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LNG exports prompt fall in easten Australia's gas demand

Tripling of gas prices defies law of supply and demand

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Key Findings

Gas demand in Australia's eastern states– excluding gas used for LNG production – has fallen by 32% since its peak in FY2012-13.

This fall follows a 40-year period of continuous increase; the turnaround coincided with the start of LNG exports from Queensland in 2015, which drove a tripling in gas prices.

Gas demand for power generation is down almost 60% while gas demand for manufacturing has fallen to a 31-year low, mostly due to plant closures.

The fall in demand happened as gas production rose by a factor of 2.8, with LNG production soaking up new gas supplies. Across Australia, the LNG industry uses 80% of all gas produced.

Executive Summary

When excluding gas used for LNG production, gas demand in eastern Australia dropped to a 25-year low in the fiscal year (FY) 2023-24, with a 32% decline since FY2012-13. Gas use declined across the main consuming sectors: manufacturing, electricity and residential. This fall follows a 40-year period of continuous increase; the turnaround coincides with the start of LNG exports from Gladstone in Queensland.

Since LNG exports began, average gas prices have tripled due to the stronger linkage between LNG export prices and domestic gas prices. Correspondingly, the largest gas use reductions came from the electricity and manufacturing sectors, which tend to be more price-sensitive. Prices are likely to remain higher than pre-2015 levels for decades.

In manufacturing, gas demand decreased by 24% between FY2012-13 and FY2022-23. Demand in FY2022-23 was at its lowest level since FY1991-92. This reflects the closure of petroleum refineries, the loss of minerals and chemicals processing capacity over the past decade and the impact of worsened economic conditions, including higher gas prices on smaller manufacturers, which have forced some plants to close.

Gas use eastern Australia's electricity system – known as the national electricity market (NEM) – dropped almost 60% between FY2012-13 and FY2023-24 as more renewables connected to the grid. Over this 11-year period, renewables rose from a 10.4% to 38.1% share of generation in the national electricity market (NEM) while the share of gas dropped from 11.5% to 5%.

Gas demand in households, particularly in Victoria, which accounts for about two-thirds of household gas demand in eastern Australia, has declined in recent years. This was likely driven by a range of factors including weather, electrification and high prices.

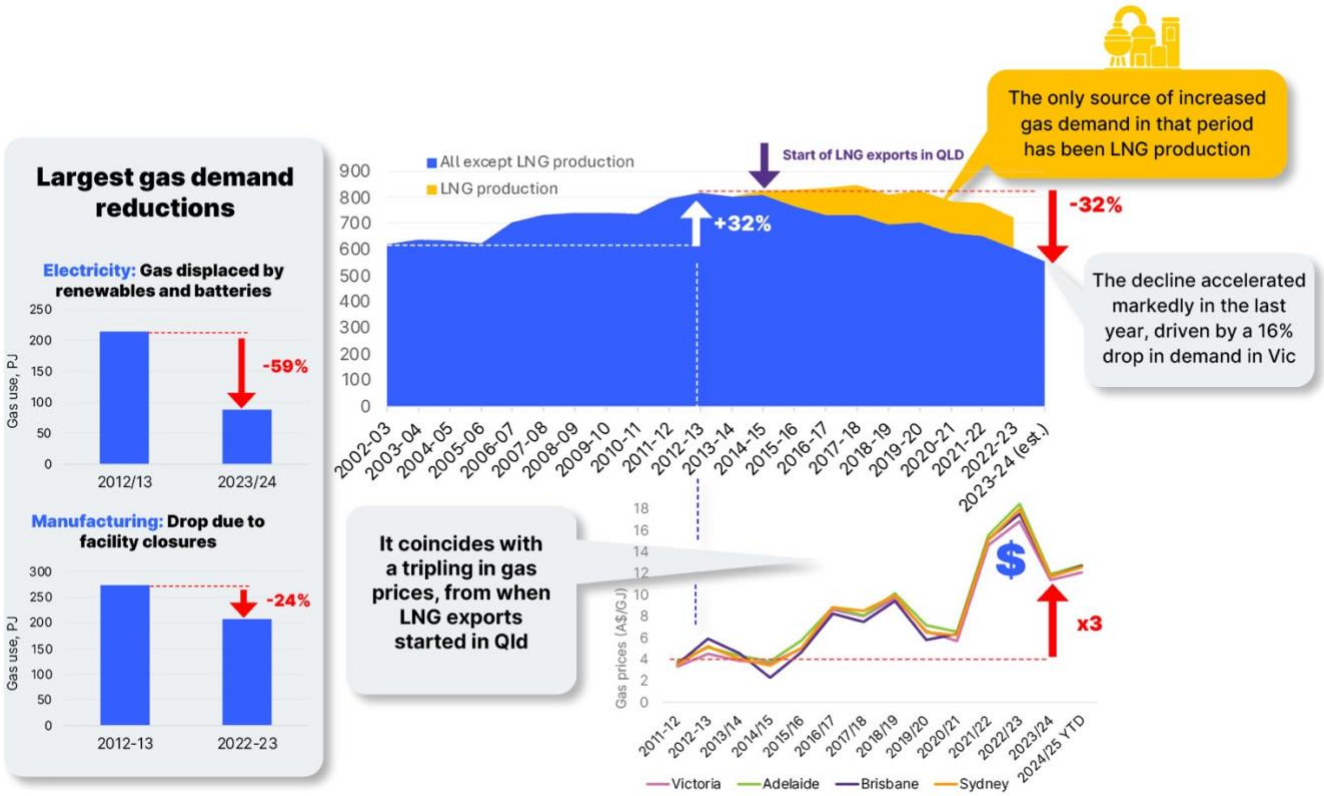
In contrast, the gas industry itself has been one area of gas consumption growth in eastern Australia, particularly since Queensland started exporting LNG in 2015. This increased demand is due to the fact that 8-10% of the gas used to make LNG is consumed in the liquefaction process and in piping the source coal seam gas (CSG) hundreds of kilometres to LNG export locations. Across the whole of Australia, the LNG industry uses 80% of the gas produced in the country.

Eastern Australia's gas production has risen 2.8 times since LNG exports started from Gladstone, from an average of 1,930 terajoules a day (TJ/d) in January 2015 to 5,490TJ/d in June 2024. This means the increase in eastern Australia's total output has effectively been directed to the three Queensland LNG export plants, given the decline in domestic gas use.

There are indications that further gas demand falls may occur in manufacturing, electricity and the residential market due to high prices, more competitive alternatives and government policy incentives. In Victoria, the state government has a gas substitution roadmap, partly in response to the

long-term decline in gas production from the Gippsland Basin, which has been Victoria's main gas supplier for 50 years.

