

**Submission  
No 35**

**MINERALS LEGISLATION AMENDMENT (OFFSHORE DRILLING AND  
ASSOCIATED INFRASTRUCTURE PROHIBITION) BILL 2023**

**Organisation:** Institute for Energy Economics and Financial Analysis (IEEFA)

**Date Received:** 31 August 2023



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31 August 2023

To: Legislative Assembly Committee on Environment and Planning

**RE: The inquiry into the Minerals Legislation Amendment (Offshore Drilling and Associated Infrastructure Prohibition) Bill 2023**

Thank you for the opportunity for the Institute for Energy Economics and Financial Analysis (IEEFA) to present its submission to this inquiry.

Regards

Kevin Morrison, Energy Finance Analyst, LNG/Gas Sector



IEEFA supports the proposed legislation to prohibit the granting of licences and permits to either explore or extract hydrocarbons and minerals from the seabed off the New South Wales (NSW) coast. IEEFA welcomes the fact that the legislation proposes the banning of further oil and gas exploration offshore NSW, and that such as a ban would not just be the policy of the government of the day. This legislation would provide more certainty to investors and industry.

IEEFA is of the view that the energy sector is undergoing a technological change that seems to occur every 50 years or so, whereby prices of new technologies fall below the prevailing energy sources.<sup>1</sup> This has now occurred with wind and solar combined with batteries compared with gas. Moreover, amid the growing costs and worsening impacts caused by increasing concentrations of carbon dioxide (CO<sub>2</sub>) in the atmosphere from burning fossil fuels, there is an even greater imperative for change.

Therefore, the focus for the NSW state government should be on accelerating the deployment of energy technologies that are cheaper and have lower emissions than methane gas, which offered a good solution for heating and cooking in Australian homes on a mass scale when it first emerged in the 1970s, but it is no longer suitable for Australia in the 2020s.<sup>2</sup>

**Terms of reference – (a) any constitutional issues or unintended consequences raised by the bill, and whether any amendments may address those.**

The objectives of the proposed bill are understood, but it needs to be clear that the federal government cannot overrule the planned legislative change both for the issuance of new exploration permits, the extension of existing permits and the issuance of oil, gas and minerals development licences. The changes should have no bearings on the issue of offshore wind development permits.

**Terms of reference – (b) whether there are other ways to achieve the intended outcomes of the proposed bill including through the New South Wales Government offshore exploration and mining policy.**

The government of the day can commit in its offshore exploration and mining policy to ban any mining or petroleum development activity in NSW and execute any executive order to overrule any future change in the legislation to reallocate the development of offshore petroleum and mineral resources.

**Terms of reference – (c) enforcement and compliance issues raised by the bill.**

The enforcement of this state legislation must be undertaken by the state government.

**Terms of reference – (d) environmental impacts of offshore drilling.**

There are specific environmental and emission concerns with offshore oil and gas projects. These include, but are not limited to: potential oil spills and the impact on coastal areas; the

<sup>1</sup> CSIRO. [Wind and solar remain the lowest cost new build electricity generation sources despite inflationary pressures](#). 18 July 2023.

<sup>2</sup> Australian government, Department of Climate Change, Energy, the Environment and Water. [Australian Energy Update 2022. Table F](#). 2 September 2022.



production of thousands of litres of waste drilling fluid, which has toxic components; disturbances to marine life created by seismic surveys; and the threat of endangering biodiversity.<sup>3</sup>

The “*Deep Water Horizon Oil Spill (BP)*”<sup>4</sup> disaster in the Gulf of Mexico in April 2010 and the “*Eye of Fire*”<sup>5</sup> disaster in July 2021 (in which the operator was Mexican state-controlled energy company Pemex) show that the potential for environmental catastrophes remains a significant risk, regardless of technological advancements and stringent regulations.

Offshore gas extraction is also a source of greenhouse gas emissions. Gas producers and their industry lobby groups have advocated for natural gas playing a role in the energy transition – a claim that should be viewed with scepticism.

