Climate Council of Australia

Submission to: The New South Wales Independent Planning Commission hearing into the proposed Santos Narrabri Gas Project

Addressed to: Independent Planning Commission
via https://www.ipcn.nsw.gov.au/have-your-say

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About the Climate Council

The Climate Council is an independent non-profit organisation funded by donations by the public. Our mission is to provide authoritative, expert advice to the Australian public on climate change.

To find out more about the Climate Council's work, visit www.climatecouncil.org.au.

1. Executive Summary

It is the Climate Council's firm position that this project should not be approved.

The concerns we highlight are centred on the following key facts:

- Meeting globally-agreed temperature goals requires a well-planned, but nonetheless rapid, transition to a fully decarbonised energy system. The immediate, deep and permanent level of greenhouse gas emissions reduction required to stabilise global temperatures at the globally agreed goals mean that there is no more room for new gas infrastructure. The project should be rejected on that basis alone.

- The data provided by the proponent relating to emissions from their project is based on science which is more than a decade old and conditions present on a different continent. The proponent has made no effort to show how conditions there are relevant to the Australian experience.

- The best available energy system modelling, including that produced by the Australian Energy Market Operator (AEMO), shows that new gas-powered generation capacity is not required in New South Wales or anywhere else in the National Electricity Market (NEM) any time between now and 2041.

- New gas-powered generation will not reduce the emissions intensity of the New South Wales grid relative to the counterfactual where it is not built. The proponent's emissions estimates deviate wildly from contemporaneous assessments using the same version of the same methodology. The proponent has not attempted to disclose any of the assumptions underpinning their assessment making it impossible to quantify their clear errors.

- As a result of COVID-19 and its impact on the global market for oil and gas, the gas shortfall predicted by AEMO is now exceptionally unlikely to materialise and locking in a decades-long fossil fuel project to avoid it is the worst answer to this now-hypothetical problem.

2. Introduction and overview

We thank the Independent Planning Commission for the opportunity to be heard on the important matter of whether the proposed unconventional gas project in Narrabri should proceed.

It is the Climate Council's firm position that this project should not be approved.

Our position on this development shares a lot in common with certain features of the NSW Land and Environment Court's judgment in the *Rocky Hill* litigation.[1] The current state of the remaining global greenhouse gas emissions budgets is such that staying beneath the globally agreed temperature goals identified in the Paris Agreement means new fossil fuel developments must be rejected. Approval of this gas development will lead to an unnecessary and unacceptable additional increase in global greenhouse gas concentrations at a time where what is urgently needed is a rapid and deep decrease in annual greenhouse gas emissions.[2]

In 2020, it no longer makes any sense to approve new fossil fuel projects. Wind and solar are the cheapest form of new electricity generation in Australia.[3] We must accelerate the transition to renewables and storage technologies and new fossil fuel projects will only delay climate responses.

In this submission, we focus on a handful of discrete issues related to the proponent's 2016 Environmental Impact Statement ('EIS') and the Department of Planning, Infrastructure and Environment's ('DPIE') recent assessment report. After having had preliminary discussions with other organisations, we are generally supportive of the positions taken by the North-West Alliance, Institute for Energy Economics and Financial Analysis, Environment Defenders Office and the Sydney Environment Institute among others and ask the Commissioners to take seriously the expertise offered by these groups.

Each of the issues raised in this submission has, to some degree, been raised with the proponent and the department through the assessment process. The responses have been underwhelming. So far, the proponent has failed to respond in any meaningful way with clear errors identified in the Environmental Impact Statement (EIS) and has made virtually no effort to justify how it intends to address these errors. We are concerned that the Department does not seem to have seriously turned its mind to any of the matters we outline here. The assessment report does little more than reiterate the proponent's unjustifiable claims.

The simple and most essential fact is that this project, if approved, would see an overall increase in greenhouse gas concentrations in the atmosphere relative to the counterfactual scenario where this project did not occur. There is no demonstratable benefit we can see that might accrue as a result of this project. This project would do little more than further exacerbate the kinds of climate impacts that Australia—and New South Wales in particular—has felt most

acutely in the past year with a Black Summer of devastating bushfires, drought and heat. As a result, the project clearly fails to meet the public interest and should be rejected.

3. The global emissions budget and the Australian climate context.

The 2015 Paris Agreement establishes a shared global goal of limiting global mean warming to well below 2°C above pre-industrial temperatures, while pursuing efforts to limit average warming to 1.5°C above the same threshold temperature.[4] This goal has been agreed to by all 197 members of the United Nations, and formally ratified by all but eight countries,[5] making it the only appropriate benchmark for a globally agreed goal. Australia is a signatory to this agreement and ratified it in 2016.[6]

In 2018, the Intergovernmental Panel on Climate Change ('IPCC') released its special report, *Global Warming of 1.5°C*. This report was exceedingly clear on two matters.

First, while limiting mean warming to well below 2°C above pre-industrial temperatures is vastly superior to greater levels of warming, there is a distinct and appreciable benefit to reducing climate change further, especially in a country as vulnerable to the impacts of climate change as Australia.[7] Second, the report outlines, with unprecedented clarity, what must be done to meet those goals.[8] Namely: immediate, deep and enduring cuts are required to global greenhouse gas emissions across the world.