Figure 1: The export effect – eastern Australia's gas demand vs gas prices



Source: IEEFA

Gas demand weakens across key markets

Eastern Australia's gas demand, excluding gas used by the LNG sector, dropped to a 25-year low in FY2023-24. Lower gas use in electricity generation, manufacturing and the residential market caused gas consumption to drop 32% in the 11 years from FY2012-13.[1] The gas demand decline is accelerating, with a near 13% reduction since FY2021-22.

The decline follows a 40-year period of continuous growth and a near fivefold increase in gas demand in eastern Australia from FY1973-74 to FY2012-13. The reversal in gas demand coincided with the development of the LNG export industry from the port of Gladstone.

The decline was experienced across all major gas-using sectors and states. The electricity sector had the deepest fall, followed by the manufacturing sector. The residential sector recorded 46 years of almost unbroken demand growth to FY2019-20 when it received a partial boost from more people working from home during the COVID-19 pandemic. But residential demand dropped to a nine-year low in FY2022-23.

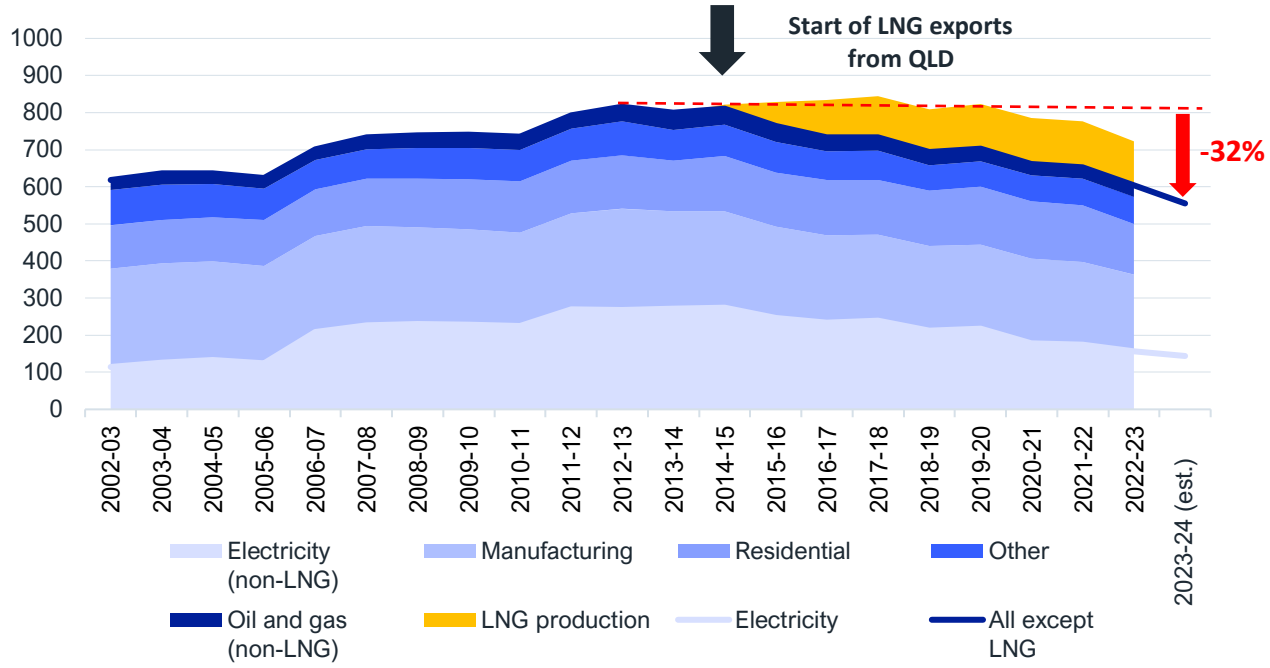
Of the states, South Australia experienced the strongest relative decline with an estimated 45% reduction from FY2012-13 to FY2023-24. Victoria followed with a 34% demand reduction over the 11-year period, but most of the fall occurred since 2019-20. Queensland experienced a 33% decline in gas use.

Over the same period, gas use for LNG production increased significantly. This includes the gas used in the liquefaction process to prepare LNG for shipping, in electricity generation for the LNG facilities, as well as to pipe coal seam gas (CSG) hundreds of kilometres to export locations. Gas use for LNG production represents about 20% of the gas use in eastern Australia. In total, the oil and gas sector uses about as much gas as the electricity sector.

The decline in gas use in eastern Australia occurred during a period of relatively strong economic growth in which the national economy became less gas intensive with higher energy productivity.[2] From June 2011 to June 2024, Australia's gross domestic product (GDP) increased by 88%.[3,4] This partly reflects a shift in the Australian economy away from highly energy-intensive industries such as manufacturing towards less energy-intensive industries such as services.[5]

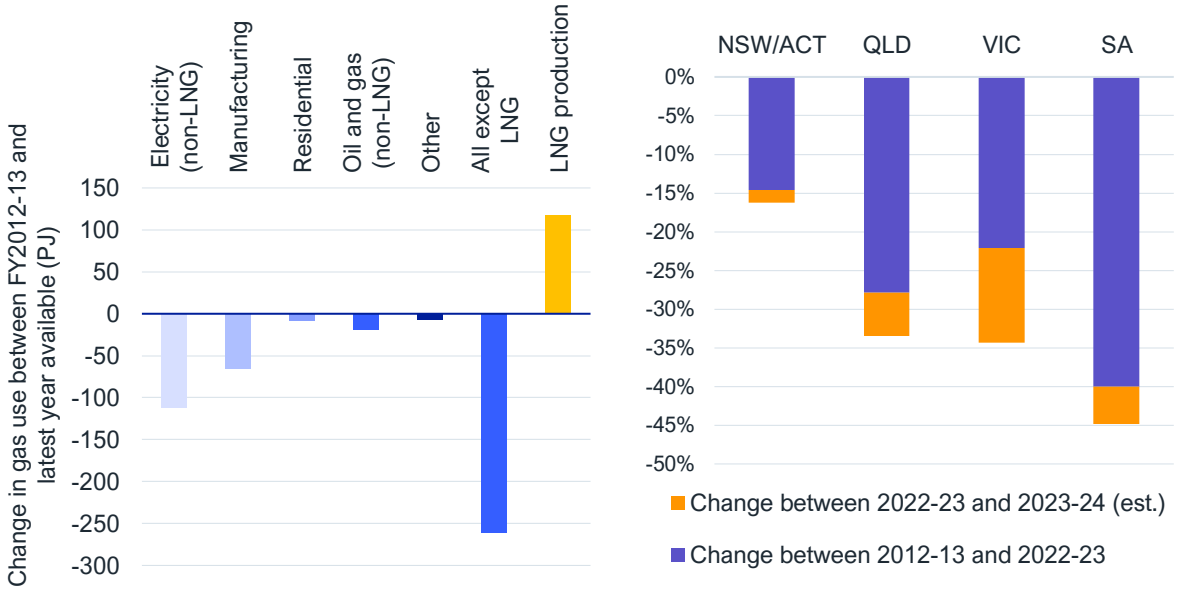
[1] Australian Energy Regulator (AER). Average daily regional demand. Note: Eastern Australia comprises New South Wales (NSW), the Australian Capital Territory (ACT), Queensland, South Australia, Tasmania and Victoria.
[2] Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW). Australian energy intensity and energy productivity.
[3] Australian Bureau of Statistics (ABS). Australian System of National Accounts. Table 1: Key National Accounts Aggregates. 4 September 2024.
[4] Reserve Bank of Australia. Composition of the Australian Economy, Snapshot. 26 September 2024.
[5] Australian Government DCCEEW. Australian Energy Update 2024, August 2024. Page 7.