Australia is a party to the Paris Agreement, a legally binding international treaty on climate change that came into force in November 2016.<sup>6</sup> The objective of the agreement is to “[hold] the increase in the global average temperature to well below 2°C above pre-industrial levels” and “[pursue efforts] to limit the temperature increase to 1.5°C above pre-industrial levels”.<sup>7</sup>

Since then, the UN’s Intergovernmental Panel on Climate Change (IPCC) has stressed the importance of the 1.5°C goal, given that “every increment of global warming will intensify multiple and concurrent hazards”.<sup>8</sup> In response, G20 leaders, including Australia, recognised the importance of the 1.5°C goal, and committed to accelerating their actions to achieve global net zero emissions by around 2050 in line with this objective.<sup>9</sup> The Australian government also describes the goal of the Paris Agreement as limiting global warming to 1.5°C in its 2022 Climate Change Statement.<sup>10</sup>

The science is now clear on what is required to limit global warming to 1.5°C. Both the International Energy Agency (IEA) and the IPCC have shown that new developments in oil and gas are incompatible with the global goal of 1.5°C with no/low overshoot.

In its latest Synthesis Report the IPCC stated that: “The best estimates of the remaining carbon budget from the beginning of 2020 for limiting warming to 1.5°C with a 50% likelihood is estimated to be 500 GtCO<sub>2</sub> [gigatonnes of CO<sub>2</sub>].”<sup>11</sup> Global modelled pathways that limit warming to 1.5°C, with a 50% likelihood with no/limited overshoot, achieve net zero CO<sub>2</sub> emissions around 2050.<sup>12</sup> However, CO<sub>2</sub> emissions from the electricity/fossil fuel industries generally reach net zero

<sup>3</sup> National Resources Defence Council. [Protecting Our Ocean and Coastal Economics: Avoid Unnecessary Risks from Offshore Drilling](#). September 2009.

<sup>4</sup> United States Environmental Protection Agency. [Deepwater Horizon – BP Gulf of Mexico Oil Spill](#).

<sup>5</sup> Reuters. [‘Eye of fire’ in Mexican waters snuffed out, says national oil company](#). 3 July 2021.

<sup>6</sup> Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW). [International climate action](#).

<sup>7</sup> United Nations Framework Convention on Climate Change (UNFCCC). [The Paris Agreement](#).

<sup>8</sup> Intergovernmental Panel on Climate Change (IPCC). [AR6 Synthesis Report – Headline statements](#). 2023.

<sup>9</sup> G20. [Rome leaders’ declaration](#). October 2021. Page 8.

<sup>10</sup> DCCEEW. [Annual Climate Change Statement 2022](#). 2022. Page 13.

<sup>11</sup> IPCC. [AR6 Synthesis Report – Longer Report](#). 2023. Page 46.

<sup>12</sup> Ibid. Page 51.



earlier than other sectors.<sup>13</sup> In addition, such a transition is not linear, with about 60% of greenhouse gas emissions reductions by 2035 below 2019 levels.<sup>14</sup>

This pace of transition is not compatible with new oil and gas developments. In fact, existing assets will need to be retired early. The IPCC Synthesis Report states: “Projected cumulative future CO<sub>2</sub> emissions over the lifetime of existing fossil fuel infrastructure without additional abatement exceed the total cumulative net CO<sub>2</sub> emissions in pathways that limit warming to 1.5°C (>50%) with no or limited overshoot. They are approximately equal to total cumulative net CO<sub>2</sub> emissions in pathways that limit warming to 2°C with a likelihood of 83%”.<sup>15</sup>

The IEA has developed a Net Zero Emissions by 2050 scenario, which demonstrates how the global energy sector can achieve an orderly transition to net zero CO<sub>2</sub> emissions by 2050. It assigns a 50% probability of achieving the global goal of 1.5°C with no or low overshoot.<sup>16</sup>

The associated roadmap states that no new oil and gas projects are required if the world is to reach net zero by 2050: “Beyond projects already committed as of 2021, there are no new oil and gas fields approved for development in our pathway.”<sup>17</sup> Under the IEA net zero pathway, gas and oil demand decline by 55% and 75% respectively by 2050 compared with 2020.<sup>18</sup>

An update of the scenario stated that investments made since its initial release were already putting the 1.5°C objective at risk: “Recent investment in fossil fuel infrastructure not included in the 2021 Net Zero Emissions Scenario would result in 25 Gt [gigatonnes] of emissions if run to the end of its lifetime (around 5% of the remaining carbon budget for 1.5°C).”<sup>19</sup>

These analyses show that there is no space beyond existing fossil fuel infrastructure if the world is to stay below 2°C. Such levels of warming would be associated with tremendous economic costs for Australia.<sup>20</sup> There are already vast amounts of new fossil fuel reserves identified and proposed for development globally and in Australia, which would further exceed the global carbon budget and increase the impacts of climate change.<sup>21</sup> Further exploration would only increase the economic impact on Australia and the world.

