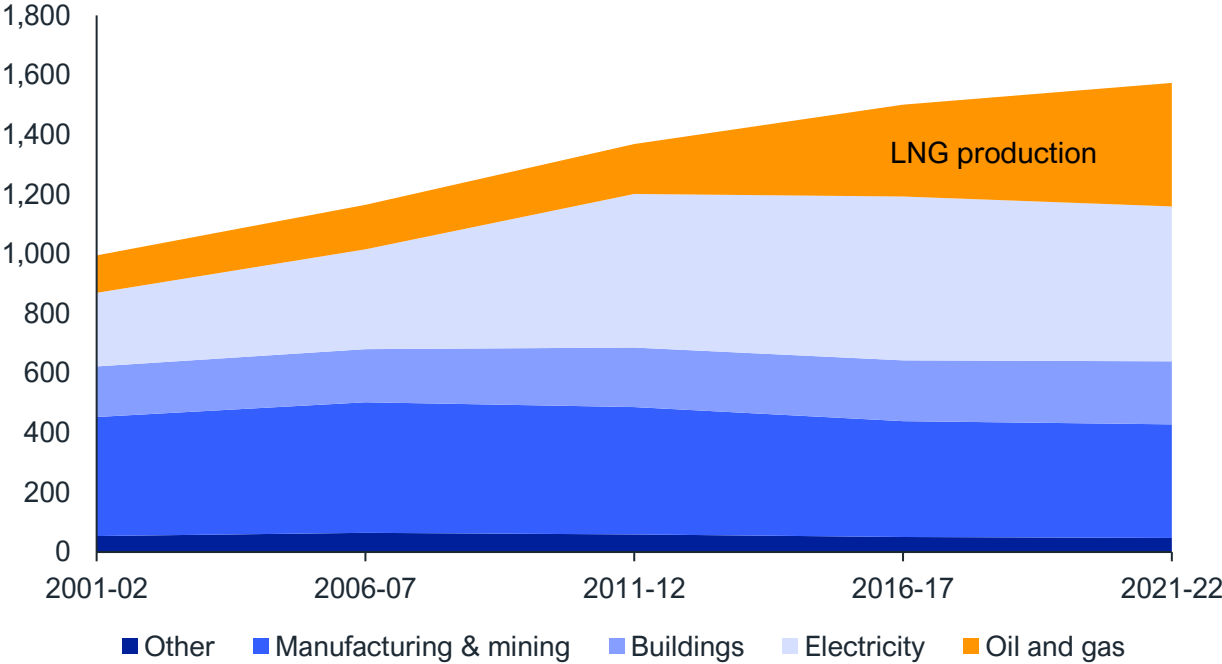
- **Underperformed by ~50%** its targets for the first 5 years
- **Injected just 34%** of 5 MtCO<sub>2</sub> it captured in FY2022-23
- **Cost >A\$3 billion** since it started

Source: IEEFA, [Carbon Capture and Storage factsheet](#)

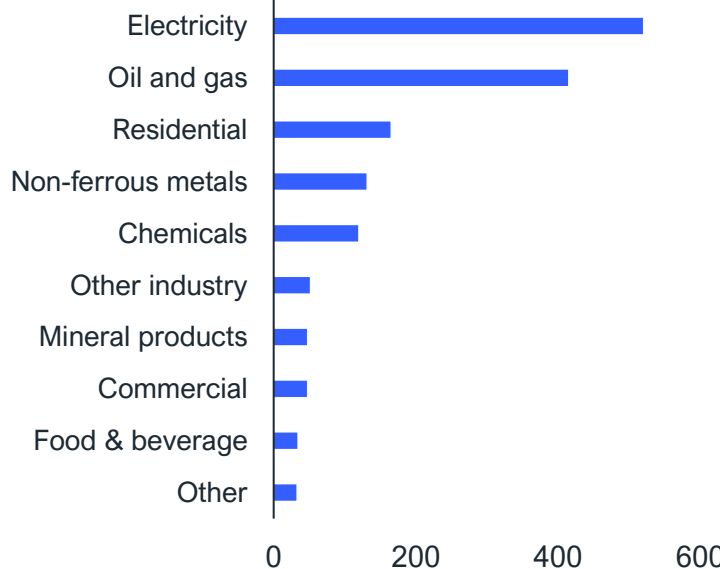
# The opportunity to reduce gas demand in Australia

