
The Narrabri Gas Project - Submission to Independent Planning Commission

*The State of NSW Should Not Sponsor a Loss-
Making, Wealth Destroying Industry*

Executive Summary

When the Independent Planning Commission NSW (IPC) assesses the clear and unequivocal evidence surrounding any one of the economic, environmental, social and governance (ESG) factors surrounding the Narrabri Gas project, the Commission will have no other avenue but to reject the proposal.

We set out the reasons why the IPC must reject the Narrabri Gas proposal in this submission, and summarise the key points below:

- **Gas is no longer serving a role as a transition fuel** either domestically or globally. The clear established global trend is towards more renewable power in electricity systems, and less gas.
- **There is a global supply glut of gas** that will continue until late this decade. The factors that led to the great global gas glut were in place prior to 2020. Overbuilding of LNG plants and over-production of uneconomic shale and coal seam gas (CSG) has occurred for years. The COVID-19 demand depression has merely accelerated the process.
- **Globally the LNG industry is in a deep depression.** The U.S. shale fracking industry has imploded with multiple bankruptcies and a severe depression in activity. Cargo ships carrying LNG are circling oceans searching for a buyer.
- **Globally, gas prices are very depressed.** There is no place for high cost Narrabri gas in this market.
- **Domestically, gas usage has shrunk.** In Australia, gas usage in gas-fired power plants has declined by 58%¹ since 2014 whilst renewables have increased to produce 25% of the energy in the National Electricity Market.
- The Australian Energy Market Operator, the only agency to model a future electricity grid in its Integrated Systems Plan, has shown that **by 2040, the role of gas in a renewable rich grid is smaller than today.**

¹ AEMO. Natural Electricity & Gas Forecasting.

- **Queensland's CSG to LNG project at Gladstone is a financial failure.** Santos' CSG to LNG Gladstone experiment on the east coast of Australia has been a financial failure with nearly \$8bn written off. The latest \$976m write-off was announced in July 2020 shortly after Santos gave evidence before the IPC. The three lead companies in the consortium that own the three export CSG to LNG plants at Gladstone have written off over \$24bn since 2014 on their failed investments.
- **Every year since 2014 Santos has failed to fulfil its export contracts.**
- **Santos has demonstrably destroyed shareholder value since 2014.**
- **East coast gas consumers pay too much for gas.** The ACCC's gas price enquiry (2017-2025) repeatedly shows that the Australian domestic consumer pays too much for gas.
- **The Narrabri gas project will *not* bring down the cost of gas** for the domestic consumer as Santos claims. And despite claims to the contrary by the Department of Planning, further supply and high production costs will affect the domestic market. The Narrabri gas project will embed high cost gas into the system, forcing up the price of gas for the domestic consumer.
- **Santos has misled the Independent Planning Commission** as to the cost savings it has made in the East Coast CSG industry.
- **The east coast gas industry is only a handful of players that have consistently price gouged the Australian domestic consumer** and our governments have allowed them to. This 'cartel' has socialised its losses on the export markets over the Australian energy consumer.
- **Santos is not a fit and proper entity to hold a CSG production licence** in the state of NSW as it has actively flouted approval conditions in Queensland.
- **Gas use in industry has fallen 12% since 2014.** High gas prices have significantly contributed to high wholesale electricity prices.
- **Santos' royalty claims are not transparent.** The IPC should look at the CSG to LNG's industries' contribution to society in terms of tax and royalties and judge it according to its actual history in Queensland and not the extravagant claims of \$1.2 billion in royalties, backed by scant evidence, made by the proponent of this project, Santos.
- **Gas use in residential and commercial applications can largely be substituted for cheaper electrical heating**, in the form of air conditioners, induction cooking and heat pumps for hot water. This would unfetter up to 190 petajoules (PJ) per annum and dwarf the contribution of at best 70PJ from Narrabri.
- **The east coast of Australia needs a domestic gas reservation policy.** A domestic gas reservation on existing and prospective fields at \$4/GJ is the only

way to ensure low prices and assured supply for Australian domestic consumers.

- **The Queensland experience is that over 570 agricultural water bores will run dry** (in just one gas field) as a direct result of CSG. That the Department of Planning has *not* highlighted this, and the clear damage to water resources that is the lived experience in Queensland, is lamentable.
- **Emissions from unconventional gas fields are high** and when burned in peaking plants and used for export are no better than coal for the climate.
- **Gas is a high greenhouse gas emitting fuel.** Every State and Territory in Australia has some sort of net zero emissions target by 2050. Producing and consuming more gas is fundamentally opposed to current State and Territory government policies on emissions.
- **The Narrabri gas project has encountered staunch and widespread opposition.** A CSG project with a large environmental footprint on both public and private land needs a social licence to operate.
- **The governance surrounding the gas industry is poor.** Science is conducted by the deeply conflicted arm of the CSIRO, the gas industry sponsored Gas Industry Social and Environmental Research Alliance (GISERA).
- **The NSW approvals process is not fit-for-purpose to assess CSG projects.**
- **The NSW Chief Scientist's 16 recommendations for the safe operation of CSG in NSW have *not* been fully implemented** despite the final report being received by the NSW government 6 years ago. The gas industry and/or government cannot claim safe operation of projects until all 16 recommendations have been fully implemented. Approving Narrabri in the absence of such oversight would be extremely reckless.

IEEFA asks that the IPC considers the economic, environmental and social governance (ESG) factors of the Narrabri gas project.

The Narrabri Gas project is not approvable on economic grounds, or on ESG metrics.

Santos is not a fit and proper entity to hold a CSG production licence in the State of NSW.

The East Coast CSG to LNG industry has torn up the wealth of our nation.

To continue to allow it to, by approving Narrabri, is not logical or reasonable.

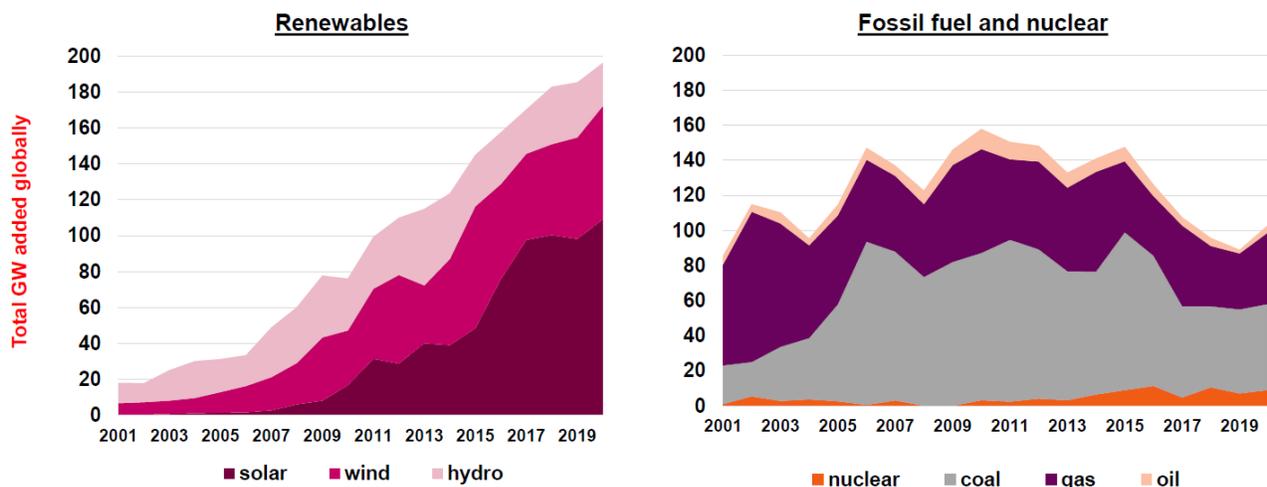
Content	
Executive Summary	1
The Global Context	5
Gas is Not a Transition Fuel.....	8
The Australian Gas Industry	11
Tax and Royalties from The Onshore Gas Industry in Australia Have Been Notably Absent.....	20
We Need the Gas for Industry	21
Policy Responses Would Fix the Problems in The East Coast Gas Market....	22
ESG: Environmental and Social Governance.....	23
Environmental Issues	23
Social Issues	28
Governance Issues.....	28

The Global Context

Globally, renewables are overwhelming new fossil fuel and nuclear power station builds.