As well as the CO<sub>2</sub> released when natural gas is burned, the main type of greenhouse gas emitted from gas projects is methane. Natural gas is composed of 70-90% methane, a potent greenhouse gas and a major contributor to global warming.<sup>22</sup>

Methane has a much shorter atmospheric lifetime than CO<sub>2</sub> (around 12 years compared with centuries for CO<sub>2</sub>), but it is a much more potent greenhouse gas, absorbing much more energy

<sup>13</sup> IPCC. [AR6 Synthesis Report – Longer Report](#). 2023. Page 58.

<sup>14</sup> Ibid. Page 56.

<sup>15</sup> Ibid. Page 24.

<sup>16</sup> IEA. [Net Zero Emissions by 2050 Scenario \(NZE\)](#). 2022.

<sup>17</sup> IEA. [Net Zero by 2050: A Roadmap for the Global Energy Sector](#). May 2021. Page 21.

<sup>18</sup> Ibid.

<sup>19</sup> IEA. [An updated roadmap to Net Zero Emissions by 2050](#). 2022.

<sup>20</sup> Climate Council. [Compound Costs: How Climate Change is Damaging Australia's Economy](#). 14 May 2019.

<sup>21</sup> Australian Government. Department of Industry, Science and Resources. [Resources and energy major projects: 2022](#). 19 December 2022.

<sup>22</sup> Yale Program on Climate Change Communication. [Should it be called ‘natural gas’ or ‘methane’?](#) 1 December 2020.



while it exists in the atmosphere.<sup>23</sup> Methane represents about 18% of global emissions and is estimated to have contributed to around 30% of the rise in global temperatures since the Industrial Revolution.<sup>24</sup>

There are various ways to combine these factors to estimate the effect on global warming. The most common way is through the measurement of the global warming potential (GWP). This metric is normally measured in a tonne of a greenhouse-gas emitted in CO<sub>2</sub> equivalent terms (CO<sub>2</sub>e).<sup>25</sup>

The Intergovernmental Panel on Climate Change (IPCC) has indicated a GWP for methane between 84-87 when considering its impact over a 20-year timeframe (GWP20) and between 28-36 when considering its impact over a 100-year timeframe (GWP100). This means that one tonne of methane can be considered to be equivalent to 28 to 36 tonnes of CO<sub>2</sub> if looking at its impact over 100 years.<sup>26</sup>

In addition to its climate impacts, methane also affects air quality because it is an ingredient in the formation of ground level (tropospheric) ozone, a dangerous air pollutant. In addition to acting as a greenhouse gas and being directly harmful to human health, it also harms plants by causing cellular damage within the leaves, adversely affecting plant production, reducing the rate of photosynthesis, and requiring increased resource allocation to detoxify and repair leaves.<sup>27</sup>

Not only does methane have a significant impact on the environment, but it also appears to be under-reported, so the actual damage to the environment is far greater than has been recorded.

The IEA recently published estimates of actual methane emissions by country for 2022. These estimates are based on “all publicly reported, credible sources where data has become available”, which includes emissions detected by satellites. IEEFA compared those estimates to the latest official national emissions inventory figures.<sup>28</sup>

The official figures were not available for 2022 at the time of writing the report, so IEEFA compared the IEA estimates to inventory data for 2020-21, as approximation for 2022 levels. The national greenhouse gas inventory quarterly updates show that total fugitive emissions (including methane and other gases) from coal, oil and gas in 2022 were exactly the same as in 2020-21, at 48.8 million tonnes of CO<sub>2</sub> equivalent (MtCO<sub>2</sub>e), and that total methane emissions were very similar in both periods at 120.7 MtCO<sub>2</sub>e in 2022 compared with 122.1 MtCO<sub>2</sub>e in 2020-21.

The IEA estimates methane emissions from the oil and gas sector in Australia are 92% higher than the national inventory data. The discrepancy corresponds to about 28 MtCO<sub>2</sub>e of under-reported emissions in Australia’s national inventory. This is more than 6% of today’s emissions (see Figure 1).

<sup>23</sup> International Energy Agency (IEA). [Methane Tracker 2021. Methane and climate change](#)

<sup>24</sup> IEA. [Global methane tracker 2023. Understanding methane emissions](#)

<sup>25</sup> Ibid.

