

6 August 2021

Felicity Sands
Manager, Gas Reform
Energy Strategy
Energy, Environment and Climate Change
Department of Environment, Land, Water and Planning

Via email - Gas.Roadmap@delwp.vic.gov.au

Dear Ms Sands

The Australian Petroleum Production & Exploration Association (APPEA) is the peak national body representing upstream oil and gas explorers and producers active in Australia. APPEA's member companies account for more than 90 per cent of Australia's petroleum production. Further information about APPEA can be found on our website, at www.appea.com.au.

APPEA welcomes the opportunity to provide comment to the Victorian Government's consideration and development of its Gas Substitution Roadmap. APPEA's submission will limit comments to matters that directly impact on upstream production and distribution of natural gas.

Australia is a leading producer of oil and natural gas and has an abundance of reserves which will last for many years to come. At the outset, APPEA and its members identify that there will continue to be demand and an ongoing requirement for the delivery of natural gas to Victoria for the foreseeable future. This has also been recognised by the Victorian Government, which while releasing its Gas Substitution Roadmap discussion paper is also preparing for the restart of onshore conventional gas exploration and production; and by AEMO which in its 2021 Victorian Gas Planning Report identifies significant ongoing demand for gas usage in the state for the foreseeable future.¹

Reliable, secure and competitively priced energy is crucial to our everyday lives in Australia and will continue to be for the foreseeable future. Natural gas plays a critical role in the Australian economy. Natural gas accounts for almost a quarter of our primary energy consumption. On a national level, natural gas is used in electricity generation (35 per cent), mining (24 per cent), manufacturing (24 per cent), residential use (11 per cent), in commercial services, transport and the construction sectors.

¹ https://aemo.com.au/-/media/files/gas/national_planning_and_forecasting/vgpr/2021/2021-victorian-gas-planning-report.pdf?la=en, p.23. While forecasting total gas consumption to decrease by 5.8 per cent over the 2020-25 outlook period, this decrease is driven by decreases in all consumption categories over the outlook period.

Natural gas delivers lower emissions

Natural gas-powered electricity generation provides security, reliability, and affordability to the electricity grid, with half the emissions compared to coal. In Victoria this currently accounts for approximately 8.5 per cent of natural gas consumption. The use of natural gas for power generation varies over the year and in response to events with, for example, gas playing a very significant role in the period following the closure of the Hazelwood Power Station in March 2017 and the June 2021 disruption at the Yallourn Power Station. In both cases, natural gas played a critical role in securing ongoing energy supplies for Victorians.

Natural gas is both a source of energy and an essential raw material for the manufacturing of everyday products like glass, ceramics, bricks, cement, plastic packaging for food and beverages, fertilisers, anti-freeze, metals like aluminium, copper, zinc, tin and in processes of food preparation, fermentation, and brewing. In most cases, there is no readily available substitute for gas. In Victoria, industrial process heating accounts for around 30 per cent of all gas consumption, while gas as an industrial feedstock for light industry accounts for an estimated 1 per cent of total gas consumption.²

APPEA supports practical efforts to decarbonise the economy, and Australia is already on a pathway to decarbonise the gas sector to help meet our nation's emission reduction commitments under the Paris Agreement on climate change. The oil and gas sector is working hard to reduce, offset and mitigate emissions in its operations.

To support government and industry efforts towards decarbonisation, APPEA has a longstanding set of policy positions in relation to climate change. Since 2010 these have formed the basis of a formal set of climate change policy principles, which are reviewed every 5 years. These reviews produced a second edition in early 2016 and the third and current edition in February 2021.³

At their core, the principles are designed to assist policymakers in developing efficient and effective responses to deal with climate change. They also provide a framework for the industry to assess and respond to climate change policies put forward by governments and others. The full set of climate change policy principles are at [Attachment 1](#). In summary, these cover that:

- Net zero emissions by 2050 should be the goal of policy.
- Climate policies should be integrated with economic, social, technology, energy policies.
- Maintain competitiveness of trade-exposed industries, such as LNG.
- Advance access to affordable, reliable, sustainable energy.

Efforts to reduce emissions should not be targeted at any one sector but rather focused on the core objective of reducing emissions across the economy. Such efforts should also be done in conjunction with national efforts to achieve decarbonisation across the entire economy. Such an approach would mean that government does not 'pick winners', and conversely that it does not make scapegoats of certain sectors.

This is especially critical in Victoria, given there are more than 2 million residential gas customers, nearly 65,000 commercial gas customers and more than 600 large industrial users of natural gas. Importantly, there is strong seasonal variability in the consumption of natural gas in the state. As the Australian Energy Market Operator identified in its Victorian Gas Planning Report, consumption of gas in household, commercial and government settings peaks in winter. This is largely due to the

² *Gas Substitution Roadmap Consultation Paper, 2021.*

³ See www.appea.com.au/all_news/oil-and-gas-industrys-climate-principles-support-a-cleaner-energy-future.

demand for heating. Industrial customer demand tends to remain relatively stable throughout the year.⁴

As a lower emissions fuel, natural gas has an important role to play in helping Victoria reach its emissions reduction targets. Continuing to use natural gas for residential heating will deliver lower emissions by enabling renewables compared to the alternative of phasing out natural gas in preference for electrification that will have to be underpinned by brown coal for electricity generation.