Since 2010 new renewable plants have grown by approximately 148% whilst nuclear plus fossil fuel plants have declined by 38%. Globally, nuclear has not been a significant source of new power station builds. (See Figure 1)

Figure 1: Global New Power Station Builds



Source: IRENA, S&P Global Platts Analytics, Market Intelligence World Electric Power Plant database. 2019 is a preliminary estimate, 2020 is forecast.

In 2019, 200 gigawatts (GW) of renewable power plants were built whilst only 100GW of fossil fuel and nuclear were constructed.

It should be noted that less gas power plants were built in 2020 than in 2001.

Gas is no longer serving a role as a transition fuel.

The Great Global Gas Depression

We are *not* seeing a slowdown in demand or even a recession in the global gas industry; we are witnessing a depression in the global gas industry.

The U.S. fracking industry has imploded.

The number of operating drill rigs in the U.S. has fallen 73% in the last 12 months. (see Figure 2) There have also been over 19 oil and gas bankruptcies so far this year.

Figure 2: Number of Operating Drill Rigs

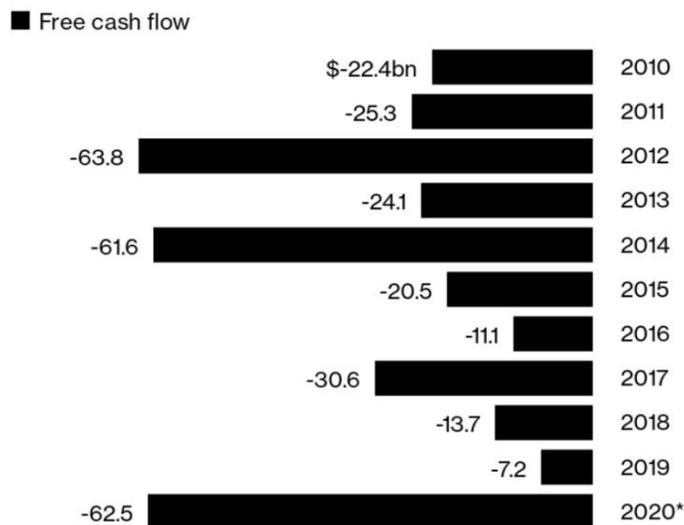
Area	Last Count	Count	Change from Prior Count	Date of Prior Count	Change from Last Year	Date of Last Year's Count
U.S.	31 July 2020	251	0	24 July 2020	-691	2 Aug 2019
Canada	31 July 2020	45	+3	24 July 2020	-92	2 Aug 2019
International	June 2020	781	-24	May 2020	-357	June 2019

Source: Baker Hughes Rig Count <https://rigcount.bakerhughes.com/>

Deloitte estimates that almost a third of U.S. shale producers are technically insolvent at current oil prices.² The shale industry has been cash flow negative every year in the last decade. (see Figure 3)

Figure 3: Deloitte – US Shale Oil and Gas Producers Free Cash Flow Burn Baby, Burn

U.S. shale oil and gas producers have burned through \$342 billion since 2010



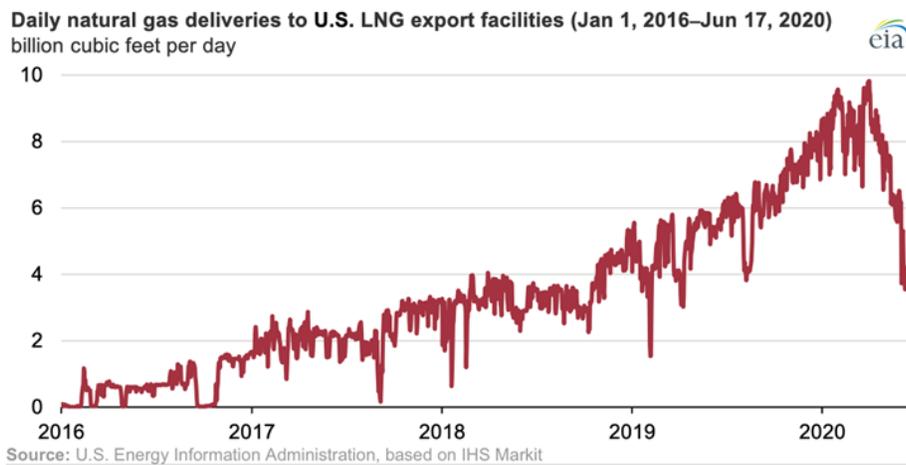
Source: Deloitte
 *2020 is estimated

Bloomberg

² Bloomberg. *Third of U.S. Shale Near Technical Insolvency, Deloitte Says*. 22 June 2020.

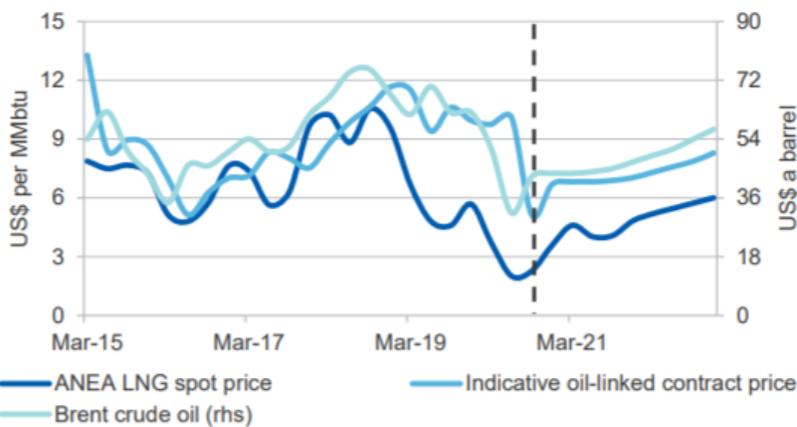
Further, U.S. LNG exports have declined by more than half so far in 2020. LNG ships from all nations are circling in the ocean whilst trying to find a buyer for their unwanted cargoes.³⁴

Figure 4: US LNG Industry Volumes Halve



Gas/LNG prices have collapsed.⁵ Figure 5 from the Resources and Energy Quarterly published by the Department of Industry quotes oil prices. Export LNG gas contracts are priced as a percentage of the oil price, hence the relevance of oil prices.

Figure 5: LNG Prices Fall to Historic Lows



Notes: The ANEA (Argus Northeast Asia) spot price is shown. LNG prices are DES (Delivered Ex Ship). DES prices include shipping and insurance. The long-term oil-linked contract price is indicative only, and is estimated at 14 per cent of the 3-month lagged Japan Customs-cleared crude oil price plus shipping.

Source: Argus (2020); Bloomberg (2020); Department of Industry, Science, Energy and Resources (2020)

³ SMH. Sailing around in circles: LNG tankers idle at sea as buyers delay cargoes. 16 July 2020.
⁴ SMH. Australia is sponsoring a failing gas industry. 23 July 2020.
⁵ OCE. Resources and Energy Quarterly. June 2020. Page 68.

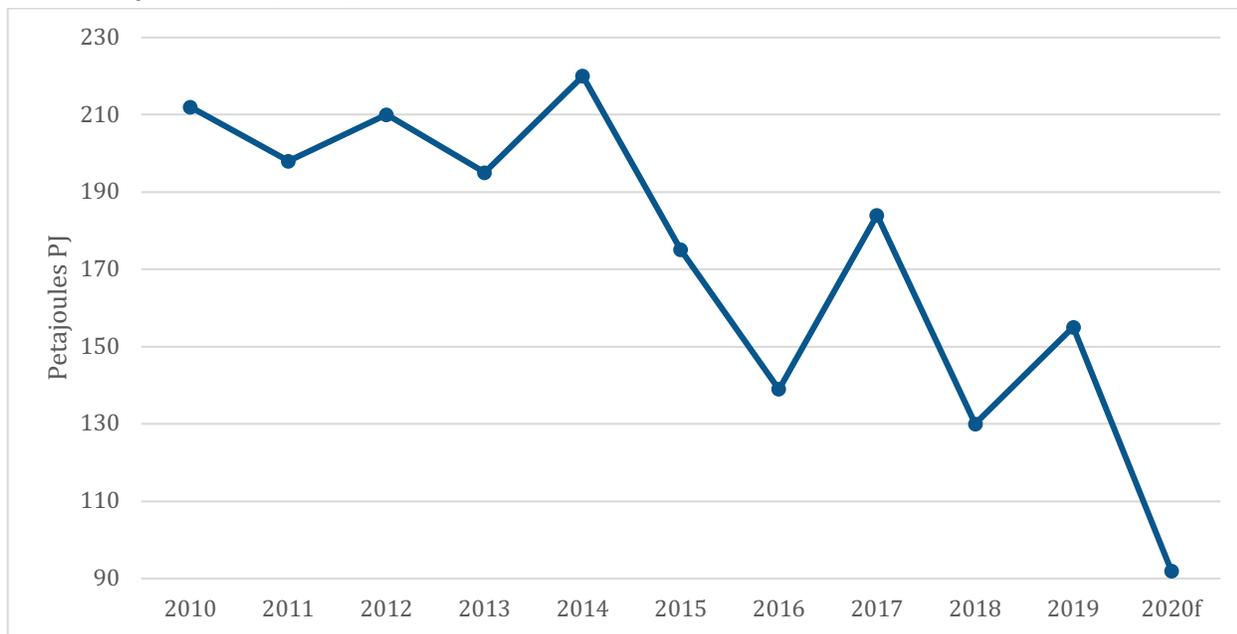
In short there is a massive global glut in gas supply that will extend out to late in this decade. The global gas glut was not caused by COVID-19. I was talking about the looming gas glut 3 years ago in an address I gave in New York. COVID-19 merely accelerated the process.