# Outside LNG, gas use has already started declining

Australian gas use by sector, PJ



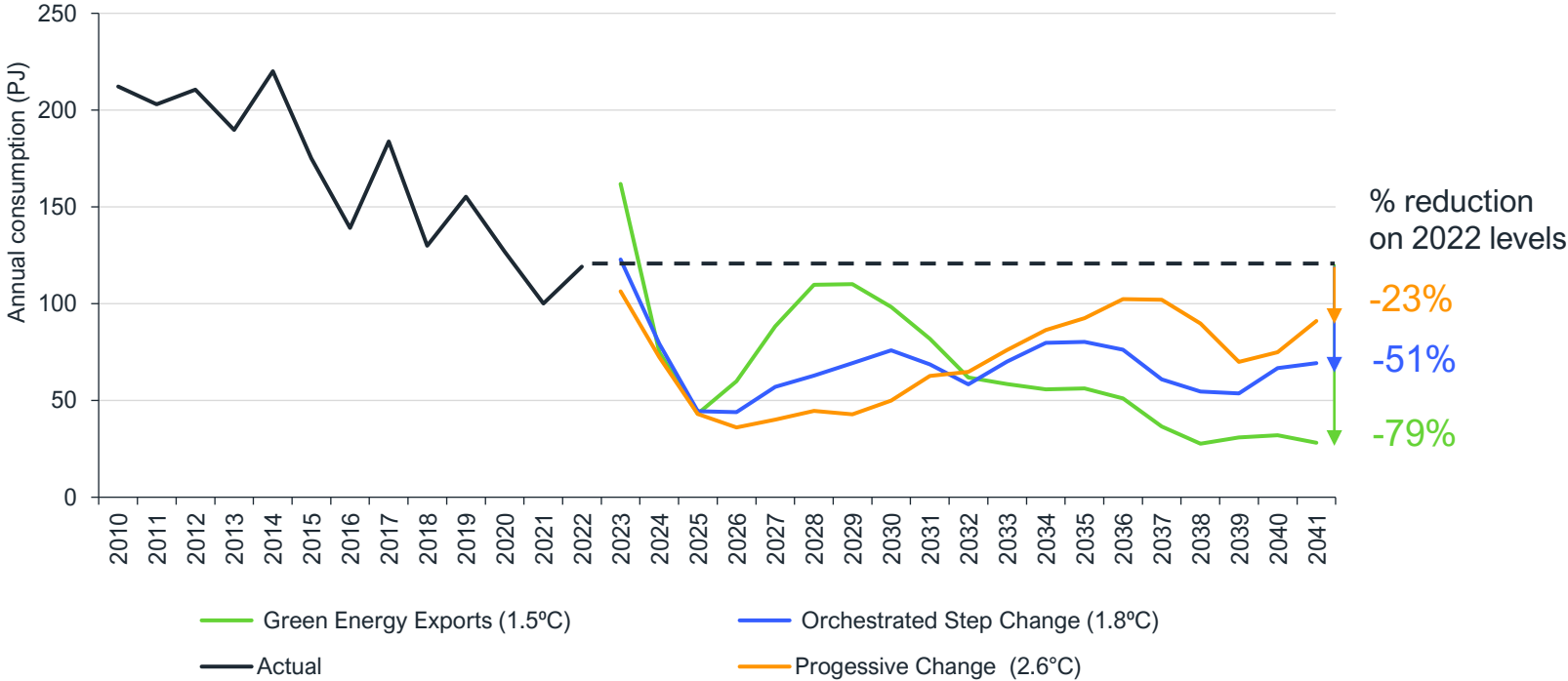
Largest gas using sectors, 2021-22, PJ



Source: Australian government, [Australian energy statistics 2023](#)