Based on the greenhouse gas emissions budgets in the special report,[9] the window of opportunity to limit global warming to the stretch goal embedded in the Paris Agreement—our choice to limit mean global warming to no more than 1.5°C above pre-industrial temperatures—is either astoundingly small or entirely closed already, depending on the assumptions used when assessing the remaining budget. The United Nations Environment Programme has calculated that meeting this goal would require annual emissions reductions of 7.6% per year, every year over the next decade to meet it.[10] This would require a wholesale transformation of the global energy system that is entirely without precedent and which may in fact be impossible, yet their assumptions are likely optimistic: that report does not consider other known, but difficult to quantify non-linearities in the global climate system.[11]

The uncomfortable reality is that more greenhouse gas has been added to the global atmosphere since the publication of the IPCC's first assessment report in 1990 than had occurred in the entire history of humankind beforehand.[12] In 2019, the global community was farther from the necessary goal of net zero greenhouse gas emissions than it has ever been, with emissions from the consumption of fossil fuels—coal, oil and, most notably for the purposes of this hearing, gas—having reached record highs.[13] It is difficult to know what the full

scale of the shock to global emissions from COVID-19 will be. Undoubtedly, the shock to global economies has been remarkable, but it is very far from the kind of systemic change needed to manage climate change effectively. We have a unique opportunity to reboot economies while tackling climate change through the creation of clean jobs and setting us up for the future.[14] New gas can only set us back.[15]

It is important to put the global temperature goals—limiting global mean warming to well below 2°C above pre-industrial levels, while pursuing efforts to limit it to 1.5°C—into context. To date, the world has warmed by an average of 1.1°C above pre-industrial levels.[16] In the past 12 months, New South Wales has seen record high temperatures and set a new record for the lowest ever rainfall,[17] with these two factors contributing to extensive drought conditions across the state.[18] These conditions were driven by a changing climate.[19]

The state also bore the brunt of the most horrific fire season ever witnessed in Australia.[20] Nearly 80 percent of Australians were affected either directly or indirectly by the bushfires.[21] Thirty-three Australians lost their lives in the fires directly,[22] and an estimated 417 more died from the burden of toxic smoke.[23] At least one billion animals were killed by the bushfires across the country, with 800 million of these being lost in New South Wales.[24] Most of the conditions precedent for this horror fire season are linked to the warming of the global atmosphere that has been seen so far.[25]

But holding the heating of the atmosphere to current levels isn't the global goal. It is not possible to hold global temperatures at the point where they are today. Even the extraordinarily difficult, and perhaps also impossible, task of pursuing efforts to hold global temperature increases to 1.5°C above pre-industrial temperatures will see substantial exacerbation of climate impacts far beyond that which has been seen so far.[26]

Australia is one of the most vulnerable developed countries in the world to the impacts of climate change.[27] To be clear, for those of us living on this continent, the future under even greater heating will certainly be far more difficult than it is today, and even partial assessments of the total economic impact of future extreme events produce exceptionally large figures.[28]

The proponent and the Department make far too much of the claim that this project will emit 0.9% of Australia's emissions.[29] This is an absurd comparison on which to base an argument. That this one single project manages to be nearly one hundredth of the emissions of a country that is one of the world's largest emitters is a truly remarkable feat, especially given how systematic the proponent's underestimations have been.

Australia is the world's 14th largest emitter, meaning that it emits more than 181 other countries.[30] The list of countries Australia emits far more than each year includes the birthplace of wholesale fossil fuel consumption, the United Kingdom. To accurately convey the scale of Australia's annual emissions, it is worth noting that just three of its coal-fired power stations contribute more to

the superheating of the global climate each year than the entire nation of Sri Lanka,[31] a country with a total population rivalling Australia's own. Australia has more than a dozen other coal-fired power stations like these. Yet, each of these is capable of being made to look insignificant by making absurd comparisons to something larger. This is the true nature of the comparisons being made by the proponent and backed up by the department.

The bottom line is that no matter what lengths the proponent goes to downplay the very large impact of this project, decisions made today on whether to approve new fossil fuel infrastructure determine how much worse that future will be for Australians. Until anthropogenic emissions of greenhouse gas—driven primarily by the consumption of coal, oil and gas—are very close to zero each year, the world will continue to warm, to ever-worsening effect.[32] Existing fossil fuel infrastructure across the world is more than sufficient to push the world past 1.5°C of mean average temperature increase,[33] and planned infrastructure is more than sufficient to push the world past 2°C.[34] As a result, limiting warming to well below 2°C requires planned fossil fuel infrastructure not to proceed, and does not allow for entirely new fossil fuel infrastructure like the proponent is suggesting.

Australia is on the frontline of climate change—confronted by more frequent, longer lasting and more intense heatwaves, harsher droughts, coastal flooding and longer, more dangerous bushfire seasons.[35] The approval of any new fossil fuel project would worsen climate impacts, putting Australian lives, the economy and the natural environment at risk. In this context, especially because the proponent has been unable to clearly articulate any substantial benefits that would flow from their proposal, the Narrabri gas project should be rejected.

4. New gas-powered generation in New South Wales is neither necessary nor desirable.

Both the proponent's EIS and the Department's assessment report make much of a claim that new gas-powered electricity generation is capable of lowering emissions in New South Wales, while shoring up the New South Wales electricity grid to allow the penetration of renewables.

These claims are demonstrably false and are based on gross misrepresentations of the content of the work of the Australian Energy Market Operator (AEMO). AEMO's most recent Integrated System Plan (ISP) makes clear that newly installed gas capacity is not required over the coming decades.[36] Under the least-cost development pathways for the five scenarios provided by the market operator, no scenario sees an overall increase in gas-powered generation, and only one—the scenario with the lowest penetration of wind and solar—sees any new gas-powered generation installed anywhere in the NEM over the next two decades. The ISP is quite clear that new gas infrastructure is not required to

shore up the electricity grid, whether to facilitate renewable deployment, or for any other reason.

Alongside this, the New South Wales grid is currently operating at an average emissions intensity below the level that several of Australia's existing gas generators—and one of New South Wales' own—can provide. With the emissions intensity of the New South Wales grid set to fall further in the near future, the gas provided by the Narrabri project is both unnecessary and undesirable.