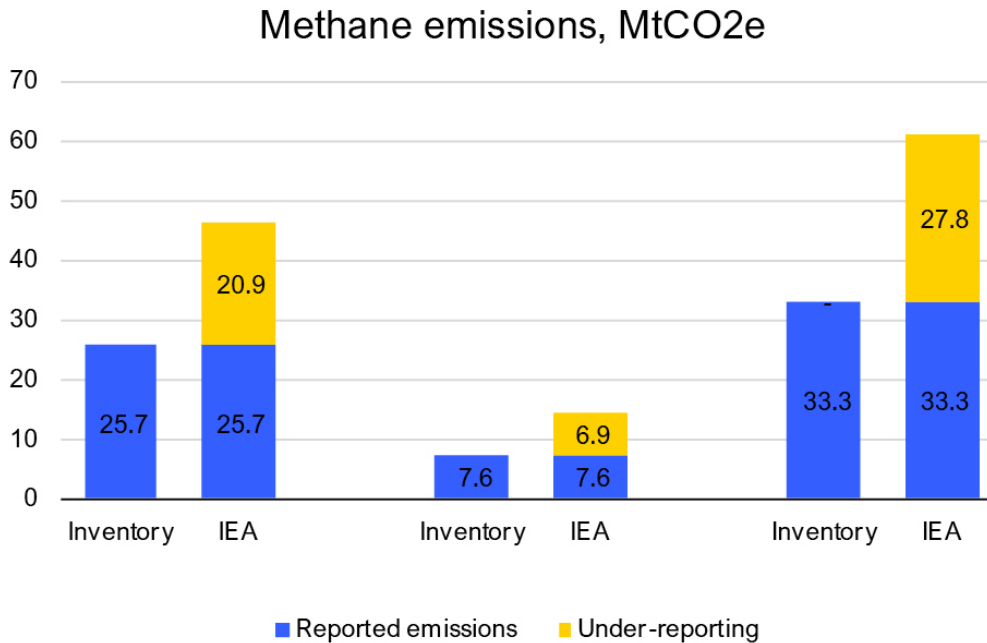
<sup>26</sup> Ibid.

<sup>27</sup> Plant, Cell and Environment (2005). [Assessing the future global impacts of ozone on vegetation](#). Page 949-964.

<sup>28</sup> IEEFA. [Gross under-reporting of fugitive methane emissions has big implications for industry](#). July 2023. Page 3.



**Figure 1. Comparison of Fugitive Methane Emissions Estimates by IEA (2022) with National Inventory Emissions Data (2020-21)**



Source: IEEFA. [Gross under-reporting of fugitive methane emissions has big implications for industry](#), July 2023. Page 4.

Australia last year joined the Global Methane Pledge, which aims to reduce global methane emissions by at least 30% below 2020 levels by 2030, but did not specify a domestic methane reduction target or a plan for how it will address them<sup>29</sup>.

Tracking methane emissions from offshore oil and gas platforms by satellite has historically been challenging because of the absorption of sunlight by water, which skews observations. A new wave of emission-tracing technologies specifically designed for offshore projects (including sealed and abandoned wells) will likely detect fugitive methane emissions from offshore fleets and wells more precisely.<sup>30</sup>

**Terms of reference – (e) any other related matter.**

Gas consumption in NSW is declining and the need for new supplies is waning (see Figure 2). Gas usage in NSW has fallen and this is partly due to less gas being consumed for power generation since the first half of the 2010s as more renewables have come online.

This is a marked contrast to the predictions made at the start of the 2010s when a large rollout of gas-fired power plants was forecast.<sup>31</sup> Principal gas-fired generation plants totalled 1,295

<sup>29</sup> Minister for Climate Change and Energy Chris Bowen. [Australia joins global methane pledge](#), 23 October 2022.

<sup>30</sup> Bloomberg Green. [Shell, TotalEnergies Join Satellite Effort to Track Methane](#), 8 July 2021.