# AEMO predicts a decrease in gas for generation

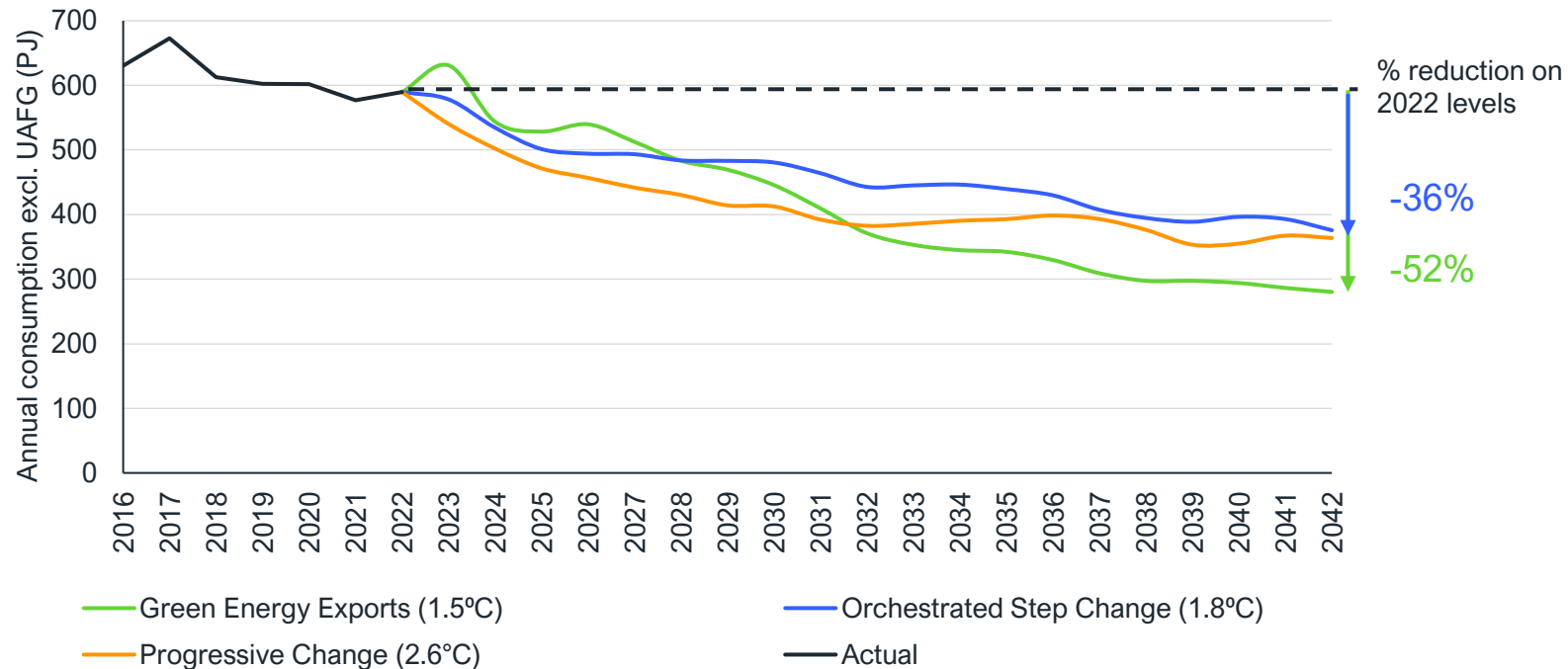
Actual and forecast NEM gas generation consumption, PJ



Source: AEMO, 2023 Gas Statement of Opportunities (GSOO)

# AEMO also expects a decrease in total domestic use

Actual and forecast domestic gas consumption (East Coast + NT), PJ



Source: AEMO, [2023 Gas Statement of Opportunities \(GSOO\)](#)

# We looked at 9 cost-effective opportunities to reduce gas demand fast in the Southern states



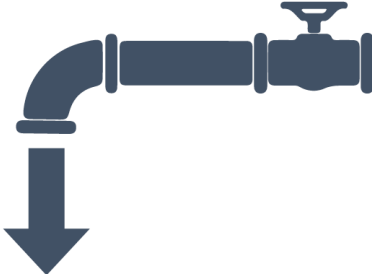
## Residential buildings

- Stop new gas connections
- End sales of new gas appliances
- Accelerated retirement to support gas phase out
- Financially driven early retirements
- Increased use of existing air conditioners
- Thermal efficiency upgrades