4.1. The current state of the New South Wales grid

Most of the New South Wales population receives their electricity through the National Electricity Market ('NEM'). Despite its name, this interconnected grid is not truly national. It extends from Cairns in Queensland through to Port Lincoln in South Australia and covers all of Tasmania, Victoria and the ACT, along with the major populated regions of Queensland, South Australia, and, of course, New South Wales. While the NEM doesn't cover the far northwest of the state, regions such as Narrabri are connected to this network.

The New South Wales grid is dominated by a fleet of large, old and inefficient sub-critical coal-fired power stations. These stations, like the Liddell and Vales Point stations, have an average age of forty years, with many nearing the end of their safe operating life.[37] Sub-critical is the least efficient class of coal-fired power station, and the power stations in the New South Wales coal fleet are by no means the most efficient even in that class.

With these power stations generating more than three quarters of New South Wales electricity needs each year,[38] the state has a relatively emissions-intensive grid by global standards,[39] and the second most emissions intensive grid by the standard of Australia's NEM-connected states.[40]

With this context, the claim that gas-powered generation supplied by the Narrabri project would halve emissions in the New South Wales electricity sector emissions would seem to be a relatively straightforward thing to justify. However, it cannot be, because it isn't true.

We note that the proponent's Environmental Impact Statement provided as part of this approval does not justify the claim, aside from one bar chart (Figure 24-1). Despite repeated concerns being raised through the approval process, no serious attempt has been made to describe, let alone justify, the assumptions used in producing that chart apart from vague reference to the methodology used.

This is insufficient because the proponent's analysis deviates wildly in several regards from contemporaneous assessments commissioned by AEMO. These assessments, conducted by ACIL Allen, rely on numbers compiled under the exact same methodology as is claimed by the proponent—a scope 1 and scope

3 assessment of many large Australian electricity generators using the very same version of National Greenhouse Accounts.[41] To be clear, there is no reasonable way that this methodology could be described as a lifecycle analysis—even a poor one—because it fails to consider entire potential sources of emissions.[42]

There are remarkable differences between the figures produced by ACIL Allen's synthesis and the proponent's EIS, but before turning to this, we would note that both the proponent and the energy market operator's analyses are very far from representing the state of the science.

Ironically, given the Department's dismissal of overseas evidence that does not link to the local context,[43] the assessment undertaken by the proponent is based on emissions factors found in the American Petroleum Institute's Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry from 2009. These emissions factors describe the operational emissions of North American facilities at a time when the unconventional gas sector was just getting started.[44] Given how recent the unconventional gas boom has been and the considerably different geologies and contexts, it would seem that there is an *a priori* need for the proponent to prove that these emissions factors are at all relevant to the Australian context. Claiming that the use of irrelevant emissions factors is an industry standard is not sufficient.

Alongside that, a crucial input into the calculations, the warming potential of methane, is demonstrably wrong. It was incorrect based on the state of the science in 2016, and has been proved to be even more so as the science has evolved since. Throughout the assessment, the proponent chose to use a 100-year global warming potential value for methane of 25, as per the IPCC's Fourth Assessment Report, released in 2007.[45] But well before the proponent's report was prepared, in 2013, the IPCC's Fifth Assessment Report had been released. This assessment saw the global warming potential revised upward significantly, to a base value of 28 for biogenic methane and 30 for methane from fossil sources.[46] This difference between the two occurs as a result of very different chemical processes linked to the release of methane and while this subtle difference is often missed, including by several others submitting into this review, the minimum scientifically valid value that can be used to assess this project is 30—not 28 and certainly not 25.

That same chapter of the Fifth Assessment Report also indicates that to understand the full scope of impacts from methane, such as the climate-carbon feedbacks that occur as a result of the released methane's presence in the atmosphere, one should add another 20% to the warming potential.[47] Doing this takes the global warming potential for fossil methane from 30 to 36. At the time when the proponent produced its EIS, this would have been the most accurate value that the proponent could have used.

Things have gotten worse for the proponent's claimed global warming potential value since the EIS was produced. In a subsequent analysis—co-authored by

the relevant IPCC co-ordinating lead author—the global warming potential of methane was revisited again. This analysis, which is highly regarded among those compiling the IPCC's upcoming Sixth Assessment Report, finds that the base value for methane should be revised up still more, adding yet another 14% to methane's overall impact.[48] This takes the relevant global warming potential value higher still, to 41.

All of this means that even if the method used by the proponent was not vastly underestimating the possible sources of greenhouse pollution—and to be clear, this method is well-known for its failure to accurately estimate the emissions even when applied to the correct context[49]—**when calculating the impact of those emissions, the proponent is significantly underestimating the effect of those emissions on the global climate; they are incorrect by more than 60%.**

Alongside this, the proponent's assessment also differs remarkably from contemporaneous assessments performed using the exact same methods and emissions factors. The proponent does not seem able to justify these differences.

In the ACIL Allen assessment conducted for the market operator, median efficiency of the current New South Wales coal fleet is 910 kilograms of carbon dioxide-equivalent greenhouse gas per megawatt hour of electricity generated (kg CO_2-e/MWh). The most emissions intensive power station currently in operation in New South Wales, AGL's Liddell power station in Muswellbrook, emits far more than most of the New South Wales fleet per unit of electricity. Its emissions intensity is an outlier at 981 kg CO_2-e/MWh. The remaining stations are in a narrow band of intensities between 908 kg CO_2-e/MWh (Vales Point) to 913 kg CO_2-e/MWh (Bayswater). This includes the emissions at point of combustion (scope 1) and upstream emissions, including fugitive emissions (scope 3).

While the proponent does not describe the sources of its data, presumably where Figure 24-1 in the EIS refers to "New South Wales grid electricity", given that it was written in 2016, it would be appropriate to assume that the proponent would be intending to refer to the grid average emissions intensity across the state in 2015.

