the human energy company®
Chevron

submission to the australian government's

future gas strategy consultation paper

Chevron Australia Pty Ltd

executive summary

Chevron Australia supports the Australian Government's intent to develop an evidence-based, long-term strategy for how Australian natural gas will contribute to affordable and reliable energy security in both Australia and our export markets whilst supporting the energy transition.

Chevron Australia is one of the largest energy suppliers to Australia and the region. The Chevron Australia-operated Gorgon and Wheatstone gas plants produce approximately 45% of the gas supplied to the Western Australian domestic market[1] and just over 6.5% of the world's Liquefied Natural Gas (LNG) supply or 33% of Australia's LNG exports[2].

To achieve this, Chevron Australia and its partners have invested more than $81 billion[3] of capital expenditure to the Australian economy since 2009 and on average $2.8 billion of annual operating expenditure, creating direct jobs and livelihoods for over 4,100 people each year. In the same timeframe, Chevron Australia has contributed more than $12 billion in taxes ($4.2 billion in 2022), which can be used to fund critical public infrastructure and assist the government to support large scale energy transition investment.

The Chevron Australia-operated Gorgon and Wheatstone facilities are multi-decade developments. We continue to progress work on future subsea projects, which remain subject to regulatory approvals and investment decisions by Chevron and its joint venture participants. These major projects to bring-on new supply will ensure we are able to continue to safely produce reliable and affordable natural gas for our customers from our Gorgon and Wheatstone assets.

Chevron Australia appreciates the opportunity to provide comment on the Australian Government's *Future Gas Strategy Consultation Paper*[4] , including outlining our perspective on Australia's future gas supply and demand and the policy and regulatory settings needed to support this; providing comment on the points made in the consultation paper; and responding to relevant consultation questions.

As will be outlined in our submission, **Chevron Australia sees Australian gas fulfilling the following key roles** in both the Australian domestic market and the export markets that rely on Australian LNG until 2050 and likely beyond:

1 Gas Bulletin Board (WA) (aemo.com.au)
2 Based on 2022 production figures.
3 All dollar figures are in Australian dollars unless otherwise stated.
4 Future Gas Strategy consultation paper (storage.googleapis.com)

- **Providing energy security** and meeting increased global energy needs with reliable and affordable energy that we need for our daily lives. Gas allows us to heat and power our homes, businesses, schools, hospitals, manufacturing, and is used, among other things, in industrial processes such as mining and minerals processing. We continue to see gas playing a critical role in industrial processes and the power sector, including to mitigate renewables intermittency.
- **Enabling economic development**, creating thousands of direct and indirect jobs given gas underpins existing but also facilitates new industries. In Australia, reliable and affordable gas has powered the mining and minerals processing sectors as well as supported other industries such as manufacturing bricks, cement, fertiliser, glass, food products such as dairy, and paper products. Going forward, gas will also provide the energy needed for new industries such as critical minerals and low-carbon hydrogen. In addition, successfully developing a large-scale carbon capture and storage (CCS)[5] industry will enable Australia to continue to benefit from its vast resource base, generating economic benefits whilst reducing the emissions intensity of these activities.
- **Supporting the energy transition** by providing firming power for the growth in renewables generation; replacing coal-fired power generation as coal assets are retired; and helping Australia lower the carbon intensity of hard-to-abate sectors by developing lower carbon intensity hydrogen supply as a cost-effective feedstock. Furthermore, the skills, technologies to lower the carbon intensity of gas production such as CCS, and to some extent infrastructure developed for Australia's domestic gas and LNG industry will assist in developing energy sources needed for the energy transition, such as lower carbon intensity hydrogen.

In short, Australian natural gas will play a critical role in the future energy mix of both Australia and the Asia Pacific region until at least 2050[6]. In addition, the extensive benefits of gas as an energy source can be realised with reduced net emissions. Australian gas facilities are subject to the Australian Government's Safeguard Mechanism if they produce over 100,000 tonnes of CO_2-equivalent covered emissions in a financial year[7]. In some cases gas facilities, such as the Chevron Australia-operated Gorgon and Wheatstone plants, also have state-based greenhouse gas conditions, which require facilities to reach net zero scope 1 emissions by 2050.