<sup>31</sup> New South Wales Parliamentary Library Research Service. [Offshore petroleum exploration and mining briefing paper No 01/2011](#), Page 46.



megawatts (MW) in June 2009. Of 53 proposed new power stations and expansions in NSW, 20 were expected to run on natural gas with a combined total capacity of at least 8,339MW.<sup>32</sup> Little of this got developed, with installed gas-fired power capacity amounting to 1,828MW at 1 January 2022.<sup>33</sup>

**Figure 2. Total Eastern Australia Demand in Terrajoules (TJ)**

Fiscal year	NSW/ACT	QLD	VIC	SA	TAS	Total TJ/d	Total PJ
2008/09	357	319	630	301	32	1,639	598.24
2009/10	391	325	583	288	39	1,626	593.49
2010/11	403	371	621	286	45	1,726	629.99
2011/12	367	391	589	275	47	1,669	609.19
2012/13	385	386	604	283	52	1,710	624.15
2013/14	376	385	575	247	36	1,619	590.94
2014/15	375	369	568	220	18	1,550	565.75
2015/16	387	323	596	265	36	1,607	586.56
2016/17	381	297	627	295	35	1,635	596.78
2017/18	365	304	625	306	41	1,641	598.97
2018/19	356	302	590	272	29	1,549	565.39
2019/20	350	306	613	234	22	1,525	556.63
2020/21	340	327	598	208	26	1,499	547.14
2021/22	371	300	634	177	27	1,509	550.79
2022/23	363	303	587	169	26	1,448	528.52

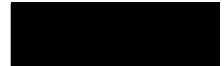
Source: [Australian Energy Regulator \(AER\)](#).

It is not just NSW where gas consumption has fallen since the AER began compiling this data series in the 2008/09 fiscal year. The whole of eastern Australia has seen a decline in gas usage over the past 14 years, most notably in South Australia where it has fallen by 43.8% over that period. The decline in South Australia is largely due to the decline in the use of methane gas for electricity generation, as shown in Figure 3.

<sup>32</sup> NSW Parliamentary Library Research Service. [Offshore petroleum exploration and mining Briefing paper No 01/2011](#).

<sup>33</sup> Australian Energy Regulator (AER). [The state of the energy market 2022](#). Page 34.





**Figure 3. Average Daily Gas Used for Gas-Powered Generation (TJ)**

Period	NSW/ACT	QLD	VIC	SA	TAS	Total TJ/d	Total PJ
2008-09	44.75	140.50	62.75	184.00	21.50	453.50	165.53
2009-10	85.25	213.00	36.25	171.50	24.00	530.00	193.45
2010-11	85.00	273.25	23.00	167.75	30.50	579.50	211.52
2011-12	73.50	266.75	23.00	161.25	31.25	555.75	202.85
2012-13	88.25	234.50	61.00	168.50	34.00	586.25	213.98
2013-14	92.25	266.50	63.25	141.25	17.75	581.00	212.07
2014-15	76.25	334.25	43.00	120.00	0.50	574.00	209.51
2015-16	81.00	220.75	33.50	129.50	18.25	483.00	176.30
2016-17	56.75	170.25	53.50	155.00	16.25	451.75	164.89
2017-18	46.75	141.00	88.50	186.75	18.00	481.00	175.57
2018-19	29.75	113.00	76.25	175.25	11.50	405.75	148.10
2019-20	43.50	133.75	69.75	157.25	3.25	407.50	148.74
2020-21	20.75	126.00	37.00	129.50	2.75	316.00	115.34
2021-22	51.25	122.00	44.25	98.50	1.50	317.50	115.89
2022-23	35.00	111.25	36.00	87.50	2.50	272.25	99.37
<b>Average (2008-09 to 2022-23)</b>	<b>60.67</b>	<b>191.12</b>	<b>50.07</b>	<b>148.90</b>	<b>15.57</b>	<b>466.32</b>	<b>170.21</b>

Source: [AER](#).

NSW has never been a great destination for oil and gas exploration spending given the state is reliant on neighbouring states Victoria, Queensland and South Australia for gas supplies. On the oil side, the state no longer has a refinery, so any oil found offshore NSW would have to be sent to the Geelong refinery in Victoria or the Lytton refinery in Queensland. Figure 4 shows the decline in exploration spending over the past 12 years, down from a peak of A\$122.60 million in the 2010-11 fiscal year to 30 June to A\$7.70 million in the 2021-22 fiscal year.