To put this into perspective, Victoria generated 21 per cent of its 2018/19 electricity from renewable generation, or an equivalent of 4 per cent of its energy consumption including transport and gas energy. Power generation still includes brown coal resulting in the highest electricity emission intensity in Australia. While Victoria has legislated a 50 per cent renewable energy target by 2030, the definition in the Act indicates this applies only to electricity generation. If gas and transport energy consumption remain at current levels, the 50 per cent renewable target will cover just over 10 per cent of Victoria's energy use. Given the size and seasonal nature of this sector, it would appear unrealistic to electrify it as massive investments would be required to build new electricity infrastructure to meet the seasonal demands.

Supporting decarbonisation without derailing the economy

As Victoria seeks to decarbonise its economy, consideration should instead be given to the range of initiatives and pathways available to it. In support of this endeavour, the Australian gas industry has collectively developed *Gas Vision 2050*, a pathway document to help navigate the gas industry to 2050 and assess what role the industry can and will play in the Australian economy. It demonstrates how gas will continue to provide Australians with reliable and affordable energy beyond 2030.

The report outlines a roadmap to decarbonising the natural gas sector to help meet Australia's emissions reduction commitments over the coming decade and documents innovative research and strong progress being made in advancing transformational technologies. It is at [Attachment 2](#).

Carbon Capture and Storage

It is the active deployment of technologies by industry to realise decarbonisation that offer significant opportunities to the Victorian Government's commitment to net zero by 2050. Technologies include hydrogen, biogas, bio-LPG, renewable methane and carbon capture and storage (CCS).

CCS is a transformational technology that can be used to decarbonise the direct use of natural gas at industrial scale including gas processing, power generation and manufacturing. In Australia, the oil and gas industry has been at the leading edge of researching and deploying greenhouse gas storage technologies. The industry instigated significant research efforts into greenhouse gas storage in the late 1990s through the Australian Petroleum Cooperative Research Centre which undertook the first assessments of possible storage sites across Australia. Several years later that work was continued by CO2CRC Limited, which is based in Melbourne. The CO2CRC is recognised as one of the world's leading collaborative research organisations focused on carbon capture and storage and continues to receive significant backing from the Australian oil and gas industry. The CO2CRC's CCS project, the Otway International Test Centre, based in Victoria at Nirranda South, is a leading demonstration of

⁴ AEMO, Victorian Gas Planning Report, 2021

the safe and secure geological storage of CO₂ and has served as a key case study of the application of CCS at an industry scale.⁵

The Australian industry is already investing and moving beyond the research and development phase with demonstration projects underway to deploy a broad range of these technologies as well as commercial scale CCS project at Gorgon Carbon Dioxide Reinjection Project in Western Australia. Other project scoping assessments are being undertaken in Perth, Carnarvon, Browse, Bonaparte and Cooper Basins as well as assisting other organisations to undertake storage site assessments in the Gippsland and Perth Basins.

CCS is an important development for hydrocarbon-based economies, like Victoria's. It enables decarbonisation pathways of existing fuel stock, while also opening up pathways for the development of new technologies and energy sources, like hydrogen. Identified as an important consideration as part of the Victorian Government's gas substitution roadmap, hydrogen can be produced through renewable electricity in electrolysis or from natural gas combined with CCS. While these are different processes, they both produce clean hydrogen.

Economic modelling

To support the development of *Gas Vision 2050*, Frontier Economics completed a study to investigate and evaluate options of the roles of gas and gas infrastructure to achieve a net zero economy by 2050. The study focused on ongoing capital and operating costs in 2050 assuming a transition to a decarbonised economy was made by then. The annual costs of different decarbonisation scenarios were modelled. These scenarios were compared to a base case where the electricity sector reached net zero emissions in 2050 while unabated gas use continued to supply heat and feedstock to industry. These scenarios achieved net-zero emission from gas use and included blue hydrogen, green hydrogen and electrification – all matters under active consideration by the Victorian Government's Gas Substitution Roadmap discussion paper. A copy of the Frontier Economics report is at [Attachment 3](#).

The modelling found that the Zero-Carbon Fuels scenario was found to be the lowest cost, compared to both an Electrification scenario and a Renewable Fuels scenario. The cost saving for the Zero-Carbon Fuels scenario relative to the Renewable Fuels scenario is largely driven by the fact that the gas used by the Steam Methane Reforming process (SMR) is lower cost than electricity used in the electrolyser. The fact that the gas delivered to the SMR can make use of existing gas transmission assets (which are no longer required for delivering gas to end customers) whereas the delivery of hydrogen from the electrolyser is assumed to require new investment in hydrogen transmission pipelines, also accounts for some of the cost saving. Against this, the SMR requires additional cost to capture and store carbon, but this additional cost does not outweigh the savings from using gas rather than electricity.

The modelling finds that there is value in continuing to make use of Australia's natural gas resources to deliver gaseous fuels to end-use customers. It also finds that making continued use of existing assets to deliver energy, such as the existing gas transmission and distribution network can help avoid the material costs of investing in new assets to deliver energy.

Policies to achieve net zero emissions should be broad-based and should not focus solely on promoting a particular pathway against other viable alternatives. There is significant uncertainty about technological developments and costs over the period to 2050, and effectively ruling out the

⁵ See co2crc.com.au/who-we-are/about-us for more information.



continued application and use of natural gas with mitigating technologies is short-sighted. A broad-based policy objective to achieve net zero that follows an objective rather than a prescriptive pathway will encourage participants and customers to respond flexibly with technology and at lowest cost.

Yours sincerely

Ashley Wells
Victorian Director