Figure 2: Eastern Australia's gas use by sector, PJ



Sources: Australian government, AER, IEEFA analysis. Note: 2002-03 data is based on Australian Energy Statistics. IEEFA estimated the gas and electricity use associated with LNG production in Queensland based on the increase experienced between 2014 and 2016. Data for FY2023-24 is estimated based on the decline in gas use shown in AER's daily gas use data from FY2022-23 to FY2023-24.

Figure 3: Change in gas use* by sector (PJ) and state (%)



Sources: Australian government, AER, IEEFA analysis

The decline in gas use per person is far greater considering eastern Australia's population growth. Gas consumption peaked at 815.8 petajoules (PJ) – or 39.99GJ (gigajoules) per person – in FY2012-13 when eastern Australia's population was 20.4 million.[6] In FY2023-24, it fell by 247.8PJ to an estimated 567.9PJ – or 23.75GJ per person – while the population grew by 3.52 million to 23.91 million. The fall of 40.6% is deeper than the 32% slide in total gas volume use over that period.

… while gas prices have tripled since Qld started exporting LNG

The decline in gas use has coincided with a tripling of gas prices since Queensland started exporting LNG in 2015.[7] Gas prices rose sharply in eastern Australia from FY2014-15 to FY2023-24 despite the dip in prices from FY2019-20 to FY2020-21 due to the impact of COVID-19. Prices resumed their upward trajectory once COVID-related restrictions were lifted, and gas prices peaked in FY2022-23 when Russia widened its invasion of Ukraine.

The average gas price in Victoria was A$3.63/GJ[8] in FY2014-15, the year LNG exports started in Queensland. Victorian gas prices averaged A$11.34/GJ[9] in FY2023-24, a 212% increase over that period. This could explain some of the large decline in demand in the electricity and manufacturing sectors, which are typically price-sensitive.

The rise in gas prices in eastern Australia is not part of a global trend, as unlike oil, gas prices often have regional or country-specific pricing fundamentals. A useful comparison is the US, which like Australia is a major LNG exporter whose gas exports have expanded significantly since 2015. Yet domestic gas prices in the US have not risen as much as in Australia.

The US benchmark Henry Hub natural gas spot price averaged US$3.54 per million British thermal units (MMBtu)[10] or about A$3.71/MMBtu between July 2011 and June 2015. That equates to A$3.91/GJ, and is comparable to the Victorian gas price over the same period. The Henry Hub price averaged US$3.15/MMBtu[11] from July 2015 to June 2024, or A$4.64/GJ,[12] less than half the average Victorian gas price over that time.

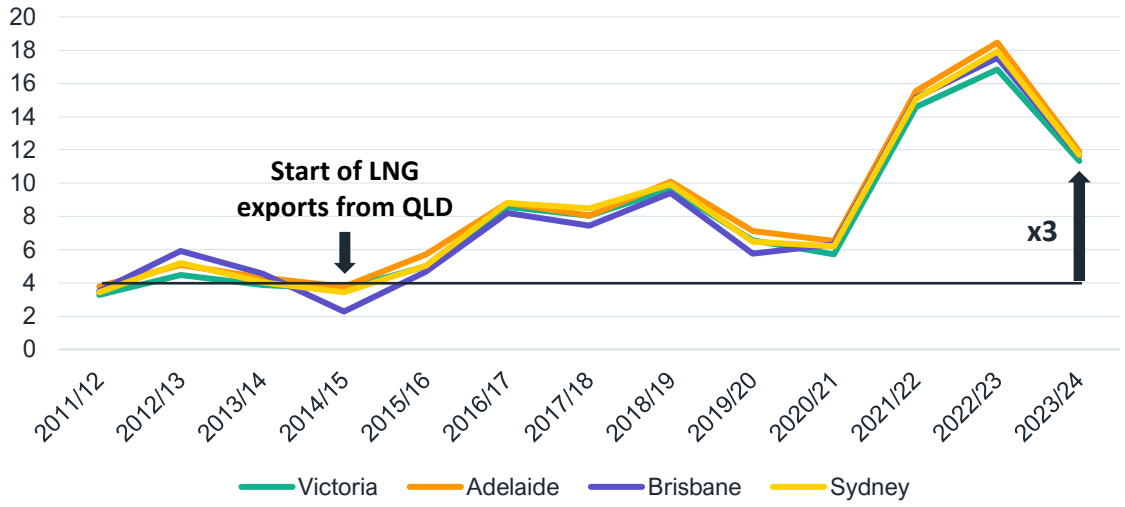
The difference between the US and Australia gas price trends and the expansion of their respective LNG exports is that when Gladstone started LNG shipments, it quickly became the centre of demand in eastern Australia. As a result, international gas prices became linked to eastern Australian gas

[6] ABS. Time series workbook 3101.0 National, state and territory population. Table 4. Estimated resident population, states and territories. 19 September 2024.
[7] ABC News. First shipment of natural gas leaves Gladstone in Queensland bound for Asia. 7 January 2015.
[8] Australian Energy Regulator (AER). Gas market prices.
[9] Ibid.
[10] US Energy Information Administration. Henry Hub Natural Gas Spot Price. (US$ per million Btu)
[11] Ibid.
[12] Reserve Bank of Australia. Historical data. Exchange rates. Note: The conversion from million Btu to GJ was from the gas conversion factors in the Argus Style Rules book 2007-08.

prices. In contrast, US domestic gas demand is still greater than its LNG exports volume so domestic supply and demand fundamentals have a greater impact on prices.