Based on that figure—again, the proponent has not provided its results other than in this one bar chart—the proponent has clearly overestimated the grid average emission intensity. By comparison, AEMO calculated the grid average emissions intensity for the year as 913 kg CO_2-e/MWh,[50] with the proponent's chart showing a total in the order of 950 kg CO_2-e/MWh. This is a relatively minor error, however, compared to those that will be described below.

The point where the proponent's claim that their product will reduce emissions clearly fails is where they describe the emissions intensity of electricity produced by consuming their product. There are two questions to be answered here. First: Is any new gas generation needed in the grid? (see Section 4.2)

Second: Will new gas generation be substantially cleaner than coal? (see Section 4.3).

4.2. The future role of gas in the National Electricity Market.

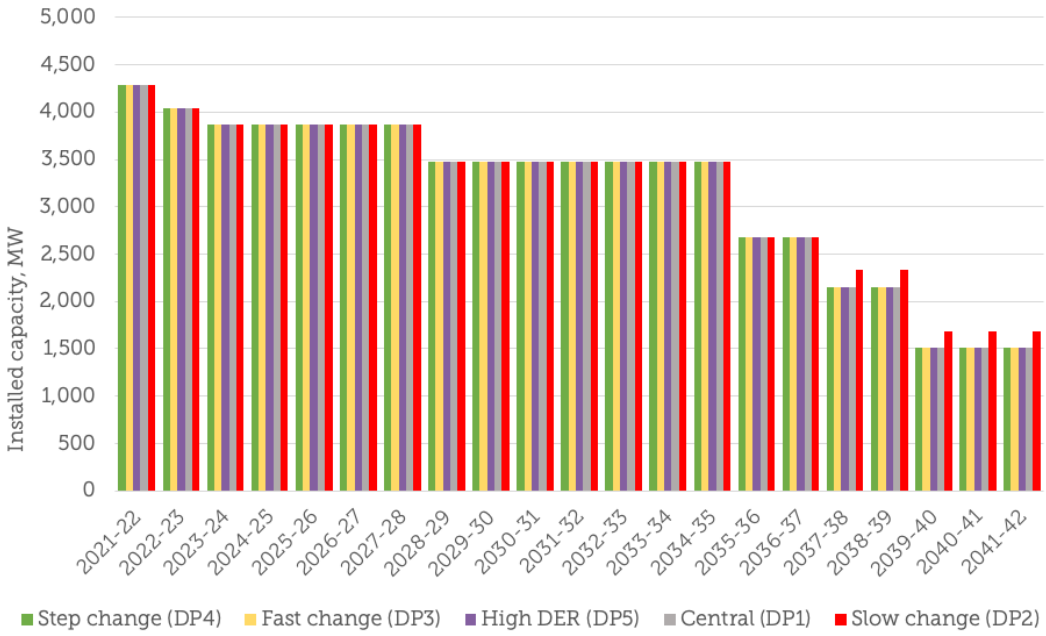
It is vital to note the considerable differences between major generation technologies. When discussing the possibility of new gas-powered electricity generation infrastructure in the 21st century, there are two primary options. Either: (a) open-cycle gas turbines—which are relatively emissions intensive, but able to be more responsive to demand fluctuations; or (b) combined cycle gas turbines—which are more efficient but with far greater restrictions on their ability to operate to meet peaks and troughs in supply or demand.

AEMO's 2018 Integrated System Plan[51] assumes a steady decline in total generation capacity from the relatively efficient combined cycle gas generators over coming decades in five-out-of-six scenarios produced by the energy market operator.[52] The only scenario where additional generation capacity is required from combined cycle generators is under the 'Increased Role for Gas' scenario where, as the name implies, the increased use of gas is the defining assumption.

In the 2020 version of the plan,[53] all five scenarios see a steady overall decline in the installed capacity of combined cycle generation.[54] If the least-cost development path is followed for each scenario, not one gas-powered generator will be installed in the entire National Electricity Market ('NEM') in the next two decades under four out of five scenarios.[55] All five scenarios see substantially lower installed capacity of gas-powered generation in 20 years than exists today. The most optimistic scenario—from the perspective of gas suppliers—shows that more than one third of generation capacity will be retired by 2042 and not replaced.

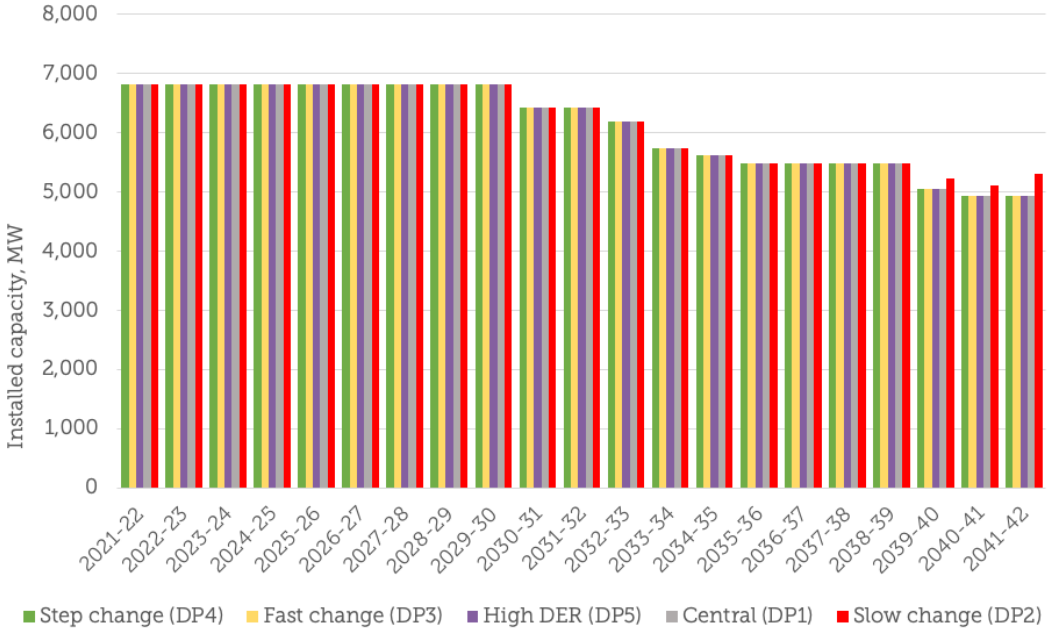
Further, and fatally to the proponent's claims, the least cost development pathways for these scenarios predict that the total installed generation capacity provided by combined cycle gas generators will be 65% lower than today. The one scenario that does predict that a new combined cycle generator might be necessary, sees that one installation performed to cover gaps in a nonetheless structural decline. This is shown below in Figure 1.