Gas is Not a Transition Fuel

Gas Usage in The National Electricity Market is Declining Significantly

In Australia gas usage in gas-fired power plants has declined by 58%⁶ since 2014 whilst renewables have increased to produce 25% of the energy in the National Electricity Market (NEM).⁷

Figure 6: Gas Usage by Gas Powered Generation in the National Electricity Market (NEM) 2010-2020



Source: Australian Electricity Market Operator (AEMO), IEEFA

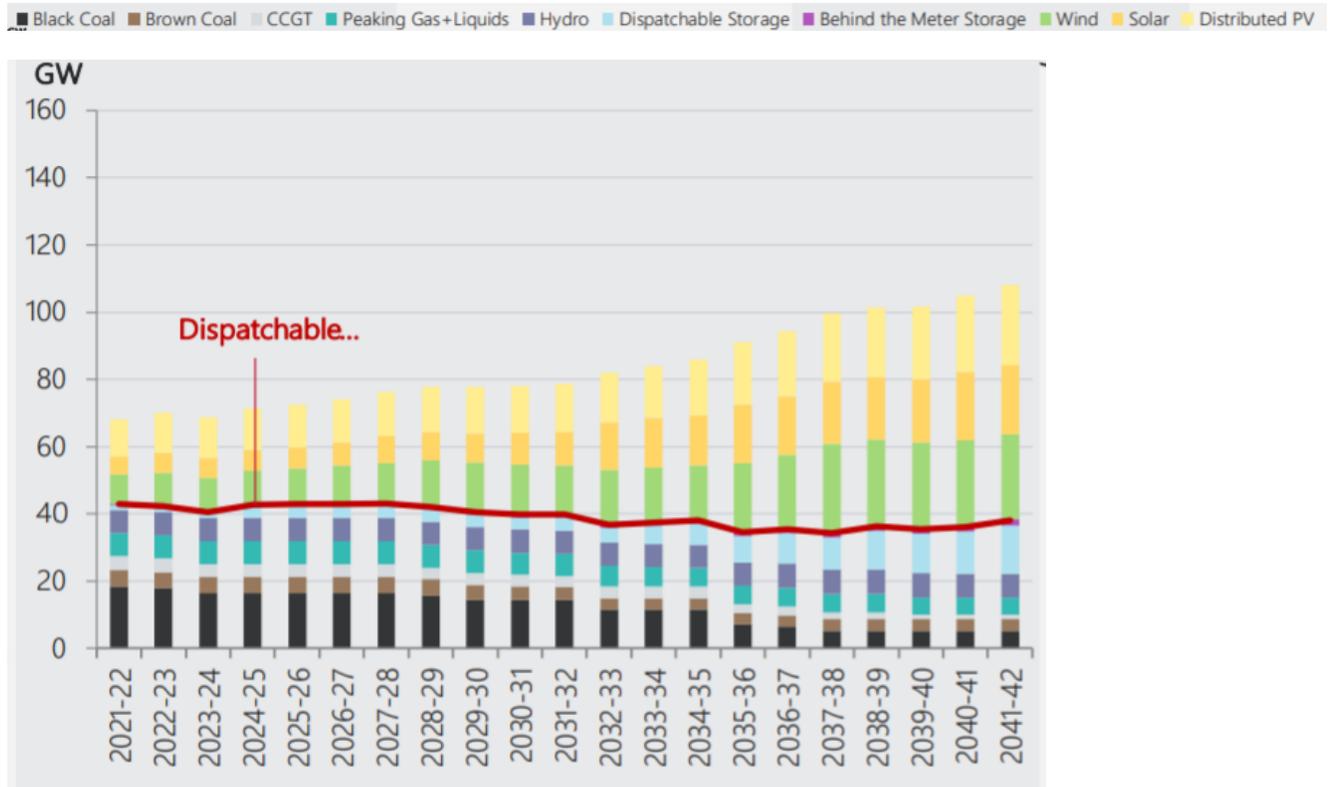
The AEMO, the only agency to model a future electricity grid in its Integrated Systems Plan⁸, has shown that in a renewables rich grid by 2040, the role of gas is smaller than it is today. (See Figure 7)

⁶ AEMO. Gas Annual Consumption Total.

⁷ OpenNEM. NEM.

⁸ AEMO. 2020 Integrated Systems Plan. July 2020.

Figure 7: AEMO Integrated Systems Plan – Least Cost Development – Central Scenario



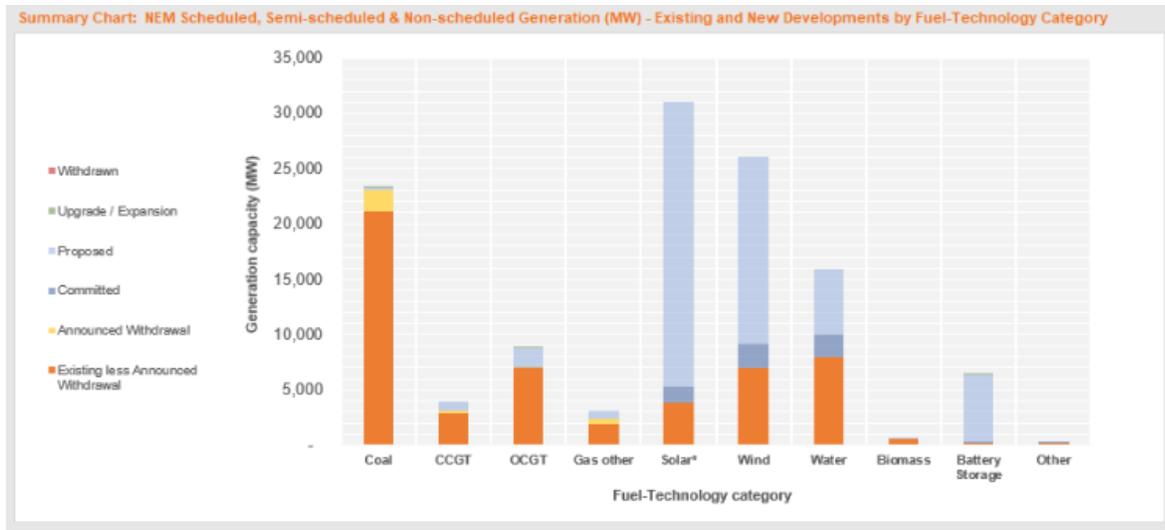
Source: Australian Electricity Market Operator (AEMO) Integrated Systems Plan. Page 40.
 Note: Gas is the combination of CCGT (Combined Cycle Gas Turbines or gas baseload plants) and Peaking gas plus liquids (Open Cycle Gas Turbines or gas peaking plants)

In the Integrated Systems Plan, AEMO considers that investment into new Gas-Powered Generation (GPG) is unlikely:

“GPG can provide the synchronous generation needed to balance variable renewable supply, and so is a potential complement to storage. The ultimate mix will depend upon the relative cost and availability of different storage technologies compared to future gas prices. This favours existing GPG plants, but further investment in GPG is less likely based on the assumptions used in this ISP, particularly in scenarios that have carbon budgets to meet.”⁹

⁹ AEMO. 2020 Integrated Systems Plan. July 2020. Page 53.