As the Reserve Bank of Australia (RBA) states, "Wholesale gas prices on the east coast have become linked to LNG export prices since 2015. This is because local gas producers can now sell into international markets through the 3 Queensland LNG export terminals. Wholesale prices will continue to be influenced by LNG export prices as long as this option is available,"[13] adding that, "gas prices are likely to remain structurally higher than their pre-2015 levels over coming decades, reflecting higher marginal costs of domestic production".[14]

Figure 4: Eastern Australia's gas prices (A$/GJ)



Source: AER Gas Market Prices

Gas demand squeezed by renewables

Electricity generation has suffered the largest loss in gas consumption by volume and in percentage terms of any major consuming sector in eastern Australia connected to the NEM. This decline has coincided with the rise in renewable energy, and provides an interesting test case for the energy transition in the power sector as electricity is the largest source of gas demand globally.[15]

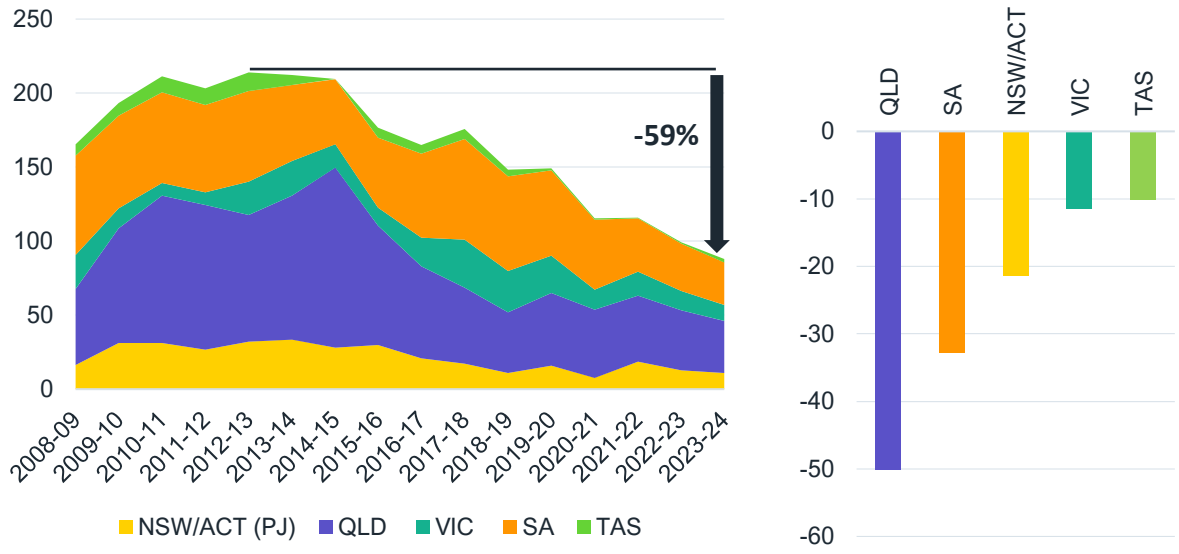
Gas use in electricity generation in the NEM dropped 59% from FY2012-13 to FY2023-24,[16] falling from almost 214PJ to about 88PJ. The volume of gas used for generation in FY2023-24 also

[13] Reserve Bank of Australia. Understanding the East Coast Gas Market. 18 March 2021
[14] Ibid.
[15] The International Energy Agency (IEA). World Energy Outlook 2024. Page 144. Note power is the largest gas demand source under the IEA's STEPs and APS scenarios to 2050 and under the NZE scenario to 2035.
[16] AER. Average daily gas used for gas powered generation.

represented the lowest level of gas used in power generation since FY2008-09 (when the Australian Energy Regulator started collecting this data).

While gas use has declined, its share of generation fuels has also fallen from 12.1% in FY2012-13 to an average of just 4.8% in FY2034-24,[17] with gas in the NEM largely limited to a peaking role to back up renewables. In contrast, the share of renewables in the NEM rose from 13.6% to 38.1% over the same period.

Figure 5: Average gas use for power generation and fall in gas use by state, FY2013-24 (PJ)

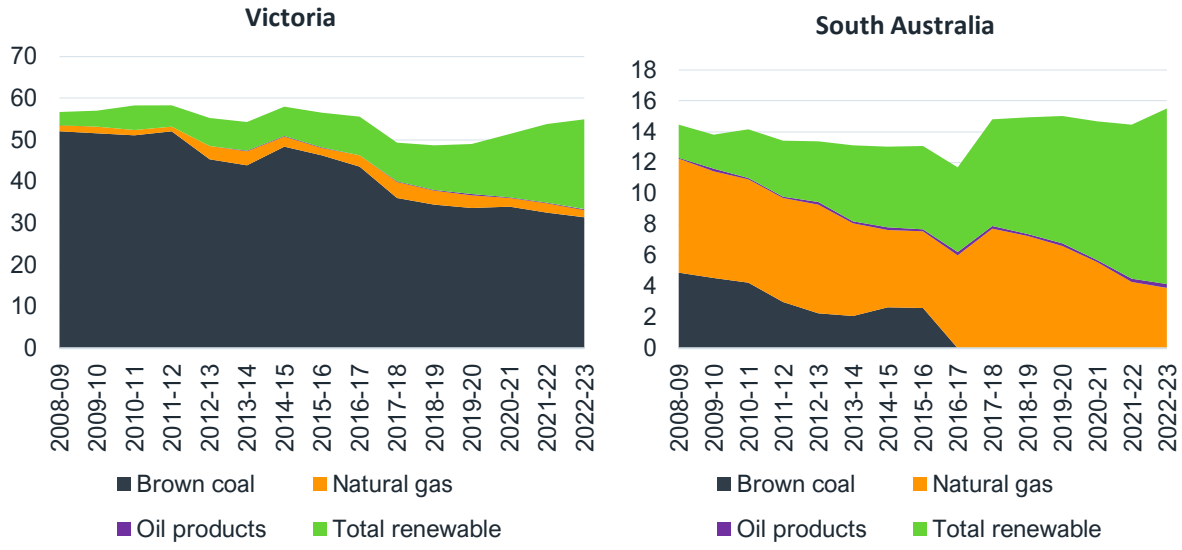


Source: AER

The slide in gas consumption in the NEM has occurred across all eastern states. When gas for power usage is compared over the 11-year period from FY2012-13 (when gas generation peaked) to FY2023-24, the largest declines in volume were experienced in Queensland and South Australia, which dropped by about 50PJ and almost 33PJ respectively over that time.[18] This equated to a near 59% fall in Queensland and a little more than 53% in South Australia, with both states and Victoria all recording their lowest volume of gas used for power generation during FY2023-24 in at least 15 years.