Figure 1: Projected decline in installed capacity of combined cycle gas turbines under all scenarios in AEMO's 2020 Integrated System Plan. Data source: AEMO.[56]



The scenarios are equally consistent when it comes to predicting the future of open-cycle generation. The four scenarios where wind and solar penetration are the highest project a relentless, though slower, decline in the installed capacity of the more flexible generators if least-cost development pathways are followed. Again, the slow change scenario bucks the trend. However, even under this scenario, the only year-to-year increase in installed capacity occurs more than twenty years away, when the proponent's project will be scaling back its operations. This is shown below in Figure 2.

Figure 2: Projected decline in installed capacity of open cycle gas turbines under all scenarios in AEMO's 2020 Integrated System Plan. Data source: AEMO.[57]



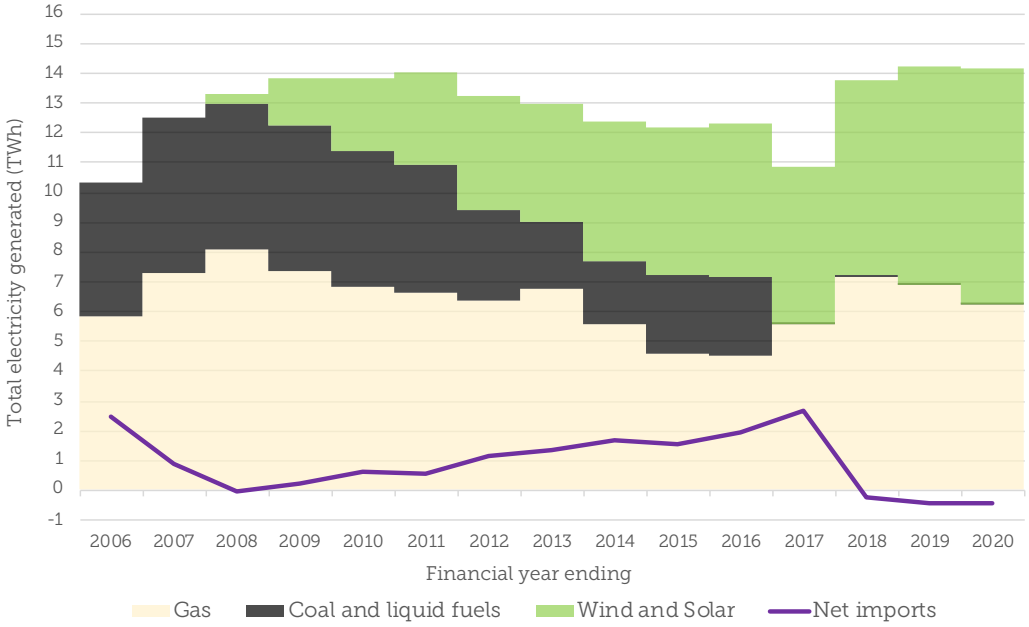
To summarise, the best available evidence indicates that no new gas generation is required in the National Electricity Market over the coming decades. Only one of the pathways mapped out for the future of the National Electricity Market under the past two Integrated System Plans shows substantial growth in gas powered generation capacity, and this is the one pathway that has growth of gas generation capacity included as an assumption, not as the outcome of a careful assessment.

None of the more recent scenarios predict growth in installed capacity of the more efficient kind of gas generation—the kind that the proponent's EIS claims is necessary. The one scenario that sees anything other than a steady decline sees no new generation needed anytime in the next 17 years.

As for gas overall, as renewable generation increases across the NEM, the need for new gas generation capacity of any kind decreases. The scenarios with the highest penetration of renewable energy do not require a new gas generator of any kind installed anywhere in the National Electricity Market in the next two decades.

The transition predicted for the New South Wales electricity network over the coming decades has already occurred elsewhere in the NEM. In the past 12 years, South Australia completely closed its coal industry without anything more than a temporary increase in gas generation. In the most recent financial year, gas-powered generation in South Australia was used less than it was when the state's coal power stations were fully operational. Furthermore, there has been a steady decline in the use of gas each year. South Australia has recently become a net exporter of energy to the rest of the NEM, and in the past two years, it seems that wind and solar generation has begun to steadily replace gas as well. This is shown below in Figure 3.

Figure 3. Annual electricity generation by fuel type in South Australia by financial year, FYE2006 to present. Data source: http://opennem.org.au



4.3. The poor emissions performance of gas-powered generation

It is vital to interrogate the accuracy of the proponent's claims regarding the relative emissions intensity of their project.

To begin with, it is worth noting that the proponent has offered no insight into the assumptions that underpin the calculations used in the EIS. Contemporaneous assessments using the same methodology claimed by the proponent show that the proponent's assessment is very much too low. The assessment conducted by ACIL Allen for AEMO, referred to on several occasions above, finds that **gas powered generation has the highest scope 3 emissions of any form of generation**.[58] This is in stark contrast to the claims provided by the proponent in their impact assessment. There the proponent claims that the scope 3 emissions—primarily from upstream fugitive emissions in this instance—from electricity produced using Narrabri gas will be below the state average. This is not possible.