Figure 8: Australian Electricity Market Operator (AEMO) Existing and New Developments by Fuel Technology



Source: AEMO

Gas peaking plants, or as they are termed Open Cycle Gas Turbines (OCGT), only contributed 1.5%¹⁰ of the NEM's generation in the year to 1 July 2020 whilst accounting for 12.5%¹¹ of capacity.

Put simply, we need capacity in gas peaking plants, but they are not run for long. We don't need much gas to power them.

All new investment in Australia is flooding in to solar, wind and hydro. The most recent example, post the COVID-19 lockdown, is the Central West Renewable Energy Zone (REZ) where the NSW government called for tenders for 3GW of renewable power projects and got back responses for 27 GW.¹² The tender was 9 times over-subscribed.

¹⁰ OpenNEM. [NEM](#).

¹¹ AEMO. [Generation Information](#).

¹² ABC. [NSW Government's renewable energy plan attracts more than 100 potential investors](#). 23 June 2020.

The Australian Gas Industry

The Australian Gas Industry division – West Australia vs Eastern Australia

The Australian gas industry is clearly divided between the efficient Western Australian LNG industry and the financially disastrous East Coast Coal Seam Gas (CSG) to Liquefied Natural Gas (LNG) industry.

The Development of The East Coast Gas Industry

The East Coast gas industry was irrevocably altered by the opening of 3 large export terminals in Gladstone in 2014-15. (For a more in-depth look at the transformation of the East Coast Gas market please see IEEFA's report, Gladstone: The Risks Mount.¹³)

Following the development of Gladstone, the market went from 'domestic only gas' to exporting over 70%.¹⁴ The price rises induced in the domestic market saw domestic gas consumption decline by 21% in the period 2014 – 2020.

Table 1: The Transformation of The East Coast Gas Market – Gas Consumption in PJ

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020f
Gas Powered Generation (GPG)	212	198	210	195	220	175	139	184	130	155	92
Industrial	291	293	301	302	297	280	264	257	254	255	262
Residential and Commercial	181	178	184	174	172	192	185	192	190	190	192
Total Domestic Consumption	684	669	695	671	689	647	588	633	574	600	546
LNG exports	0	0	0	0	5	325	1060	1219	1237	1325	1415
Total Production	684	669	695	671	694	972	1648	1852	1811	1925	1961

Source: AEMO

The gas companies made two fundamental mistakes:

1. They dramatically underestimated the costs of the LNG plants,¹⁵ and
2. They got their costs of production for gas horribly wrong. Far from producing gas at \$2.20-2.70/GJ they produced gas for between \$3.50 and \$8.50/GJ.¹⁶

The result has been that over \$24bn has been written off the failing east coast CSG to LNG industry.

¹³ IEEFA. *Australia's Export LNG Plants at Gladstone: The Risks Mount*. June 2017.

¹⁴ AEMO. *Gas Annual Consumption Total*.

¹⁵ IEEFA. *Australia's Export LNG Plants at Gladstone: The Risks Mount*. June 2017. Page 21.

¹⁶ IEEFA. *Australia's Export LNG Plants at Gladstone: The Risks Mount*. June 2017. Page 22.

Shell is attempting to sell a 26.25% stake in its failed investment. Santos has already written off \$1.5bn of its investment in the Narrabri project.

Rystad, the energy consultant, estimates that at current pricing, 18% of east coast production is uneconomic.¹⁷

Santos Export LNG Business Has Failed

Santos' export LNG business is held through a 30% interest in the GLNG consortium. Feed gas is sourced from GLNG's upstream fields, Santos' portfolio gas and third-party suppliers.¹⁸

According to the 2014 Santos annual report, the GLNG facility has a capital cost of \$21.3bn.¹⁹ As a capital-intensive business, the plant's economic capacity utilisation rates should be very high, typically above 85-90%, but Santos has been unable to achieve such levels.

The GLNG plant has two production trains with a combined capacity of 8.6MT (million tonnes). Production from Train 1 commenced in September 2015 and Train 2 in May 2016.²⁰ The LNG plant produced just 4.8MT of LNG in 2018, utilising just 56% of capacity. In 2019 the LNG plant produced 5.2MT of LNG operating at just 61% of capacity.

As Santos operates on a calendar year ending 31 December, the results above are pre-COVID-19. The global gas glut caused by over investment in LNG facilities world-wide and exacerbated by COVID-19 ensures that the outlook for the industry is very poor.

It is unlikely that Santos' GLNG investment will improve upon its 2019 result in 2020, leaving it a severely underperforming asset.

Santos Has Failed to Fulfil Its Export Contracts

Santos has two long term contracts to fulfil out of its GLNG joint venture totalling 7.6MT. Each contract is for 3.8MTPA over 20 years with Petronas and Kogas.²¹ The contracts started in 2015 and 2016 respectively. Santos has *not* been able to fulfil these obligations as yet.

Indeed, Santos has been unable to fulfil the contracts to supply gas to offshore customers every year since 2014.

¹⁷ Rystad Energy. [Up to 42% of Australian gas resources uneconomical at current LNG netback prices](#). 3 April 2020.

¹⁸ Santos. [Annual Report 2019](#). Page 21.

¹⁹ Santos. [Annual Report 2014](#). Page 43.

²⁰ Santos. [Annual Report 2019](#). Page 21.

²¹ IEEFA. [Australia's Export LNG Plants at Gladstone: The Risks Mount](#). June 2017. Page 20.

Santos Has Destroyed Shareholder Wealth

Santos' failed investment in the CSG to LNG industry has seen investors torched. In 2014 Santos' shares were \$12-13. Today, they are under half that level at just \$5. While the market has risen, Santos has fallen.

The Staggering Write-Offs in The East Coast CSG to LNG Industry

The three export plants at Gladstone are owned by consortium headed by Santos, Origin Energy and Shell. (see Table 2)

Table 2: Ownership of The Three Export Plants at Gladstone

Project	Annual Capacity (MT)	Consortium Lead	Shareholders	Shareholder Percentage	Comment
Australia Pacific LNG (APLNG)	9	Origin Energy	Origin Energy	37.5	Origin Energy is an Australian Stock Exchange listed public company. Origin is responsible for the operation of the APLNG gas fields and the main gas transmission pipeline.
			Conoco Phillips	37.5	ConocoPhillips is a US based oil and gas multinational. It is responsible for the construction and operation of the two train APLNG facility on Curtis Island.
			Sinopec	25	Sinopec Group is China's second largest crude oil and natural gas producer. It is China's largest petroleum products and chemicals producer and supplier.
Santos Gladstone LNG (GLNG)	8.6	Santos	Santos	30	Santos is an Australian Stock Exchange listed public company
			Petronas	27.5	Petronas is Malaysia's national oil and gas company and the worlds second largest exporter of LNG.
			Total	27.5	Total is a large french integrated oil and gas major
			Kogas	15	Kogas is short for Korean Gas Corporation- the worlds largest LNG importer
QCLNG	8.5	Shell	Shell	73.75	Shell took over British Gas (BG Group) in February 2016. BG had in turn taken over Queensland Gas Company in November 2008. Shell also owns Arrow Energy.
			CNOOC	25	China National Offshore Oil Corporation ("CNOOC"), the largest offshore oil & gas producer in China, is a state-owned company operating directly under the State-owned Assets Supervision and Administration Commission of the State Council of the People's Republic of China. Founded in 1982 and headquartered in Beijing.
			Tokyo Gas	1.25	Tokyo Gas is a supplier and distributor of gas and electricity into Japan.

Source: Total, Shell, APLNG (<https://www.total.com/news/australia-gladstone-lng-ships-first-liquefied-natural-gas-cargo>; <https://www.aplng.com.au/about-us.html>; <https://www.shell.com.au/about-us/projects-and-locations/qgc/about-qgc.html>)

Santos has written off \$7.9bn since 2014 on its east coast CSG and LNG assets including the recent July 2020 announcement of a \$976m write down.²²

Origin has written off \$4.7bn since 2014 including its recent July 2020 announcement of a \$745m write-down.

Shell took over BG group in 2015. Prior to the takeover, BG Group wrote down the value of its CSG to LNG assets in Australia by US\$6.8bn (A\$7.7bn).²³ In May 2017, Shell wrote off a further \$1.2bn following poor drilling results.²⁴

In June 2020, Shell announced up to US\$22bn in write-downs including US\$8-9bn²⁵ on its Australian assets Prelude and QCLNG (its failing CSG to LNG investment). IEEFA estimates that the write-offs taken on QCLNG are A\$2.9bn.