**Figure 4. Mineral and Petroleum Exploration, Australia**

Period	Offshore	Onshore	Seasonally adjusted	QLD	SA	WA	NT	NSW
1994-95	497.4	169.4	666.8	85.6	46.2	344.9	-	-
1995-96	512.9	172.1	685.0	104.9	54.5	319.1	1.1	-
1996-97	558.4	245.4	803.8	128.1	22.3	439.1	-	-
1997-98	685.1	234.3	919.4	84.2	-	463.9	-	0.1
1998-99	670.3	180.9	851.2	67.8	12.1	530.6	-	-
1999-00	594.0	108.5	702.5	28.2	-	444.0	-	-
2000-01	848.8	179.3	1,028.1	85.5	24.3	687.5	5.7	1.1
2001-02	711.9	167.7	879.6	76.2	24.8	479.7	7.1	3.5
2002-03	804.8	188.1	992.9	93.5	87.3	598.3	42.4	9.8
2003-04	711.2	228.0	939.2	93.2	55.8	670.5	28.2	10.2
2004-05	769.2	271.5	1,040.7	104.2	77.3	526.5	-	9.1
2005-06	898.6	357.8	1,256.4	138.1	135.7	593.6	-	4.0
2006-07	1,711.0	499.8	2,210.8	193.1	161.6	1,468.6	21.6	12.4
2007-08	2,538.7	490.3	3,029.0	165.9	191.2	2,175.5	0.8	30.0
2008-09	3,314.8	492.1	3,806.9	289.7	110.2	2,940.7	3.5	17.3
2009-10	2,742.6	756.5	3,499.1	487.1	69.2	2,493.0	1.9	110.0
2010-11	2,566.2	758.5	3,324.7	462.3	81.1	2,411.7	0.6	122.6
2011-12	2,277.0	914.7	3,191.7	462.6	173.3	2,113.5	2.6	27.0
2012-13	3,425.6	1,364.8	4,790.4	652.9	382.2	3,297.3	7.7	37.6
2013-14	3,523.1	1,316.1	4,839.2	613.0	535.0	3,017.1	510.0	-
2014-15	2,546.0	1,241.1	3,787.1	741.2	384.8	2,070.7	441.5	51.8
2015-16	1,285.6	489.4	1,775.0	201.7	137.6	1,319.8	97.9	25.6
2016-17	945.9	435.2	1,381.1	156.3	159.5	644.0	360.4	16.0
2017-18	673.0	351.0	1,024.0	163.2	109.0	548.9	161.5	15.5
2018-19	812.0	439.9	1,251.9	194.8	108.2	712.0	181.6	12.4
2019-20	586.7	669.0	1,255.7	232.2	133.0	594.6	185.8	10.0
2020-21	369.8	629.8	999.6	297.7	111.0	439.4	91.3	9.4
2021-22	465.9	682.9	1,148.8	225.9	90.9	580.3	185.2	7.7
2022-23(YTD)	234.7	446.6	681.3	153.1	20.7	266.8	107.5	-

Source: [Australian Bureau of Statistics \(ABS\)](#).

Potentially developing a new gas field offshore NSW is not consistent with the state’s plan to be net zero by 2050 and reduce greenhouse gas emissions by 50% by 2030 from 2005 levels.<sup>34</sup>

<sup>34</sup> NSW Climate and Energy Action. [Net Zero Plan](#).



Furthermore, NSW has scope to do a lot more on the gas demand side, such as following in the footsteps of its neighbour Victoria and unveiling a gas substitution roadmap<sup>35</sup> and banning new gas connections to newly built homes<sup>36</sup>. The Victorian government has sent strong signals that it recognises electrification as the most cost-effective and most likely forward pathway for Victorian households. Its Victorian Energy Upgrades (VEU) program encourages the uptake of electric appliances.<sup>37</sup>

NSW also has plenty of renewable resources, including offshore wind, to ensure that consumers are able to benefit from the most cost-effective source of power supply. The federal Minister for Climate Change and Energy Chris Bowen announced in July that the Pacific Ocean off the Hunter Region, NSW, is suitable for offshore wind development.<sup>38</sup> NSW is also developing five Renewable Energy Zones<sup>39</sup>, and is targeting an additional 12GW of renewables and 2GW of long-duration storage by 2030<sup>40</sup>.

<sup>35</sup> Victoria state government. [Victoria's gas substitution roadmap](#).

<sup>36</sup> Premier of Victoria. [New Victorian homes to go all electric from 2024](#). 28 July 2023.

<sup>37</sup> IEEFA. ['Renewable gas' campaigns leave Victorian gas distribution networks and consumers at risk](#). 17 August 2023.

<sup>38</sup> DCCEEW. [Area in the Pacific Ocean off the Hunter declared suitable for offshore wind](#). 12 July 2023.

<sup>39</sup> NSW government. EnergyCo. [Renewable energy zone locations](#).

<sup>40</sup> IEEFA. [New South Wales targets 12 gigawatts of renewables by 2030](#). 4 October 2022.