New South Wales' black coal generators, which currently provide three quarters of the state's electricity needs, have an average scope 3 emissions intensity of 48 kg CO_2-e/MWh. The existing New South Wales gas fleet, on the other hand, operates at an average scope 3 emissions intensity of 124 kg CO_2-e/MWh. However, this comparison is slightly unfair, given that current NSW gas-powered generators must rely on their gas being piped long distances before they reach the point of consumption, allowing far more opportunities for leakage than would occur if the Narrabri project were to proceed.

For a better comparison, we should look to those gas-powered generators in Queensland that are co-located with the unconventional gas fields supplying them. This fleet, which includes several of the NEM's newest gas generators, is still far higher on a scope 3 basis than New South Wales' coal, at an average 77 kg CO_2-e/MWh. To reiterate, the numbers produced here use the exact same methodology as the proponent claims to be using and show that the proponent has underestimated the scope three emissions by over 60% even using a method that—as was discussed in section 4.1—already underestimates the climate impact of those emissions.

These disparities have been raised with the proponent and remain unjustified. They should now be considered unjustifiable.

But of course, there is also the most obvious source of greenhouse gas emissions—those released at the point of combustion. Unfortunately, the EIS also grossly miscalculates this value.

The Department and the proponent claim that gas will support renewables, which is an implicit commitment to the more flexible, less efficient open cycle generation (see the earlier discussion on types of gas generators in Section 4.2). There are many other ways to shore up the supply of electricity other than gas,

but among gas generation technologies, only open cycle gas turbines can rapidly scale up and down to meet short-term peaks and troughs in supply from renewables. Thus, the construction of combined cycle gas turbines would be of very little, if any, benefit in this regard.

Open cycle gas turbines vary greatly in their relative emissions intensity. While many can and do operate at an emissions intensity that is more than 10% below that of the New South Wales coal fleet, the average is somewhat misleading. For example, the NEM's worst performing open cycle gas generator—Dry Creek in South Australia—is among the dirtiest generators in the country with an average emissions intensity of 1,343 kg CO_2-e/MWh, making it more than 45% worse than New South Wales coal.

The three large open cycle turbines in New South Wales currently in operation are relatively efficient compared to this, ranging from 706 kg CO_2-e/MWh (Broken Hill) to 783 kg CO_2-e/MWh (Colongra). But with this efficiency boost, the relative emissions benefit that might be delivered in the immediate transition from black coal to Narrabri gas is only 14% to 23% compared to the extremely inefficient New South Wales coal fleet. Using the most optimistic assumptions, the very highest degree of efficiency that this project might realistically hope to achieve, after a new—costly and entirely unnecessary—power station is built close to the site of unconventional gas extraction, would be to match the efficiency of Braemar 1 or 2 plants in Queensland. This would deliver a relative efficiency gain of around 30% against the aging New South Wales sub-critical coal fleet.

This is a very far short of the 50% reduction in emissions intensity claimed in the EIS. That kind of reduction is simply impossible given the current needs of the New South Wales grid.

The consumption of coal, oil and gas need to approach zero before the climate might begin to stabilise. However, even noting this, to accept the proponent's argument that this hypothetical gas facility would push coal out of the market and have any impact on the emissions intensity of the New South Wales grid, one of two things would need to happen.

One option is that the New South Wales government develops a concrete plan, perhaps funded by the proponent, which would see more coal-fired power stations close than if the Narrabri project did not proceed. Pointing to the existing plans for the closure of Liddell is irrelevant, because that will close with or without the Narrabri project.[59] The plan would have to show a degree of additionality.

Alternatively, the proponent should need to present a compelling case for how this entirely hypothetical new facility, burning relatively expensive gas, that the Australian Energy Market Operator says is not required, would be able to compete on price with a fully depreciated, decades old coal-fired power station.

And even if they could do that, it is worth pointing out that after this impossibly slight hypothetical benefit has been received, it can be assumed that the new facility would operate for decades locking New South Wales into a high emissions pathway in the long term and fuelling more devastating and costly climate impacts.

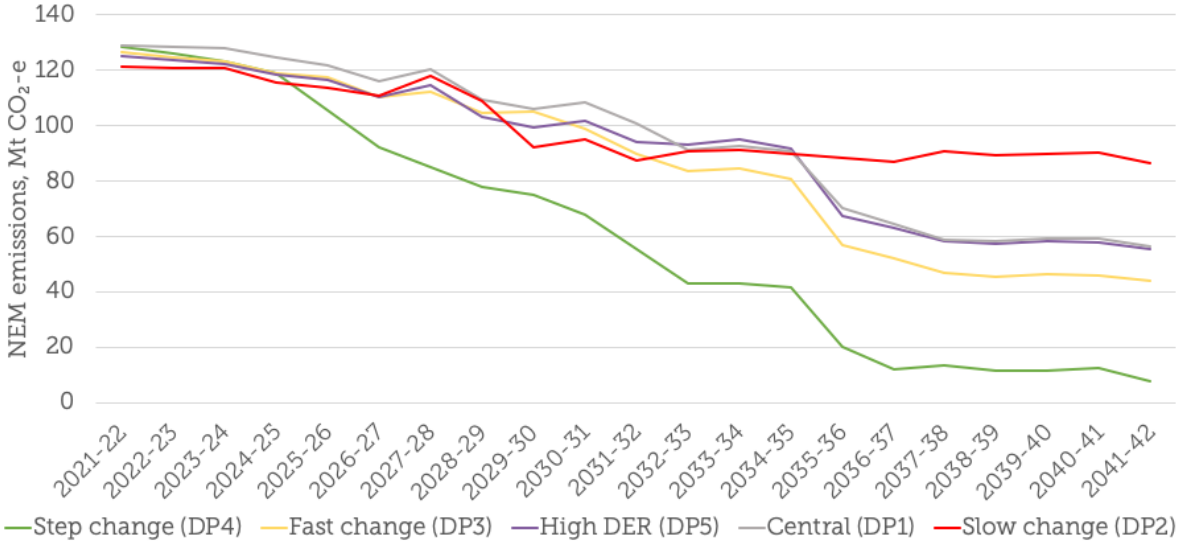
The reality is that the New South Wales grid has shifted substantially even just since the EIS was created. New South Wales is by no means a leader in the transition to renewables.[60] Nonetheless, the emissions intensity of the New South Wales grid has fallen from an average emissions intensity of 913 kg CO_2/MWh in the 2015 calendar year to just 790 kg CO_2-e/MWh in 2019.