Shell (and BG Group) write-offs on its failed CSG to LNG investments total an estimated \$11.8bn.

The three lead companies in the consortium that own the three export CSG to LNG plants at Gladstone have written off over \$24bn since 2014 on their failed investments.

The Narrabri Project is High Cost Gas

The average costs of production for existing gas fields on the east coast of Australia are \$3.05/GJ, according to Core Energy who were commissioned by AEMO.²⁶ Core Energy estimates that the Narrabri gas project (stated in the report as Gunnedah) will have costs at a minimum \$7.28/GJ.

Narrabri gas is high cost gas at more than twice the costs of existing fields. It is simply not possible to bring down the cost of a commodity by producing it at a high cost, as Santos will do at Narrabri. The proposition is absurd.

Narrabri gas has been pledged to the Sydney consumer by Santos. Santos is planning to supply the domestic market with high cost gas whilst exporting lower cost sources of gas. It will use the high costs at Narrabri to justify pricing the domestic market at a premium.

Essentially, the Narrabri gas project will not bring down the cost of gas for the domestic consumer as Santos claims, nor will it have no effect on the domestic market as the Department of Planning maintains.

²² Santos Annual Reports 2014-2019 plus its July 2020 announcement to the ASX.

²³ Mining Weekly. [BG Group reports massive write-down on Aus assets](#). 4 February 2015.

²⁴ The Australian. [Shell's \\$390m asset write-off casts doubt on CSG reserves](#). 2 May 2017.

²⁵ Shell. [Shell second quarter 2020 update note](#). 30 June 2020.

²⁶ AEMO. Core Energy and Resources. [Gas Reserves and Resources and Cost Estimates](#). November 2019. Page 13.

The Narrabri gas project will force up the price of gas for the domestic consumer.

Santos Has Mislead the Independent Planning Commission

In their address to the IPC in July 2020, Santos stated that:

“You’ve seen the impact that we’ve had in Australia – sorry, in Queensland over the last four or five years, where we’ve taken down the cost of supply by reducing drilling costs by more than 84 per cent and production cost by more than 36 per cent. As we continue on that trajectory, we’re driving the cost of supply down, and Narrabri will benefit from those cost ... programs and those efficiency programs that we’ve been able to implement over the last four years or so to drive that cost of supply down further.”²⁷

Days later, Santos announced a \$976m write-down of its East Coast CSG to LNG assets.

If the company had managed to cut costs so successfully, why did it announce such a massive loss of value when it had already written of \$7bn in the period 2014-2018 prior to its most recent write-off?

Santos’ claims of massively reduced costs cannot be taken seriously.

The Effects of The CSG To LNG Industry on The Australian Economy

Of far more significance than the losses incurred by Santos, is the effect of the East Coast CSG to LNG industry on the Australian economy.

For many years prior to 2014, the price of gas in Australia was steady at \$3-4/GJ. We are often told that we must pay export parity pricing for gas now that we are large exporters. Nothing could be farther from the truth. As report²⁸ after report issued by the ACCC has shown, we pay well above what we should.

The ACCC’s first inquiry into the gas industry, the East Coast Gas Inquiry 2015, concluded with a report in April 2016.²⁹ In April 2017 the government directed the ACCC to start another gas inquiry for a period of three years. In July 2019 the inquiry was extended to December 2025. It is now essentially a never-ending inquiry that republishes the same conclusions again and again. The government responds with precious little action and certainly none that makes a material difference to the gas and electricity consumer on the east coast of Australia.

²⁷ Independent Planning Commission Public Hearing Re: Narrabri Gas Project. 20 July 2020. Page 38.

²⁸ ACCC. Inquiry into the east coast gas market. April 2016.

²⁹ ACCC. East Coast Gas Inquiry 2015. 22 April 2016.

We are now up to the ACCC's 9th report on the east coast gas industry. All the reports essentially say the same thing: that consumers are being price gouged by the gas industry and are paying more than they should for gas on a consistent basis.

Figure 9: The Never Ending ACCC Gas Inquiry



The screenshot shows the ACCC website's 'Publications' section. The main heading is 'Gas inquiry 2017-2025'. Below the heading, there is a 'Listen' button and a paragraph of text: 'On 19 April 2017 the Australian Government directed the ACCC to conduct a wide-ranging inquiry into the supply of and demand for wholesale gas in Australia, as well as to publish regular information on the supply and pricing of gas for the next three years. On 25 July 2019, Treasurer the Hon Josh Frydenberg MP, wrote to the ACCC extending the ACCC's inquiry into the gas market until December 2025.' Below this, there is an 'Issues' section with a link to 'Gas inquiry January 2020 interim report'. The link is accompanied by a small image of the report cover and a brief description: 'This is the eighth interim report of the Australian Competition and Consumer Commission's (ACCC) inquiry into gas supply arrangements in Australia. The ACCC has continued its focus on the operation of the East Coast Gas Market, where there are immediate and longer-term concerns. 18 Feb 2020'.

Source: ACCC (<https://www.accc.gov.au/publications/serial-publications/gas-inquiry-2017-2025>)

Santos is Not A “Fit and Proper” Entity to Hold A Coal Seam Gas Licence in The State Of NSW

Santos is not a fit and proper entity to hold a CSG production licence in the state of NSW as it has actively flouted approval conditions in the state of Queensland.

Santos asserted in the Environmental Impact Statement (EIS) for its Gladstone GLNG plant that it would *not* contribute to a future shortage of gas in the east coast market:

“The project may initially supply domestic gas markets, but it is not diverting gas from local markets to export markets. The project’s supply of gas to the domestic market is uncertain at this stage. Options to manage ramp-up gas and any gas that is surplus to the requirements of the LNG facility include a

range of commercial and technical possibilities. Therefore, the project has no direct implications for domestic gas prices. The gas to supply the LNG facility will come from newly developed CSG fields. The amount of gas is very small relative to the identified conventional and CSG fields reserves available to supply the Australian east gas fields. It is therefore unlikely to contribute to a future shortage of gas in the domestic market.”³⁰

Santos made additional assertions that it could supply their Gladstone export project from new sources of supply:

“As Santos worked toward approving its company-transforming Gladstone LNG project at the start of this decade, managing director David Knox made the sensible statement that he would approve one LNG train, capable of exporting the equivalent of half the east coast’s gas demand, rather than two because the venture did not yet have enough gas for the second.”

“‘You’ve got to be absolutely confident when you sanction trains that you’ve got the full gas supply to meet your contractual obligations that you’ve signed out with the buyers,’ Mr Knox told investors in August 2010 when asked why the plan was to sanction just one train first up.”

“‘In order to do it (approve the second train) we need to have absolute confidence ourselves that we’ve got all the molecules in order to fill that second train.’”

“But in the months ahead, things changed. In January 2011, the Peter Coates-chaired Santos board approved a \$US16 billion plan to go ahead with two LNG trains from the beginning.”³¹

Despite the official assurances by Santos, both in approvals documents for the government and in investor briefings, the company has been unable to supply its export plants and has bought gas out of the domestic market instead.

Credit Suisse estimated that Santos purchased 160PJ out of the domestic market in 2016, equivalent to 27% of domestic consumption.³² The purchase of third-party gas for export has placed tremendous pressure on domestic prices as the ACCC gas inquiry has repeatedly found.

Santos has not adhered to project conditions for its GLNG export facility in Queensland. Its lack of adherence has forced up the price of domestic gas in Eastern Australia to prices above international prices. It has brought tremendous hardship to gas and electricity consumers in Australia.

Santos is not a fit and proper entity to hold a CSG mining licence in the state of NSW.