[17] OpenElectricity. Energy NEM financial years 1998-99 to 2024-25. Accessed 30 October 2024.
[18] AER. Average daily gas used for gas powered generation.

Figure 6: Electricity generation by fuel for Victoria and South Australia, TWh



Source: AER Australian Energy Update 2024

South Australia and Victoria had the most pronounced increases in renewable energy over the 11 years to FY2023-24. In South Australia, the share of electricity generated from renewable sources rose from 27.4% in FY2012-13 to an average of 69.2% in FY2023-24. In Victoria, the share of renewables rose from 10.9% to 40.5% over the same period (Figure 5).[19]

Declining gas demand in power generation is largely confined to eastern Australia while Western Australia and the Northern Territory, which have separate electricity systems, increased gas use for power generation. As a result, gas generation in the NEM, which accounts for about 85% of Australia's total electricity generation, fell below the combined gas for power use in Western Australia and the Northern Territory, which have far smaller power networks. This highlights the potential for those markets to follow eastern Australia's lead in reducing gas use in the power system.

Manufacturing gas demand falls to 1990s levels

Gas consumption in eastern Australia's manufacturing sector has fallen to volumes not seen since the early 1990s as factory closures, particularly in Victoria, contribute to the decline. Most of this fall in consumption has coincided with the rise in gas prices since early 2015.

Gas demand in eastern Australia's manufacturing sector dropped to a 31-year low of 207.6PJ in FY2022-23, and is down 24% since its peak consumption of 273PJ in FY2012-13. The sector's

[19] Open Electricity data website. South Australia and Victoria.

largest decline was in Victoria, followed by South Australia and NSW, which together accounted for 93% of the total decline in gas consumption by manufacturing over the 10 years since FY2012-13.[20]

The share of gas used in manufacturing represented almost 29% of total demand in eastern Australia in FY2022-23, down from more than one-third 10 years ago and an average of about 43% from FY1973-74 to FY2005-06.[21]

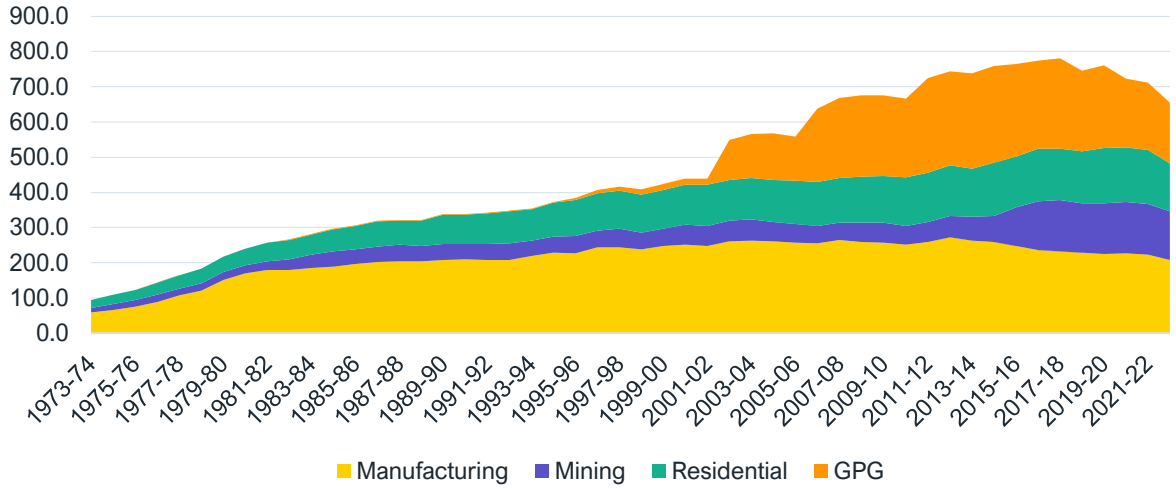
Despite its eroding market share of gas demand in eastern Australia, manufacturing is still the largest gas consumer among the main market segments of power generation, mining and residential. The downward spiral in gas use by manufacturing has mirrored its declining share of the Australian economy. The Reserve Bank of Australia estimates that manufacturing accounts for 5.9%[22] of the economy compared with about 30% in the early 1960s,[23] when the sector was protected by tariffs on imported items including motor vehicles, steel products and textiles. In contrast, the less energy-intensive services sector, covering finance, health and education, has increased its share of the domestic economy.

Gas demand in Victoria's manufacturing sector reached its lowest level in 38 years in FY2022-23 at 55.5PJ, down 45.5% from its peak of 98.3PJ in FY1998-89, and accounted for 47% of the contraction in gas use in eastern Australia's manufacturing sector.[24]

One of the largest contributors to this decline in gas usage in Victoria is from non-metallic mineral products subsector where gas consumption dropped to its lowest level in FY2022-23 at 9PJ (since the Australian Energy Statistics dataset started in FY1973-74). It is down 58.7% from its peak of 21.8PJ in FY1986-87.[25] Other subsectors such as wood, paper and printing are also down from their peak in FY1988-89, but the 8.6PJ consumed from this subsector was its lowest in 11 years. In contrast, gas demand in Victoria's food, beverage and tobacco sector has remained relatively steady over the past 20 years. Food and agriculture are among Victoria's largest exports and major contributors to the state's economy.[26]

[20] Australian Government DCCEEW. Australian Energy Update 2024, Table F, August 2024.
[21] Ibid.
[22] Reserve Bank of Australia. Composition of the Australian Economy. Latest available data at 6 November 2024.
[23] Australian Government Productivity Commission. Submission to the Senate Economics References Committee Inquiry into the Australian Manufacturing Industry. September 2021. Page 4.
[24] Australian Government DCCEEW. Australian Energy Update 2024, Table F, August 2024.
[25] Ibid.
[26] Australian Government Department of Foreign Affairs and Trade. Victoria.

Figure 7: Eastern Australia's gas demand by sector, PJ



Source: DCCEEW Australian Energy Statistics

In South Australia, gas demand for manufacturing hit a 39-year low of 19.8PJ in FY2022-23. The non-metallic mineral products subsector also experienced a sharp decline in gas demand, but not on the scale of Victoria. Gas demand in this subsector dropped to a 15-year low in FY2022-23 (9.8PJ), down almost 31% from its peak of 14.2PJ in FY2010-11, but still representing almost half of manufacturing gas demand in the state.

Gas usage trends in NSW manufacturing mirror Victoria, with the sector's demand at a 41-year low of 58.8PJ in FY2022-23. The non-metallic mineral products subsector was again a significant contributor to the decline, with its gas consumption at a 44-year low of 10.2PJ. In contrast, gas demand in the food, beverage and tobacco sector reached its highest level in FY2022-23.