Given the effect of the COVID-19 pandemic, the first six months of 2020 was perhaps not the most representative period for the New South Wales grid. However, it is worth noting that during this period, the grid average emissions intensity for New South Wales dipped below what is capable of being provided by the state's dirtiest gas facility. In the first half of 2020, the average emissions intensity of the New South Wales grid was 781 kg CO_2-e/MWh. This means that the New South Wales grid was operating at an average emissions intensity below Colongra Gas Turbine, which, as noted above, manages 783 kg CO_2-e/MWh. With the closure of the Liddell—New South Wales' most emissions intensive generator—locked in through 2022 and 2023 and multiple recent announcements relating to proposed Renewable Energy Zones across the state, the average emissions intensity of the New South Wales grid is certain to fall far further in the near future.

As a result of this, claims of a purported climate benefit from shifting to gas powered generation—already spurious for the reasons detailed above—will become even more absurd over the 25-year life of this project.

Building new gas of any kind would raise, not lower, New South Wales' emissions relative to the counterfactual. The scenarios developed by AEMO for the coming decades show that the scenarios with the lowest emissions are the scenarios with the least gas in the National Electricity Market. This is shown below in Figure 4.

Figure 4: Emissions pathways for the National Electricity Market as identified in the Australian Energy Market Operator's Integrated System Plan. Source: AEMO.[61]



5. AEMO's predicted gas shortfall is increasingly unlikely to materialise and this project is not necessary to manage it.

In the 2019 Gas Statement of Opportunities, AEMO predicted a possible gas shortfall in the east coast gas market after 2023.[62] This possible shortfall was significantly smaller in the more recent 2020 Statement of Opportunities, but nonetheless still present under the market operator's Central scenario.[63]

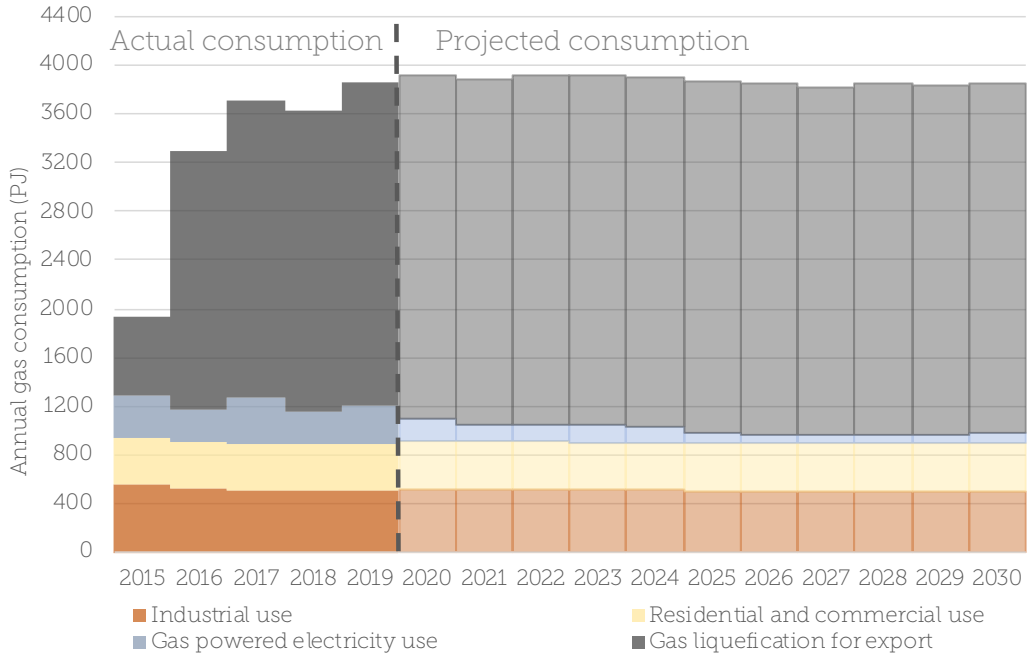
While this gas shortfall might in part be blamed on reduced supply from Victoria's conventional gas fields, the reality is that a far more significant cause can be found elsewhere in the eastern gas network.

In the same year that AEMO began predicting a shortfall of gas supply in the eastern market—2019—Australia also became the world's largest exporter of liquefied gas.[64] In order to achieve this top ranking, 2,650 petajoules of gas was stripped from the east coast gas market to be sent overseas through one of three gas export facilities, including one—the Gladstone LNG project—operated by the proponent. To put this remarkable figure into context, in the same year, the entire fleet of gas-fired generators in the National Electricity Market used a mere 311 petajoules of gas—less than one-eighth of the total exported.

Even with the growth in unconventional gas production through the Surat Basin and elsewhere, this is a catastrophically large burden to have placed on the market. While there has been some reprieve recently, projects such as the proponents' have been driving up energy prices for consumers both in the gas market per se,[65] and through driving up the wholesale price of electricity.[66]

In 2019, LNG facilities processing Australian gas for export withdrew two thirds of all gas from the east coast market. This is shown, along with AEMO's most recent projections, in Figure 5 below.