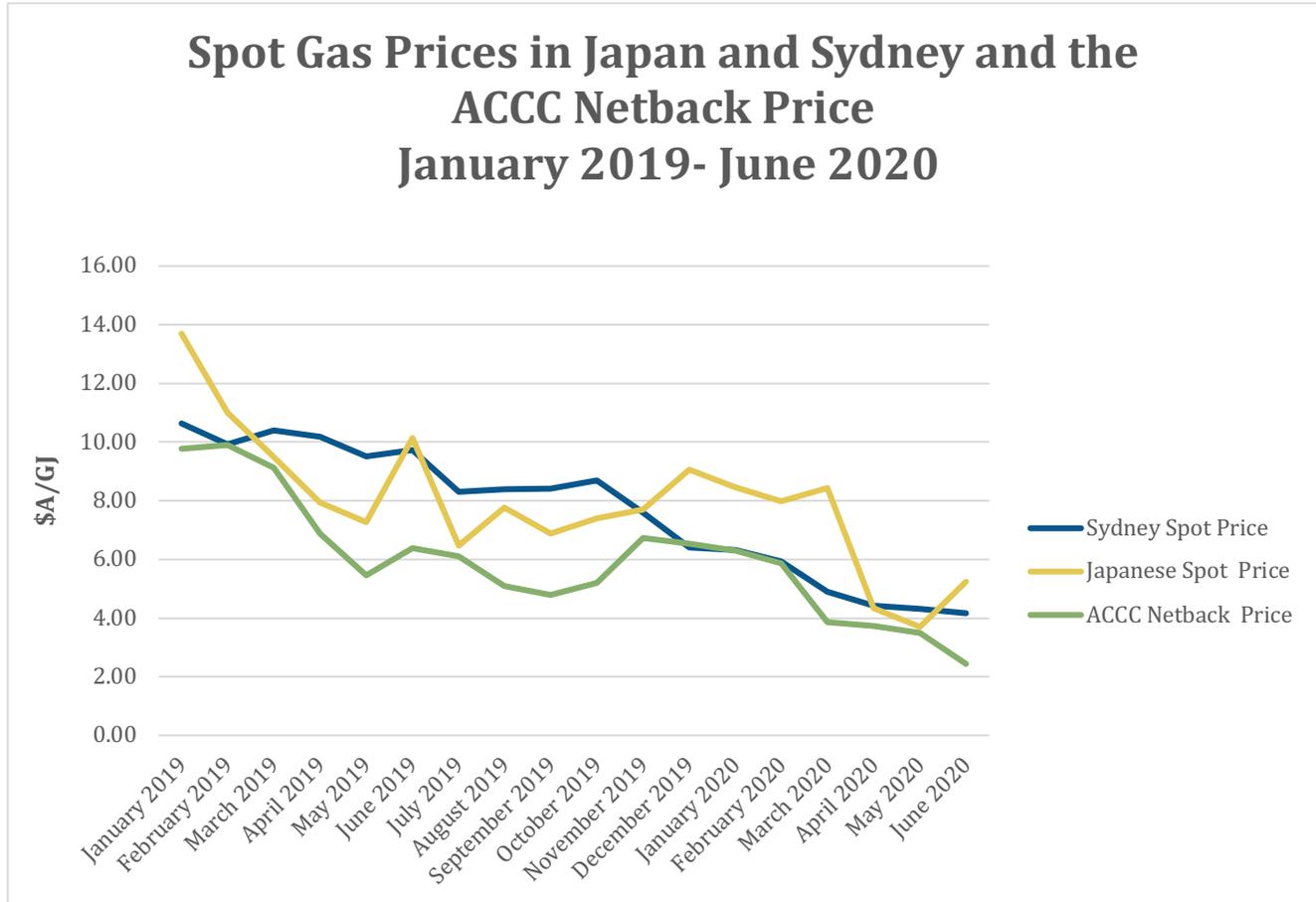
³⁰ GLNG Project. Environmental Impact Statement. Chapter 6. Page 6.15.11

³¹ The Australian. [How Santos’s leap of faith became gas supply strife](#). 3 April 2017.

³² Credit Suisse. [East Coast Gas Market](#). 1 March 2017.

Australian Gas Consumers Pay More for Gas Than Our Asian LNG Customers

Figure 10: Spot Gas Prices in Japan, Sydney and the ACCC Netback Price



Source: Australian Energy Market Operator (AEMO), Ministry of Economy Trade and Industry (METI), The Australian Competition and Consumer Commission (ACCC)

The chart above shows how Australian gas consumers have, for most of the time, paid more for gas than consumers in Japan (our largest export customer). For almost the entire period, we have paid a higher price than the ACCC deems appropriate. The ACCC uses the netback price as a benchmark for what we should be paying.³³

The east coast gas industry – or cartel - has consistently price gouged the Australian domestic consumer and our governments have allowed them to. The cartel has used the Australian gas consumer to socialise its losses on the export markets. Cartels,

³³ ACCC. *Gas inquiry 2017-2025*. 3 August 2020.

incidentally, are an illegal market structure, as is the price fixing that so clearly occurs.

The cost of the gas cartel to the economy has been immense. Not only has gas priced itself out of the electricity system, except for very niche peak power applications, it has also destroyed Australian gas intensive manufacturing. Gas use in industry has fallen 12% since 2014.³⁴

High Gas Prices Have Also Ensured High Electricity Prices on the East Coast of Australia

According to the ACCC, high gas prices have led to high electricity prices in the NEM:

“Another major factor in wholesale prices has been the significant shortages in competitively priced gas at a time when gas-powered generation would often be the logical source of replacement for lost coal-fired capacity. Gas prices have doubled or tripled in recent years. We estimate that for every \$1/GJ rise in gas prices, the wholesale price of electricity rises by up to \$11/MWh, depending on regional differences in the NEM.”³⁵

The leveraged effect of gas prices on electricity prices is profound. For example, we can compare actual gas prices with the more reasonable National COVID Commission (NCCC) gas price target of \$4/GJ.

In the first quarter of 2019, wholesale contract gas prices were \$9-11/GJ.³⁶ Wholesale electricity prices were 130/megawatt hour (MWh)³⁷ and the contribution of gas generation was strong in the NEM. Gas generation sets the price for electricity in the NEM. If gas was at \$4/GJ in Australia at that time, wholesale electricity prices could have been as low as \$64/MWh or half of what they were.

The effect of inflated gas prices on electricity prices is profound. Narrabri is expensive gas and as we have shown, will raise the price of gas as the gas cartel recovers its high costs. High gas prices will raise electricity prices in the NEM placing a massive burden on the entire economy, not just gas consumers.

³⁴ Source: AEMO see Table 1

³⁵ ACCC. [Retail Electricity Pricing Inquiry—Final Report](#). Page viii.

³⁶ ACCC. [Gas Inquiry 2017-2020. Interim Report](#). Page 9.

³⁷ OpenNEM. NEM.

Tax and Royalties from The Onshore Gas Industry in Australia Have Been Notably Absent

Royalties

Santos claims that it will pay \$1.2 billion in royalties to the state of NSW.³⁸

The IPC should carefully examine the experience of Queensland before taking this figure at face value. Santos is a leading player in the Queensland CSG industry and similar extravagant claims were made by the industry prior to it commencing operations in that state. Royalty payments have consistently disappointed the state of Queensland. The end result has been that Queensland taxpayers have funded the industry.

In the 2014 Queensland budget, petroleum royalties were expected to rise from \$68m in 2013-14 to \$660m by 2016-17 on the back of the boom in CSG. The result was a fraction of the expectation at just \$98m in 2016-17.

The royalty take by the Queensland government was so disappointing that the rate was increased from 10% to 12.5% starting in 2019-20.³⁹

The 2019-20 State budget stated that the estimated actual royalty take from the petroleum sector was \$450m in 2018-19.⁴⁰ With the crash in global gas prices it is likely that this will be the high point for royalty collection for quite some time.

The Queensland government will not have recovered the costs of administering the CSG industry, road repair/upgrades and maintenance and provision of other infrastructure and services.

The Queensland government recently reviewed its royalty regime and on 8 June 2020 announced that a new volume-based model will apply from 1 October 2020.⁴¹ The outcome of this review is highly uncertain.

The industry has a history of royalty evasion that should be examined closely by the IPC and perceived benefits to the community in Queensland have been non-existent.

³⁸ Independent Planning Commission Public Hearing Re: Narrabri Gas Project. 20 July 2020. Page 33.

³⁹ Queensland Government. [Budget Strategy and Outlook 2019-20](#). Page 72.

⁴⁰ Queensland Government. [Budget Strategy and Outlook 2019-20](#). Page 86.

⁴¹ Queensland Government. [Queensland Petroleum Royalty Review](#). 8 June 2020.

Taxes

Taxes paid by the CSG to LNG industry in Queensland have been minimal.

The Australian Tax Office publishes actual tax paid by corporations. The latest year for these statistics is 2016-17.⁴² The record of tax paid by companies who have benefited from the natural wealth of Queensland has been very poor.

In 2016-17 BG group paid no tax. BG has been taken over by Shell and it too paid no tax in 2016-17.