To deliver these benefits and meet the requirements of increasing energy needs, new gas resources in Australia will need to be developed over the coming decades. In some markets, such as in Western Australia, the demand for gas will increase over the medium term to meet the needs of replacing coal-fired power generation; providing firming generation for renewable energy; and supporting existing key industries such as mining and minerals processing and new industries such as low-carbon hydrogen and critical minerals like lithium.

To ensure sufficient gas supply is developed to meet demand requirements in a timely manner, Australia must ensure it has a stable, clear, and efficient policy and regulatory framework. A stable and efficient policy and regulatory framework will also assist in deploying lower carbon energy technologies at scale in the decades ahead.

To achieve this, Chevron Australia recommends that the Australian Government should:

- **Clarify and amend its major project assessments and approvals processes** to improve efficiency, certainty and predictability for major projects whilst maintaining a robust regulatory framework. Improvements could be made to the offshore petroleum and retention lease regimes. In particular, amendments to the Offshore Petroleum Greenhouse Gas Storage Environment Regulations are needed to provide certainty on consultation requirements for both proponents and stakeholders, as well as amending oil spill guidelines to provide a more appropriate geographical area for the environment that may be affected. In addition, ensuring assessments are streamlined where possible is required, particularly when both Federal and State government agencies have oversight of a project activity and there is a risk of duplication or inconsistency between Federal and State requirements.
- **Provide a pathway to prioritise projects and developments critical to energy security and decarbonisation[8] of energy in Australia and the region** for government and regulator assessments and processes. The Western Australian government has recently implemented the Green Energy Approvals Initiative[9]. A similar initiative for gas developments critical to Australia's energy security should be considered. On decarbonisation, the Australian government could assist in supporting the emissions reduction efforts of our regional trading partners by using Australia's geology and having the policy and regulatory

5 Reference to carbon capture and storage (CCS) technology could also include utilisation in future developments which would be known as carbon capture utilisation and storage (CCUS) technology. For ease of reading, we have used only CCS in this submission.

6 IEA net zero scenario World Energy Outlook 2023 (windows.net) table 3.6 still shows use of unabated & abated natural gas in 2050, albeit at lower levels than today.

7 The Safeguard Mechanism (cleanenergyregulator.gov.au)

8 'Decarbonise' or 'decarbonisation' generally refers to the process of stopping or reducing release of greenhouse gases, especially carbon dioxide, into the atmosphere as the result of a process. For Chevron, decarbonisation can refer to reducing absolute emissions or reducing the carbon intensity of a process or asset.

9 Green Energy Approvals Initiative | Western Australian Government (wa.gov.au)

frameworks in place to support emissions abatement solutions for the region[10].

- **Increase the investment attractiveness of Australia for gas developments, low carbon energy projects, and carbon abatement projects**, particularly given international investment will be needed for large-scale low carbon energy projects. There have been several regulatory and policy changes in Australia impacting LNG projects in relatively quick succession (such as reforms to the Safeguard Mechanism and fiscal settings) which cumulatively can impact Australia's competitiveness as a place in which to invest in future energy supply. There is also intense global competition for energy investment capital. Australia's transition to a net-zero economy is expected to require "at least a USD$1.9 trillion investment" ($2.4 trillion) in the country's energy system by 2050 . Investment attractiveness could be improved by enabling shared infrastructure, more efficient and streamlined approvals processes, and having bi-partisan political support for the regulatory framework to increase confidence that regulatory requirements will be more stable. Being an attractive investment destination will enable ongoing economic benefits and jobs for Australia.
- **Promote a market-based approach to decarbonisation that accounts for full life-cycle emissions profiles of various energy technologies**, allowing different technology solutions to compete on a level playing field. Support for technological development and lower carbon initiatives should be based on the carbon intensity instead of being limited to selected technologies only. For example, for hydrogen development, policies should create a level playing field where all technologies/ fuels that reduce emissions are eligible, based on total emissions reductions achieved on a lifecycle basis across the hydrogen value chain.
- **Maintain access to high quality, verifiable carbon offsets for hard-to-abate industries** to use in order to reach net-zero emission targets of sectors such as energy, mining and manufacturing. Enabling access to cost-effective offsets will be important to reducing costs of products produced by emissions intensive industries which in turn will reduce the cost to the consumer.
- **Promote policies that incentivise investment in energy supply and infrastructure, including common user infrastructure; energy system reliability; and measures that promote energy efficiency**. Governments should avoid market interventions or policies that discourage investment in Australia's energy system as this will lead to further supply challenges and domestic price volatility.