Figure 5: Actual and projected gas consumption across NEM states by sector under AEMO's Central scenario. Data Source: AEMO, Gas Statement of Opportunities 2020.[67]



Should nothing change, as is in AEMO's gas statements of opportunity, there is a real risk of a shortfall in the eastern gas market in the coming years.

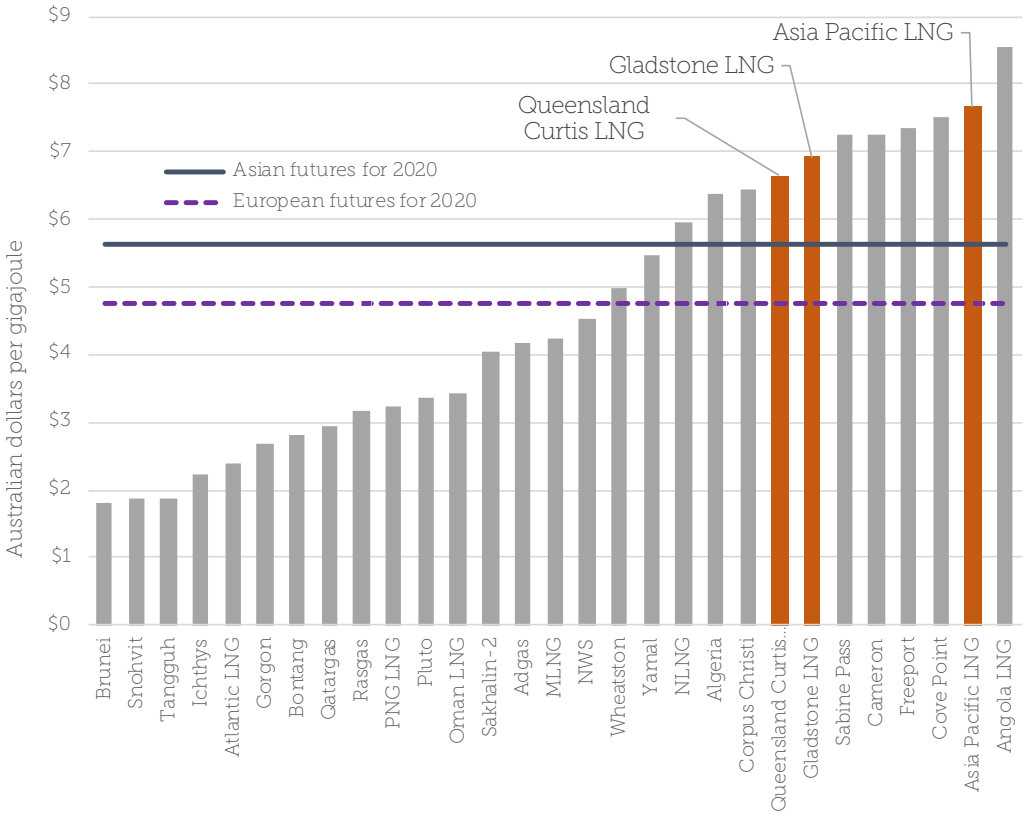
However, change has already occurred since the statement was released. In a trend that began in 2019, and was exacerbated through 2020 as the effects of coronavirus took hold, **the global gas market—particularly for Australia's major trading partners in Asia[68]—has become drastically oversupplied**.[69] This shift has seen a global glut that the International Energy Agency—an organisation not known for dramatic overstatement—has described as a **'meltdown' in the international market for gas**.[70]

By global standards, the largely unconventional gas exported from Australia's east coast, and which the proponent intends to provide more of through this project, is expensive-by-definition. The Australian Petroleum Production and Exploration Association—the oil and gas sector's peak body—claims that 90% of new gas projects have a lifecycle cost of more than $6 per gigajoule and "[n]ew projects have production costs of up to $8.25 per gigajoule before transport, distribution, retailing, commercial or financial costs."[71] Indeed, it describes as a "Myth" the idea that Australian gas could be provided more cheaply than this.[72]

According to recent HSBC Analysis, **gas from Australia's three east coast gas export terminals is relatively expensive by global standards**,[73] shown below in Figure 6. With HSBC predicting a deflated global market for LNG **over the next**

decade, it notes that Australia's three east coast gas terminals will likely see decreased utilisation as a result of the high price of the gas that provide.

Figure 6: Breakeven point for Australia's three east coast liquefied gas export terminals (shown in brown) relative to other international export hubs (AUD/GJ). Chart adapted from: HSBC.[74]



Therefore, while AEMO's statements were based on the assumption that Australian gas exports would be stable over the next decade, and expected a slight shortfall on that basis,[75] this seems exceedingly unlikely on more recently available information. The full scope of this information, post-dates AEMO's analysis and so was not available for the market operator at the time it last revisited the state of the market.

And even if the contraction of east coast gas exports is not enough to eliminate the possibility of a shortfall, then sustained increases in electrification and energy efficiency through the state—in line with the state's Net Zero 2050 plan—would be more than sufficient to make up the difference.[76]

Alongside all of this, the Australian Domestic Gas Security Mechanism, established under the *Customs (Prohibited Exports) (Operation of the Australian Domestic Gas Security Mechanism) Guidelines 2017* (Cth) grants the Commonwealth Minister for Resources and Northern Australia the power to limit global liquefied gas exports in a year where there is a shortfall in domestic supply.

Against this background, the shortfall predicted by AEMO has become an exceedingly remote possibility. In this context, it becomes difficult to see any public benefit of this proposed project.

At a time where global greenhouse gas emissions budgets are rapidly closing and climate impacts are becoming more severe and costly, this project is dangerous and unnecessary.

The proponent is unable to provide a rationale for this project that is based on evidence and can only claim to be meeting imagined needs. As a result, on the basis of the public good, we feel that the Commission has obvious grounds to reject this project and should do so.

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