The other two consortium that own plants at Gladstone are led by Santos and Origin, neither of which paid tax in 2016-17, according to the ATO.⁴³

There simply have not been the billions of dollars for the Queensland and Commonwealth governments that were promised.

The IPC should look at the CSG to LNG's industries contribution to society in terms of tax and royalties and judge it according to its actual history and not the extravagant claims, backed by scant evidence, made by the proponent of this project, Santos.

We Need the Gas for Industry

The East Coast Market is Interconnected and Is One Market

The east coast gas market is one market connected by pipelines.

The industry constantly wants to push state against state by saying, for example, that NSW is not "self-sufficient" in gas. In economic terms, this is nonsense.

Historically, NSW has only ever been a bit player in east coast gas production, sourcing its gas from efficient and cheap sources in the Moomba/Cooper and Bass Strait basins.

The idea that each state should produce all its products, including energy inside its own borders, runs counter to any idea of some states being better at producing products than others. It will send this nation down a road to economic poverty.

⁴² Australian Government. *Corporate Tax Transparency*. Updated 12 December 2019.

⁴³ <https://data.gov.au/dataset/ds-dga-c2524c87-cea4-4636-acac-599a82048a26/details>

For Some Applications There Are Substitutes, for Others We Need Gas

Many high heat applications for gas can be substituted with cheap renewable power. Some however cannot, and therefore we need some gas production.

The federal and NSW governments have set the level of gas needed at 70PJ pa, being somewhat conveniently the same production number as the Narrabri gas project.

The Solution Involves Looking at Demand as Well As Supply

Gas use in residential and commercial applications can largely be substituted for cheaper electrical heating in the form of air conditioners, induction cooking and heat pumps for hot water.^{44 45}

This would make available up to 190PJ pa and would dwarf the proposed contribution from Narrabri.⁴⁶

Policy Responses Would Fix the Problems in The East Coast Gas Market

Gas production on the east coast of Australia has tripled since 2014. Exports have gone from zero to over 1400PJ yet there is still talk of gas “shortages”.

We have enough gas. The problem on the east coast is essentially one of price and market structure, not shortages.

In Western Australia, they faced a similar problem to the east coast and have successfully ensured cheap and bountiful sources of gas for the domestic gas consumer by implementing a domestic gas reservation.

On the east coast, a domestic gas reserve on existing and prospective gas fields would solve both the supply and price problems being experienced in the domestic market. For a more in-depth review of the east coast gas market and how a domestic gas reservation could be implemented, please see IEEFA’s report, “Towards a Domestic Gas Reservation in Australia”.⁴⁷

⁴⁴ Melbourne Energy Institute. [Switching off gas - An examination of declining gas demand in Eastern Australia](#). 26 August 2015.

⁴⁵ Environment Victoria. [A Gas-free recovery? New report shows how phasing out gas will benefit all Victorians](#). 3 June 2020.

⁴⁶ See Table 1.

⁴⁷ IEEFA. [Towards a Domestic Gas Reservation in Australia](#). 9 July 2019.

ESG: Environmental and Social Governance

One of the less enlightening passages of the IPC's hearings re the Narrabri proposal was the answer given by the Department of Planning to the question put by Mr O'Connor: (on page 24 of the transcript)

"MR O'CONNOR: Okay. Just a question following on from Richard's discussion with you moments ago about the precautionary principle. Looking through the department's assessment report, I'm struggling to find where the ESD principles – the ecologically sustainable development principles – have been addressed by the department. Can you lead me to where that's given some consideration?"

This response was floundering at best⁴⁸ and he virtually went on to say that ESD principals were the vibe of the whole report.

IEEFA notes these issues need to be addressed comprehensively. In the investment industry we deal with these issues under three simple principals: Environmental, Social and Governance (ESG).

Environmental Issues

We will single out two issues for examination, either of which would see the Narrabri project rejected: water and emissions.

As with tax and royalty payments, the Department seems loathe to look just north of the border where the CSG to LNG industry has been in operation since 2014.

Water

IEEFA notes the lack of assessment of the data out of Queensland is negligent. Whilst geology differs in different regions, the lived experience, albeit short term, should be properly assessed.

In just one CSG basin in Queensland, the Surat Basin, 122 bores have run dry as a result of CSG activities and are subject to 'make good' arrangements by CSG companies according to the Queensland Government's own Office of Groundwater Impact Assessment.⁴⁹ The predicted number of affected bores has increased by 10% in the most recent report (from the 2016 estimate) to 571 bores. This is a significant impact on just the Surat Basin, or for those of us with memories of a region renowned for its agricultural prowess, the Darling Downs.

⁴⁸ Independent Planning Commission Public Hearing Re: Narrabri Gas Project. 20 July 2020. Page 24.

⁴⁹ Queensland Government. [Underground Water Impact Report for the Surat Cumulative Management Area](#). July 2019.

There is a distinct timing mismatch that is not highlighted by either the Department of Planning nor the Queensland government. The gas industry has only been commercially producing CSG in the Surat basin since 2006.⁵⁰ Production has ramped up significantly post 2014 when the LNG export facilities started operation. The CSG fields are expected to be in operation for 30-50 years, after which the licences will be handed back and the companies involved will go and find other activities.

The 'make good' arrangements on the 571 water bores (a number that only seems to increase as time passes) that are expected to be impacted, only last whilst the petroleum licence is held by a company.

Farms don't last for just 30 – 50 years. They go on as long as life persists.

The water bores do not repair themselves when they have been affected by the CSG industry; they are permanently impaired. The farmers are left with a permanently diminished asset. A farm with less water is not viable.

The effects of the CSG industry in Queensland clearly demonstrate that the industry cannot "manage" water loss in agricultural bores. This is permanent irrevocable loss.

Emissions from Gas Have Been Underestimated

Nature, the eminent scientific journal, published a major new study earlier this year showing that emissions of the potent greenhouse gas, methane, from fossil fuel production are 25% to 40% higher than previously understood.⁵¹

The research measured methane levels in ice cores. The methane produced by fossil fuel extraction has a signature that can be identified. By measuring methane radiocarbon from more than 200 years ago, when there were no industrial sources, the researchers knew that all fossil methane from that era had to be emitted naturally. They found that almost all the methane emitted to the atmosphere was biological until about 1870. That is when the fossil component began to rise rapidly. The timing coincides with a sharp increase in the use of fossil fuels.

Significantly, researchers discovered the levels of naturally released methane from fossil fuels are about 10 times lower than previous research reported. IEEFA notes gas producers can no longer blame flatulent cattle for the emissions their industry produces. As the researcher says:

"We've identified a gigantic discrepancy that shows the industry needs to, at the very least, improve their monitoring," said Benjamin Hmiel, a researcher at the University of Rochester and the study's lead author. "If these emissions are truly coming from oil, gas extraction, production use, the industry isn't even

⁵⁰ Queensland Government. [Queensland's petroleum and coal seam gas 2015–16](#). January 2017. Page 5.

⁵¹ Nature. [Preindustrial 14CH₄ indicates greater anthropogenic fossil CH₄ emissions](#). 19 February 2020.

reporting or seeing that right now.”⁵²

Methane Venting and Leakages

Methane is the greatest threat to the warming climate. If gas leaks and venting account for more than 2% to 3% of methane produced, it is worse for the climate than coal.⁵³

With the installation of methane leak detection equipment on new gas projects, companies are facing new challenges to necessarily overcome.

BP stated that:

“The wider energy industry leaks about 3.2% of the gas it produces, which is probably almost enough to offset the benefit of switching from coal to gas.”⁵⁴

Essentially, BP is acknowledging that gas is worse than coal for greenhouse gases. The gas industry in Australia must do the same.

The Supply Chain in Gas

The gas industry’s claims of low emissions, echoed by governments, are based on a half-truth.

According to GISERA, the gas industry-funded and gas industry controlled, arm of CSIRO⁵⁵, gas consumed domestically produces:

- 31% fewer emissions when burned in an open cycle gas turbine (OCGT), commonly known as a gas peaking plant, or
- 50% fewer emissions when burned in a more efficient combined cycle gas turbine (CCGT), commonly referred to as a gas baseload plant.

Combined cycle gas turbines (CCGT) are not a large part of the electricity system in Australia for one very simple reason – they are very expensive to run. Gas prices in

⁵² Nature. [Preindustrial 14CH4 indicates greater anthropogenic fossil CH4 emissions](#). 19 February 2020.