## Industry

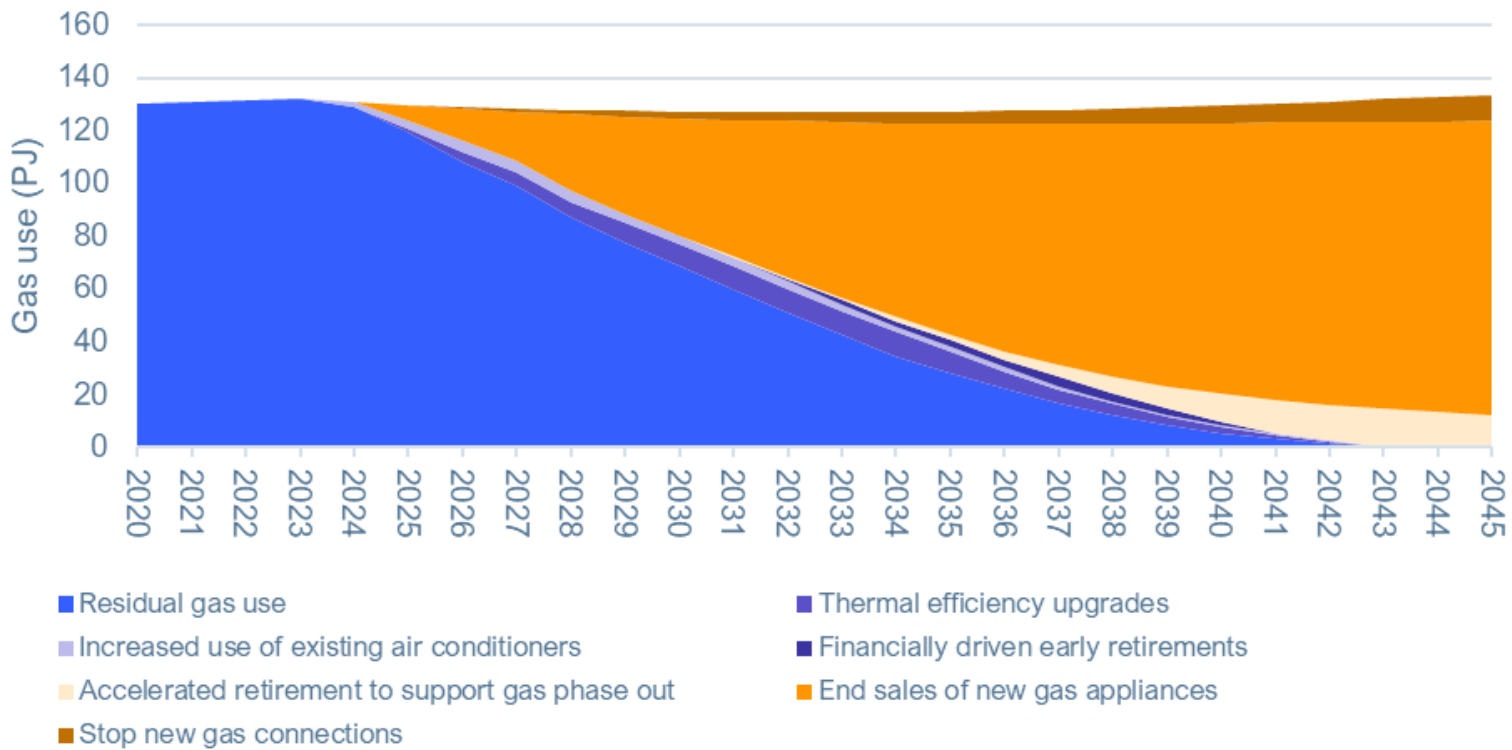
- Energy efficiency interventions in light manufacturing
- Heat pumps
- Ongoing best practice energy efficiency

Source: IEEFA, [Reducing demand: A better way to bridge the gas supply gap](#)