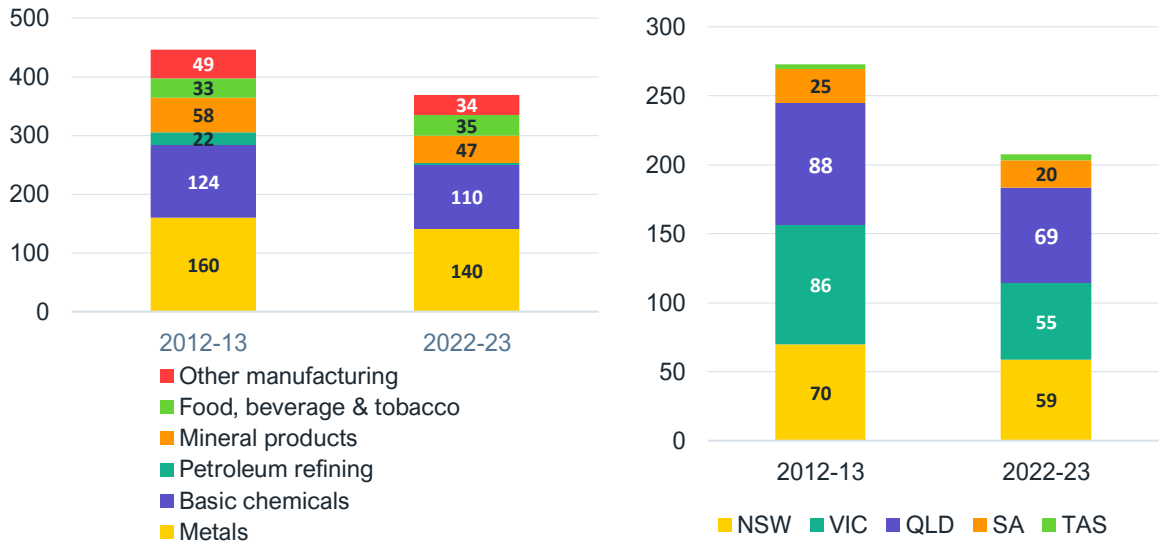
The drop in gas use for non-metallic mineral products can be partially explained by the decrease in local clinker production – the most energy and emissions-intensive part of the cement manufacturing process – replaced by clinker imports.[27]

The near 90% decline in gas demand from Australia's petroleum refineries in the 11 years to FY2022-23 was due to the closure of about three-quarters of Australia's refining capacity.[28] Four of the five refineries that closed were in eastern Australia, and represent the bulk of the 20.9PJ fall in consumption between 2011-12 and 2022-23.[29]

[27] Cement Industry Federation. Australian Clinker and Cement Production. 2023.
[28] Argus Media. Australia refinery closures raise fuel import reliance. 10 February 2021.
[29] Australian Government DCCEEW. Australian Energy Update 2024, Table F, August 2024.

In 2024, Australia's largest plastics manufacturer, Qenos, closed its plants in Melbourne and Sydney,[30] which caused the shutdown of chemical suppliers such as Indorama in Sydney.[31] This underlines the pressure higher gas prices place on low-margin businesses. Airconditioning and heater manufacturer Seeley International closed its factory at Albury in NSW in December 2023, blaming high gas prices.[32]

Figure 8: Australian manufacturing gas demand by sector and state, PJ



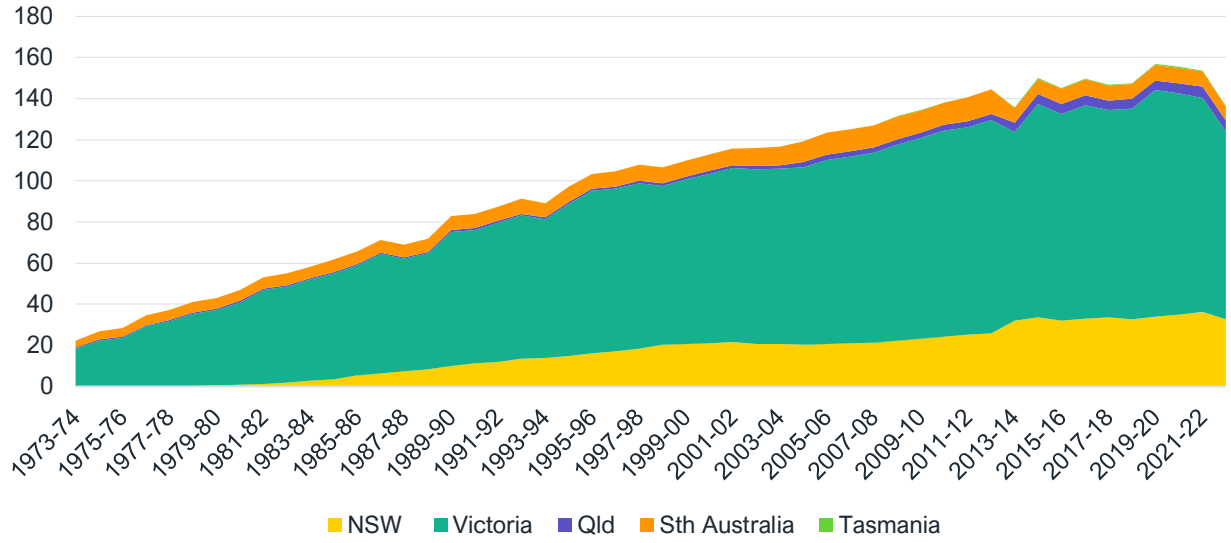
Source: DCCEEW Australian Energy Statistics

Victorian households using less gas

Gas demand from households in eastern Australia dropped in FY2022-23 to its lowest level in nine years, down almost 13% from its record demand levels just three years earlier. Most of the decline in household gas use occurred in Victoria, which accounted for 67% of all residential gas demand in eastern Australia in FY2022-23.[33] Residential gas demand in Victoria was at a 16-year low of 91.7PJ in FY2019-20.[34]

[30] The Australian. Qenos targets September closure of its Altona manufacturing plant in Melbourne. 16 July 2024.
[31] The Australian. Thai chemicals major Indorama to close Sydney manufacturing plant as a result of Qenos collapse. 5 June 2024.
[32] Ibid.
[33] Australian Government DCCEEW. Australian Energy Update 2024, Table F, August 2024.
[34] Ibid.