⁵³ Page 26. “A general consensus has emerged from these studies that climate benefits of natural gas replacing coal are lost where fugitive emissions from all upstream operations are greater than 3% of total production” (Alvarez et al 2012; Zavala-Araiza et al 2015) in CSIRO Energy. [Whole of Life Greenhouse Gas Emissions Assessment of a Coal Seam Gas to Liquefied Natural Gas Project in the Surat Basin, Queensland, Australia. Final Report for GISERA Project G2](#). July 2019.

The lower level of 2% was based on a shorter 20-year (Global Warming Potential) time frame as opposed to the 100-year time frame. Sourced from correspondence with Professor Ian Lowe.

⁵⁴ Bloomberg. [BP to Install Permanent Methane Leak Detectors on New Projects](#). 10 September 2019.

⁵⁵ GISERA. [Whole of Life Greenhouse Gas Emissions Assessment of a Coal Seam Gas to Liquefied Natural Gas Project in the Surat Basin, Queensland, Australia. Final Report for GISERA Project G2](#). July 2019. Page viii.

Australia are simply too high and it is not economic to run them when there are cheaper sources of power. In the U.S. there is a large fleet of CCGT gas power stations as gas prices are reasonable.

If gas is to be used as a transition fuel in Australia, CCGT would need to be retired and more of the emissions-intensive open cycle gas turbines will be needed. OCGT are less efficient but far more flexible because they can be rapidly started and shut down to fill in the gaps when renewable power is deficient.

IEEFA notes that the promotion of 50% less emissions from gas is at best dishonest and is designed to mislead and deceive the public, investors and gas consumers.

A Full Life Cycle Analysis Gives a Totally Different Picture

The industry's claims of gas producing 50% less greenhouse pollution than coal also fails to consider a full life cycle analysis of the product.

Australia is the world's second-largest exporter of gas⁵⁶, with the gas industry exporting about three quarters of the gas it produces. Gas must be liquefied for export in an extremely energy intensive process that super cools the gas to minus 160°C.

Robert Howarth, a leading Cornell University gas emissions expert, said in a submission to the Irish parliament that:

*"To liquefy and transport the gas requires a substantial amount of energy: to import one cubic meter of gas as LNG would require 1.2 cubic meters of gas to be produced, with 0.2 cubic meters consumed to produce and transport the LNG (Hardisty et al, 2012, Energies, 5: 872-897)."*⁵⁷

The energy intensity of the LNG process is best illustrated by the fact that 17% of the methane produced is used just to produce and transport the LNG. The direct emissions of methane in the shipping process are unknown.

Howarth explains:

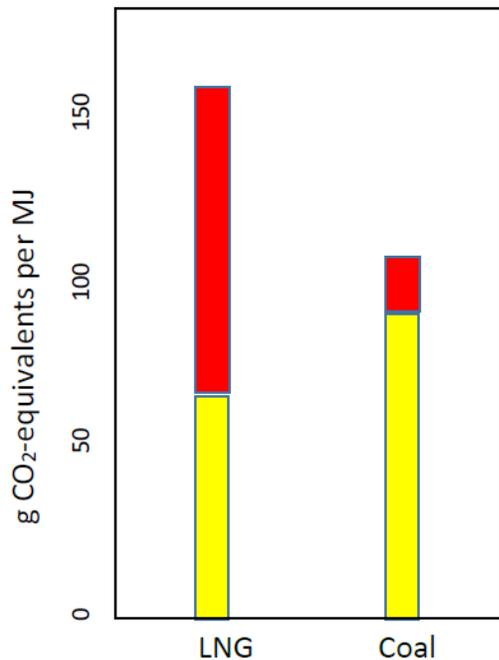
"LNG is kept in liquid form by allowing some methane to "boil off," resulting in evaporative cooling. In a typical voyage, 2 to 6% of the LNG is lost as gaseous methane due to this boil off. Usually, the methane is used as fuel to help power the ship, but it seems highly likely that some is emitted to the atmosphere, although I am aware of no data on this emission."

⁵⁶ Australian Government. Department of Industry. [Resources and Energy Quarterly December 2019](#).

⁵⁷ Testimony of Robert W. Howarth, Ph.D. Cornell University, Ithaca, NY 14853 USA before the Joint Committee on Climate Action House of Oireachtas, Ireland. 9 October 2019. Page 2.

He concludes that, taking in all the emissions and burning as fuel, LNG produces more greenhouse gases than coal.

Figure 11: Electricity Produced with LNG Emits More Greenhouse Gases Than Coal-fired Electricity



Source: Robert W. Howarth

Figure 11 shows the greenhouse gas footprint of LNG imported to Ireland from the U.S. compared to coal. Emissions of carbon dioxide are shown in yellow. The red bars indicate methane emissions in units of carbon dioxide equivalents.⁵⁸

Because most of the gas Australia produces is exported, it is misleading of the gas industry to claim that gas emits 50% less greenhouse gas than coal. The 50% figure covers only domestic consumption. Once the effects of liquefaction, shipping, regasification and distribution are considered, LNG may well be a more damaging way of producing power.

⁵⁸ Estimation of greenhouse gas emissions: Emissions of carbon dioxide are as reported in Howarth's 2011 paper and are based on data from the US Department of Energy. Emissions of methane from coal are as reported in 1996 by the Intergovernmental Panel on Climate Change. Methane emissions for LNG are based on a 3.5% emission rate for shale gas in the United States, as determined in my 2019 Bio geosciences paper, and the estimate of Hardisty et al. (2012) on the amount of natural gas consumed in the process of producing and transporting LNG. Methane emissions are converted to carbon dioxide equivalents using the 20-year global warming potential of 86 reported by the Intergovernmental Panel on Climate Change in their 2013 synthesis report.

Conclusion for Emissions

Every state and territory in Australia has some sort of net zero emissions target by 2050.

Gas is a high greenhouse gas emitting fuel. Producing and consuming more gas is fundamentally opposed to current state and territory government policies on emissions. We must be looking to reduce production and consumption of gas, not increase production and consumption if we are to meet the net zero targets.

Social Issues

CSG has a large environmental footprint. Its operations require a network of roads, pipelines and water treatment ponds and facilities that may or may not be on private land. As the industry expands out of the Pilliga forest and onto more agricultural land, the need for a social licence to operate becomes ever more pressing.

IEEFA does not need to remind the IPC that the Narrabri gas project is one of the most opposed projects in the history of planning in NSW. Any large resource project, that in the fullness of time will be needing more access to private land, needs broad social acceptance.

Santos' Narrabri gas project does *not* have broad social acceptance. Rather, it has broad social opposition. The sheer numbers of opposing submissions to the project show this.

Governance Issues

There are three pertinent issues surrounding governance and the Narrabri gas project.

The science surrounding the gas industry is conducted by the Gas Industry Social and Environmental Research Alliance (GISERA), a special purpose arm of CSIRO. GISERA is funded by the gas industry. It has five gas industry executives on its board of nine voting members. There is a clear conflict of interest.

The mining approvals process itself is deficient and not fit for purpose. The process was designed for mines which are located in one position. CSG is a multi-staged development that spreads out from its initial approval to cover large tracts of land. One only has to look at Queensland to see this occurring.

The IPC is only looking at stage one of a multistage development. It is only assessing 840 wells in the Pilliga forest. Yet Santos holds petroleum licences over much of north west NSW. It is clearly their intention to develop these licences on prime agricultural land, otherwise why would they hold them. If approval for stage one is given, approvals for stages 2, 3, 4 etc are easily rubber stamped. The cumulative effects of the stages are not assessed.

CSG should have a different approvals process that takes into account the staged nature of the development and the cumulative effects of the stages.

The NSW chief scientists' 16 recommendations on the safe operation of the CSG industry have not been fully implemented⁵⁹ despite them being received by government some six years ago in September 2014.⁶⁰

The gas industry and the government cannot claim safe operation until all 16 recommendations have been fully implemented. Indeed, to proceed to approve Narrabri in the absence of such oversight would be extremely reckless.

⁵⁹ NSW Parliament. [The implementation of the recommendations contained in the NSW Chief Scientist's Independent Review of Coal Seam Gas Activities in New South Wales](#). February 2020.

⁶⁰ NSW Government. Chief Scientist and Engineer. [Independent Review of Coal Seam Gas Activities in New South Wales](#).

About IEEFA

The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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