It is critical as Australia's energy system transitions to a more diverse and lower carbon energy mix that energy security is maintained. As noted in the consultation paper, "how, and how fast" the world meets commitments under the Paris Agreement is "uncertain". Australia needs to balance energy security and diversity, energy reliability, and energy affordability.

It is therefore important that Australian Government policy does not inadvertently create energy shortfalls or system instability by being overly reliant on energy sources and technologies that are not yet able to reliably meet demand.

In the spirit of working constructively and collaboratively with the Australian Government to ensure energy security that is affordable and ever-cleaner, Chevron Australia would welcome further consultation and engagement as the Future Gas Strategy is progressed and finalised.

10 For example, as per passage of the Environment Protection (Sea Dumping) Amendment (Using New Technologies to Fight Climate Change) Bill 2023

11 Report Shows Pathway and Cost for Australia to Meet Climate Goals and Become Major Hydrogen Exporter | BloombergNEF (bnef.com)

Contents

2 Introduction

2.1 Chevron in Australia

Chevron Australia Pty Ltd (Chevron Australia) is part of the Chevron group of companies, of which Chevron Corporation (Chevron) is the ultimate holding company. Chevron is one of the world's leading integrated energy companies and has been present in Australia for over 70 years.

Chevron Australia is the operator of the Gorgon and Wheatstone LNG and domestic gas facilities in the north-west of Western Australia. In addition, Chevron Australia holds a one-sixth share of the North West Shelf Project. Through its share of these world-class Australian LNG and domestic gas projects, Chevron Australia is a major exporter of LNG and major provider of domestic gas to the Western Australian market. The Chevron Australia-operated Gorgon and Wheatstone gas plants produce approximately 45% of the gas supplied to the Western Australian domestic market[12] and just over 6.5% of the world's Liquefied Natural Gas (LNG) supply or 33% of Australia's LNG exports[13].

Chevron Australia and its partners have contributed more than $81 billion[14] of capital expenditure to the Australian economy since 2009 and on average $2.8 billion of annual operating expenditure, creating jobs and livelihoods for over 4,100 people each year. In the same timeframe, Chevron Australia has contributed more than $12 billion in taxes ($4.2 billion in 2022), which can be used to fund critical public infrastructure and assist the government to support large scale energy transition investment. As the requirement for gas and LNG continues, Chevron Australia will continue to provide economic benefits to the Australian government and community.

Given the importance of Gorgon and Wheatstone to the WA economy and its supply of LNG to international trading partners, Chevron Australia continues to invest in our world-class assets. For example, in June of this year, we announced the production of first gas from the Gorgon Stage Two development, which will help maintain feed gas supply for the Gorgon LNG and domestic gas processing facilities on Barrow Island. Fabrication is also underway on our $6 billion Jansz-Io Compression Project, designed to maintain production from the Jansz-Io field using proven, world-leading subsea compression technology. Such investments will ensure Gorgon, in this example, continues to maintain its rate of production to fulfil both domestic and international customer energy requirements.

At the Gorgon LNG facility, Chevron Australia operates the Gorgon carbon capture and storage (CCS) facility which has so far sequestered over 8.8 million tonnes of CO_2-equivalent since it commenced operations in August 2019. At current injection rates, the Gorgon CCS facility is the largest CCS project of its kind operating anywhere in the world. Chevron Australia is also part of three joint ventures that have been granted three separate greenhouse gas assessment permits in Commonwealth waters offshore north-west Australia for potential CCS projects[15].

Aside from its investment in upstream exploration and production of oil and gas, Chevron has other companies within the group active in Australia. Chevron New Energies (CNE) focuses on reducing the carbon intensity of Chevron's own

12 Gas Bulletin Board (WA) (aemo.com.au)
13 Based on 2022 production figures.
14 All dollar values in this submission are in Australian dollars.
15 Chevron granted interest in three permits to assess carbon storage offshore Australia (australia.chevron.com)

operations and helping customers meet their lower carbon ambitions. Included in CNE's global portfolio is CCS, lower carbon hydrogen, renewable fuels and products, carbon offsets, and emerging technologies such as geothermal and lithium extraction.