Figure 9: Household gas demand in eastern Australia, PJ/year



Source: DCCEEW Australian Energy Statistics, Table F

The Australian Bureau of Statistics (ABS), which compiled the AES data, attributed the spike in residential gas demand in Victoria in FY2019-20 to COVID-19 restrictions driving higher household consumption. This temporary shift in energy use from the commercial sector into homes has since been reversed.[35]

Data from the Victorian Energy Upgrades programme shows there has been a surge in heat pump installations in Victoria. The issue of Victoria energy efficiency certificates (VEECs) for space heating accounted for the largest share of all VEECs issued so far in 2024. As of November, 1.2 million certificates had been issued for space heating and cooling, or 26% of the 4.6 million VEECs issued in 2024.[36] Whereas only 100,000 certificates were issued for space heating in 2023 after it was introduced into the VEEC scheme in May that year. The surge in heat pump installations was also confirmed by the Climate Change Authority (CCA), which found that heat pump imports more than quadrupled between 2019 and 2024.[37]

In Victoria, NSW and the ACT, demand for gas in winter is approximately triple the demand during summer, due in large part to space heating.[38] The Australian Energy Regulator (AER) suggests warmer weather may have played a part in lowering gas demand in the residential sector, which would largely affect winter gas demand.[39]

[35] Australian Government DCCEEW. Australian Energy Update. August 2024. Page 2.
[36] Essential Service Commission. Victorian Energy Updates (VEU) data dashboard.
[37] Climate Change Authority. 2024 Annual progress report. Page 41.
[38] Energy Networks Australia. Reliable and clean gas for Australian homes. Page 4.
[39] AER. 2024 Electricity and gas networks performance report. Page 71.

Gas dominates demand in mining

The strongest source of gas demand growth in eastern Australia since FY 2012-13 has been the LNG sector, which uses gas as feedstock to produce LNG. This demand is included in the mining sector, where the oil and gas sector accounted for 95.4% of mining gas demand in FY2022-23.

Queensland dominates gas demand in the mining sector in eastern Australia. It accounted for 85% of total mining sector demand in eastern Australia in FY2022-23 compared with 30% in FY2013-14, the last full fiscal year before Gladstone started exporting LNG. [40]

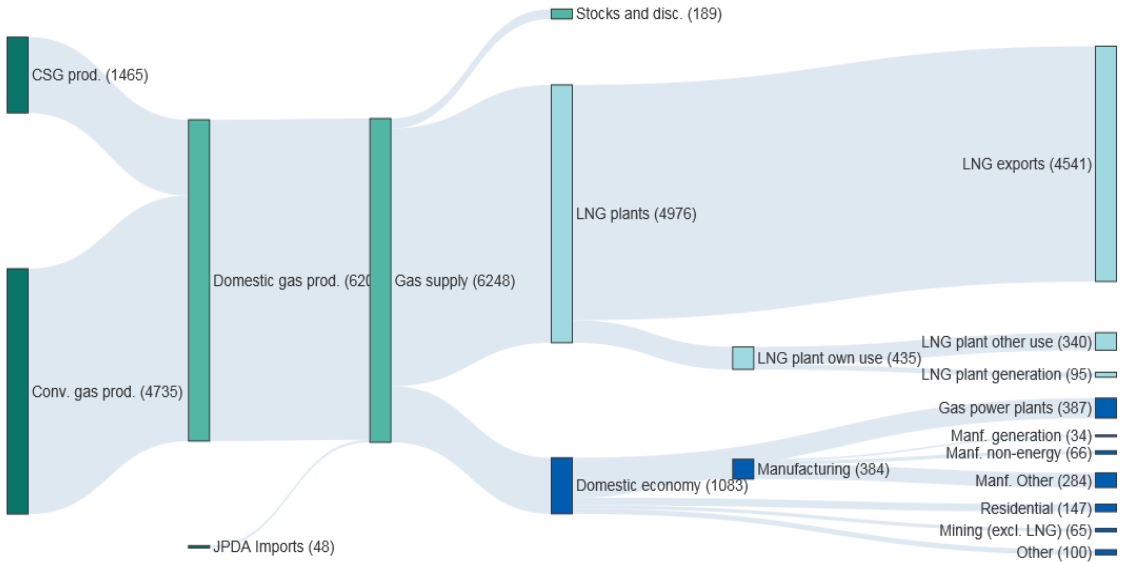
There is a clear correlation between rising mining gas demand in eastern Australia and the ramp-up in LNG production. The start of Queensland's LNG industry led to a 47% increase in gas demand from 27.5PJ in FY2014-15 to 64.4PJ in FY2015-16. Once all six LNG trains in Gladstone were online in October 2016,[41,42] mining gas demand in Queensland surged to 101.2PJ that fiscal year, peaking at 122.7PJ in FY2021-22. (This volume excludes gas exports, and only reflects the gas consumed in the liquefaction process.) This demand pattern for LNG in eastern Australia is mirrored across the country.

The LNG industry uses 80% of the gas produced in Australia, with about 9% of this use powering LNG production, and 91% being exported as LNG cargoes (Figure 10). LNG production is the largest user of gas in Australia with 435PJ a year, ahead of electricity generation with 387PJ and manufacturing with 384PJ.

In eastern Australia, total LNG-related gas demand, which the AES data counts as domestic demand and not as exports, represented about 118PJ in FY2022-23 or about 19.5% of total gas demand.

[40] Australian Government DCCEEW. Australian Energy Update 2024, Table F, August 2024.
[41] LNG Industry. QCLNG Train 2 starts commercial operations. 25 November 2023.
[42] Santos. 2015 first cargo shipped from GLNG. 16 October 2015.

Figure 10: Australian gas flows FY2022-23, PJ



Source: DCCEEW Australian Energy Update 2024

What next? Further declines in gas demand

Further falls in gas demand can be expected in the three market segments that have already experienced sustained declines in consumption levels: manufacturing, electricity and residential. This is due to technological innovation from industrial heat pumps in manufacturing, solar and batteries, both for the home and grid-scale, in the electricity and residential sectors.

Heat on manufacturers to switch to cheaper more efficient options

A significant share of gas demand in the manufacturing sector is for producing heat to process minerals, chemicals or produce food. For decades, gas has been unrivalled for its capacity to produce heat at very high temperatures. But this role is being increasingly challenged by innovation in heat pump technology, with commercially available heat pumps now able to generate heat up to 250°C.[43]

The adoption of heat pumps in industry, paired with energy-efficiency upgrades, has the potential to further drive gas demand reduction. For example, IEEFA modelled three interventions that have the effect of shifting industrial gas load to electricity, and improving energy productivity in NSW, Victoria, South Australia and Tasmania. We found that industrial gas demand could fall by 63% by 2045.[44] The

[43] Australian Government Department of Industry, Science and Resources. How Australian gas is used today.
[44] IEEFA. Reducing gas demand – A better way to bridge the looming supply gap. 16 November 2023.

study did not include Queensland, which accounts for one-third of manufacturing gas use in eastern Australia.