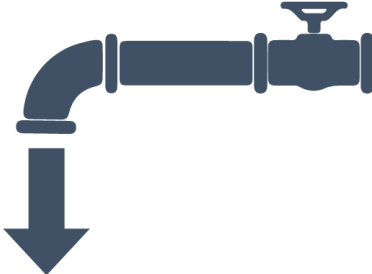
# Residential gas use eradicated by early 2040s

Southern states residential gas use and gas demand reductions, PJ



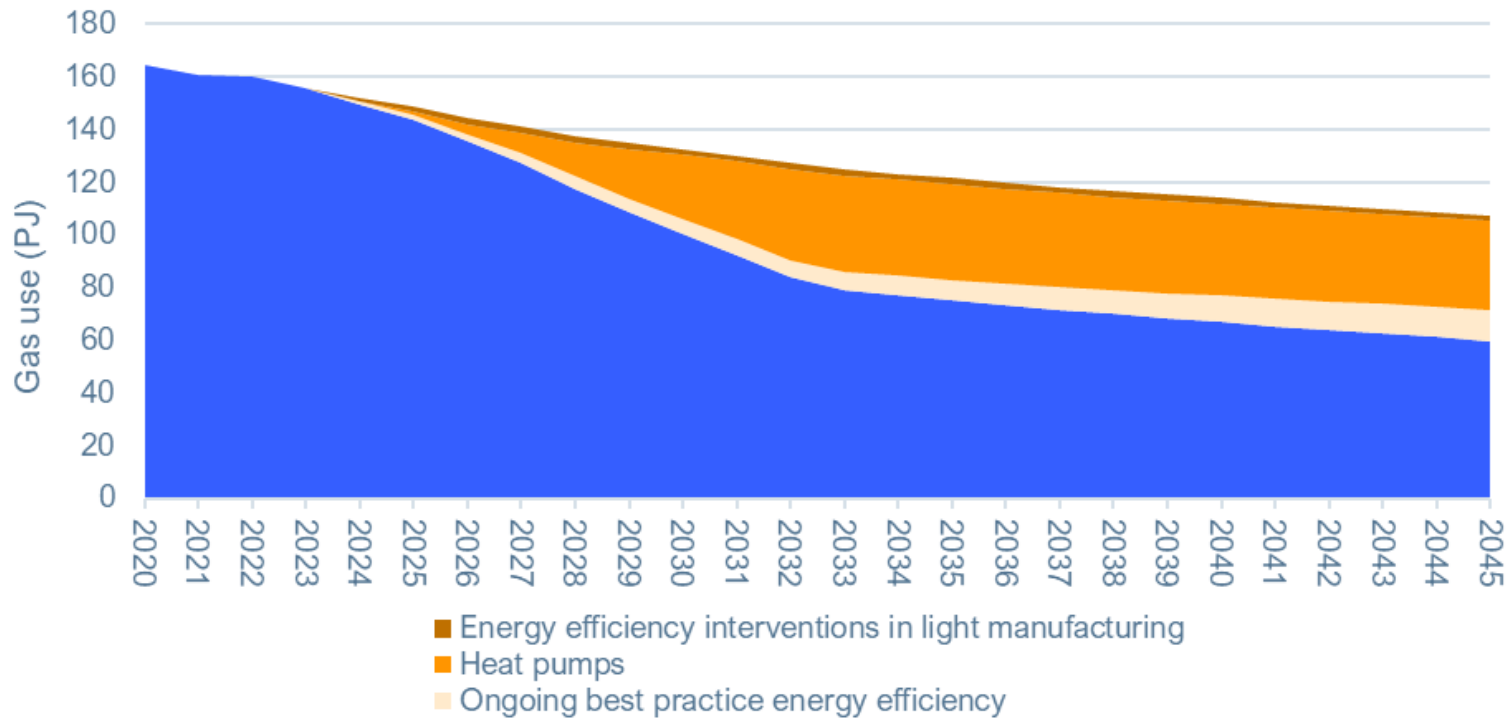
Source: IEEFA, [Reducing demand: A better way to bridge the gas supply gap](#)