A separate IEEFA study found that heat pumps could electrify industrial processes below 250°C, and replace up to 17% of Australia's gas use.[45] Heat pumps in the food and beverage sector could replace 29PJ of gas, and reduce Victoria's industrial gas use by 36% in 10 years.[46]

High gas prices may continue to affect gas demand from manufacturers. After the collapse of Qenos, the Australian Industry Group warned that high gas prices could force more manufacturers to close, and "urged federal and state governments to replace dwindling Bass Strait gas and transition industry to green replacements".[47]

More residents to go down electric avenue

Governments are targeting households to switch from gas to electric appliances to combat high gas prices and reduce energy bills. Studies have shown households would lower their energy bills if they electrified their homes and switched to heat pumps, induction stoves, household batteries and rooftop solar.[48]

The Victorian government's gas substitution roadmap was unveiled in 2022, followed by initiatives to support the transition from gas to all-electric homes. They included a requirement for new residential dwellings to be all-electric, largely implemented as of 2024.[49] Further policies are under consideration, including a requirement for gas appliances to be replaced with electric alternatives at end of life.[50] These initiatives could significantly accelerate the reduction of residential gas demand.

The gas substitution plan is at relatively early stage, and too early to be reflected in the AES data.

The Australian Energy Market Operator (AEMO) sees the decline in residential gas consumption as a structural trend with "residential and small commercial consumption forecast to slightly decline in the short term, with more significant fuel-switching to electricity in the medium to longer term as the economy transitions to meet net zero emissions goals".[51] In its latest report on the Victorian electricity market, AEMO upped its forecasts for "higher electricity maximum demand for the next five years. This is driven by homes and businesses switching from gas to electricity".[52]

[45] IEEFA. Industrial heat pumps key to addressing excess gas demand. 31 October 2024. Page 3.
[46] Ibid.
[47] The Australian Financial Review. Gas costs could sink more manufacturers after Qenos: AIG. 18 April 2024.
[48] Energy Consumers Australia. How much does going all-electric save a household on their energy bills? 31 July 2024.
[49] Jacinta Allan MP. New Victorian Homes To Go All Electric From 2024. 28 July 2023.
[50] One Step Off the Grid. New bill paves way to get gas out of Victorian homes, just days after cooktop concession. 12 September 2024.
[51] AEMO. Gas statement of opportunities March 2024. Page 22
[52] AEMO. Victorian Annual Planning Report, October 2024. Page 3.

Battery boom gives gas peakers competition

Further declines in gas-fired power generation in eastern Australia are expected with its largest baseload gas plant, at Eraring in NSW, to close by 2026. Proposed new gas plants are slated to operate only as peaking plants (rather than as baseline generators), and are expected to operate less than 5% of the time.

At the same time, Australian utilities have been investing in grid-scale batteries. Australia is the fourth-largest market globally for utility-scale batteries, with 9GW of capacity in operation or under construction, behind China at 57GW, the US (34GW) and the UK (12GW).[53]

Rystad Energy has observed, "Once this capacity becomes operational over the next 12 to 24 months, the National Electricity Market (NEM) and Wholesale Electricity Market in Western Australia (WEM) could see their use of alternative peaking technology (gas and hydro) cut by 10% to 30%, while solar and coal will be the beneficiaries of the batteries charging during periods with low prices."[54]

In November 2024, the Australian government has revised upwards its national battery installation forecast by more than 53% to 40GW by 2035 from an estimate of 26GW a year earlier. Much of this capacity is expected to be in the NEM given it is the dominant power system in Australia.[55]

Three gas-fired power stations in South Australia are due to close between 2026 and 2032.[56] These closures are to be partially offset by the opening of two new gas plants in NSW with a combined nameplate capacity of 1.07GW.[57,58,59] Both of the new gas plants are to be used for peaking power, and will operate less than 5% of the time. This should lead to a net fall in gas demand given the new plants will be used less than those they will replace.

AEMO also notes that an additional 2.88GW[60] of open-cycle gas turbine (OCGT) generation is proposed for development within the NEM, which would add to the existing gas generation capacity of about 10.3GW (or about 16% of NEM generation capacity). Despite a possible increase in gas generation capacity most gas plants will operate at well below their nameplate capacity as they will largely provide firming power for more renewable energy. This means that the actual volume of gas used is likely to fall further. On average, gas generators are expected to be used 7% of the time between FY2024 and FY2050, compared with an average of 19% between 2008 and 2024.[61]

[53] Rystad Energy. Eraring's second stage sets new low for utility battery capex in Australia. 30 July 2024. Page 1.
[54] Ibid.
[55] Australia Government DCCEEW. Australia's emissions projections 2024. November 2024. Page 50. And Australia's emissions projections 2023. Page 42.
[56] AEMO. 2024 Electricity Statement of Opportunities, August 2024. Page 10.
[57] CLP. Tallawarra A Power Station and Tallawarra B Power Station.
[58] RenewEconomy. Costs jump for controversial new gas plant, with no update on green hydrogen in the mix. 31 August 2023.
[59] Australian Financial Review. Snowy Hydro's Kurri Kurri green generator to run on diesel for months. 27 August 2024.
[60] AEMO. Forecasting and planning data, NEM generation-information-July 2024.
[61] IEEFA. How much gas does the future grid need? 3 October 2024. Page 2.

Conclusion

Eastern Australia's gas market is undergoing a technological change with lower operating cost energy alternatives available for customers in manufacturing, electricity and the residential gas markets. The rate of adoption of these technologies will determine the scale of the substitution of gas, and there is a risk that the decline in gas demand may accelerate.

Stubbornly high gas prices have also weighed on demand. Potential new supplies are further from domestic consuming markets, requiring significant infrastructure costs that will be reflected in future gas prices. Gas explorers hope to develop new gas fields the Beetaloo Basin in the Northern Territory and the northern Bowen Basin in Queensland, but this would require the construction of lengthy gas pipelines to connect to the existing gas transmission network. Gas networks are already proposing price increases that are likely to make gas more expensive for users.[62]

Eastern Australia's gas users have more options to assess in energy supply that are from lower emissions-intense sources if they want to transition away from fossil fuels. Government and energy policymakers should consider more demand-driven measures than viewing energy market challenges solely as a supply issue, particularly in the residential and electricity markets where investment in all-electric options will result in lower household energy bills.

[62] RenewEconomy. Death spiral: Network blows up renewable gas claims, wants to hit consumers for cost of stranded assets. 31 October 2024.

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The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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