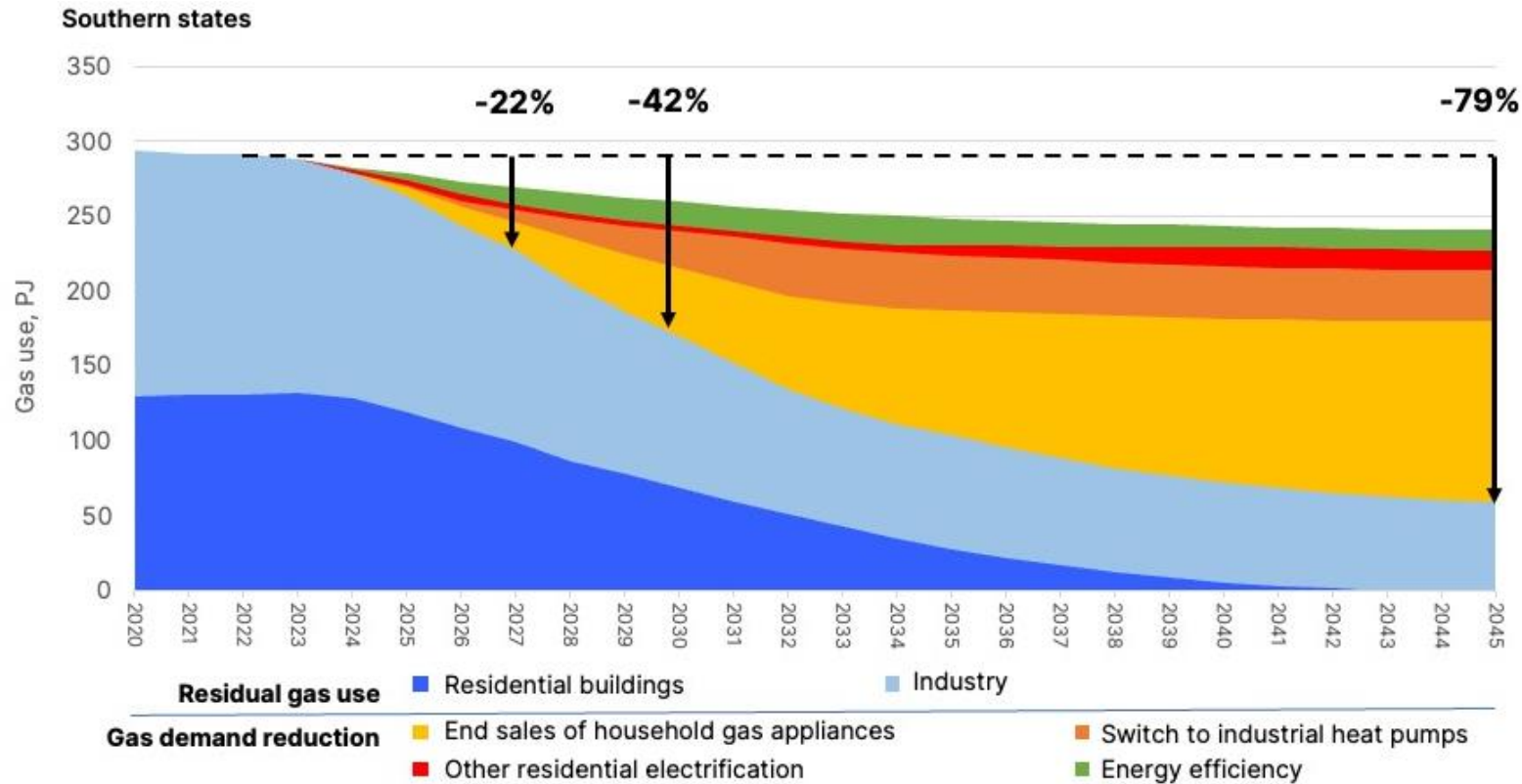
# Industrial gas use reduced by 63%

Southern states industrial gas use and gas demand reductions, PJ



Source: IEEFA, [Reducing demand: A better way to bridge the gas supply gap](#)

# Demand reduction enough to eradicate gas supply gap



## Gas supply gap:

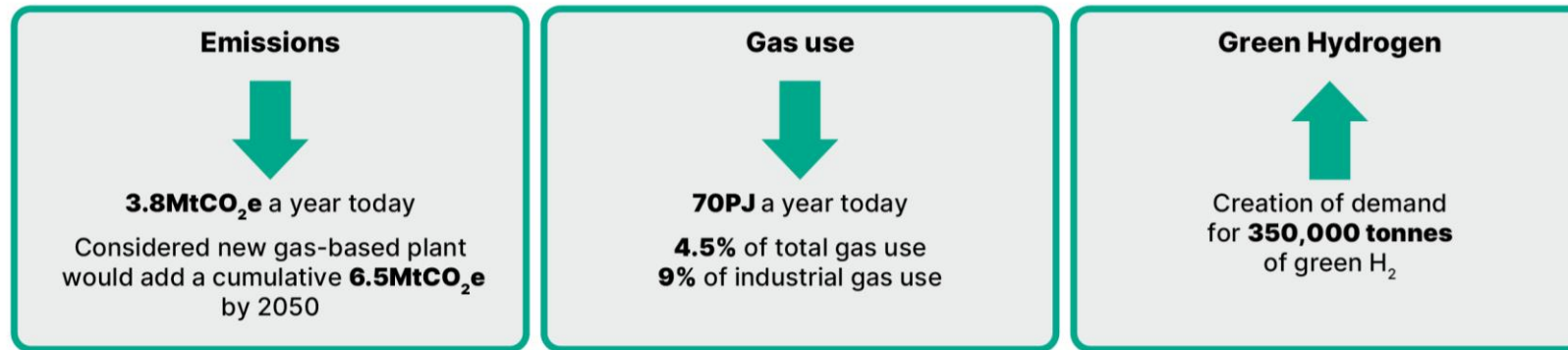
- Eradicated under AEMO's 1.5°C scenario
- Delayed by a decade under central scenario

Source: IEEFA, [Reducing demand: A better way to bridge the gas supply gap](#)

# Miners could switch to green explosives at small cost





## Decarbonising domestic ammonia production presents a triple win



Sneak peak of report to be published on **Thursday**

and could be affordably driven by miners 

 **Half of Australia's ammonia production is used to make mining explosives.**  
**Miners could progressively switch to green ammonia for a fraction of their operating costs.** 

<0.1% increase in costs for 20% switch by 2025

<0.4% increase in costs for 100% switch by 2030

Source: IEEFA, How mining could ignite Australia's green hydrogen boom



# While electricity demand increases, it can be offset

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*If done efficiently*, electrification modelled would require

**~2% increase** in electricity use

- ~4% in VIC
- ~1.3% in other states

Could likely be offset by energy efficiency and flexible demand, eg:

- 50% reduction in **compressed air systems** electricity use could offset additional electricity use in other states
- Enormous potential for flexible demand from **hot water systems** presents \$6b opportunity
- **Industrial heat pumps** combined with thermal storage also present big opportunity for flexible demand

Source: IEEFA, [Reducing demand: A better way to bridge the gas supply gap](#)

# The alternatives are costly and emissions intensive

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## Importing LNG

>\$250m for a terminal

\$24/GJ today

+20% emissions



## Pipelines upgrades

Already \$270m for upgrades  
with short economic life

~\$5/GJ for transport today

1000 kms trip with leakage risk



## New gas fields

High CO<sub>2</sub> content

Incompatible with Paris  
climate goals



Source: IEEFA, [Reducing demand: A better way to bridge the gas supply gap](#)

# The financial case is strong for demand reduction

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## Demand reduction

- Reduced energy bills
- Emissions reductions
- Energy system benefits
- Health benefits
- Higher job creation
- Productivity improvements

**VS**

## Supply increase

- High cost
- Short economic life
- Recovered on bills, with a profit margin
- High emissions

Source: IEEFA, [Reducing demand: A better way to bridge the gas supply gap](#)

# What can investors do?

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- Call on **government** to implement stronger policies on electrification & energy productivity
- Encourage **gas using companies** to accelerate energy productivity, electrification & fuel shift, even if it comes at a small cost premium
- Escalate engagement with **oil and gas companies** to ensure new investments don't put global climate goals at risk



# Contact

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