Chevron also has downstream interests in Australia. In 2020, Chevron re-entered the downstream market in Australia through the acquisition of Puma Energy (Australia) Holdings. The new organisation, Chevron Australia Downstream, delivers quality fuel and lubricant products and services across Australia via a national network of service stations, primarily under the Puma brand. In January 2022, Chevron Australia Downstream started branding new service stations in Australia as Caltex – a global brand owned by Chevron – and is rebranding many of its existing Puma service stations as Caltex.

2.2 Chevron's position on lower carbon

Chevron's strategy is to leverage our strengths to safely deliver lower carbon energy to a growing world. We are investing to grow our traditional oil and gas business, lower the carbon intensity of our operations and grow new lower carbon businesses in renewable fuels, carbon capture and offsets, hydrogen, and other emerging technologies.

Adopting intensity metrics provides Chevron the flexibility to grow our upstream and downstream businesses while aiming to become an increasingly carbon-efficient operator.

Chevron supports the goals of the Paris Agreement and is committed to helping to address climate change while continuing to deliver energy that supports society. Chevron believes climate policy should achieve emissions reductions as efficiently and effectively as possible, at the least cost to economies, and the optimal approach is to drive the most efficient and cost-effective reductions economy-wide, paired with natural and technological emissions removals.

Narrow sectoral or geographic metrics are less efficient than broad economy-wide solutions, which are uniquely able to incentivise the most efficient and cost-effective reductions. Chevron supports a price on carbon, applied as widely and broadly as possible, as the best approach to reduce emissions and we encourage national policies that support international linkages (for example, through Article 6 of the Paris Agreement), with the goal of ultimately building up to a liquid and integrated global carbon market.

For more details regarding Chevron Corporation's perspective, please refer to our 2023 *Chevron Climate Resilience Report*[16].

Stable, efficient and effective policies are essential to ensure ongoing investment in Australia's economy. By combining the Safeguard Mechanism Reforms with other appropriately designed policies, Australia can support both economic growth and the most cost-efficient emissions abatement across the economy.

Specific to Chevron Australia, as per State Ministerial Statements[17] and Safeguard Mechanism legislation the Chevron Australia-operated Gorgon and Wheatstone LNG facilities are required to reduce emissions on a five-yearly basis on a trajectory to net zero scope 1 emissions by 2050.

16 climate-change-resilience-report.pdf (chevron.com)

17 1732 Statement 1201 for publishing Wheatstone.pdf (epa.wa.gov.au)
1729 Statement 1198 for publishing.pdf (epa.wa.gov.au)

Climate change is global in nature and addressing it will require meaningful global and collaborative approaches from policymakers. Affordable and reliable energy is essential to human progress. Australia's reliable exports of LNG contribute to the greenhouse gas reduction strategies of customer nations that have ratified the Paris Agreement. For example, major LNG customers South Korea[18] and Japan[19] have in place Nationally Determined Contribution (NDC) submissions to the United Nations Framework Convention on Climate Change (UNFCCC).

2.3 Context for Chevron Australia's submission

Chevron Australia is a member of Australian Energy Producers (AEP), the Chamber of Minerals and Energy of Western Australia (CME), and the Chamber of Commerce and Industry WA (CCIWA) and has also provided input to their respective submissions on the consultation paper. The importance of the Future Gas Strategy to Australia and Asia Pacific's energy security means Chevron Australia is providing its own comprehensive submission, considering our position as a major LNG exporter and domestic gas supplier to the Western Australian market.

We consider we are well placed to provide comment on the following sections:

- Our perspective on future Australian natural gas supply and demand;
- Our comments on information included within the consultation paper; and,
- Our response to relevant consultation questions posed within the consultation paper.

Note that this submission represents views of Chevron Australia and not necessarily those of our Joint Venture Participants.

In line with the objective of the Australian Government for the Future Gas Strategy to be an "evidence-based" strategy, our submission provides references to reports or data relevant to our comments.

18 211223_The Republic of Korea's Enhanced Update of its First Nationally Determined Contribution_211227_editorial change.pdf (unfccc.int)

19 The Long-term Strategy under the Paris Agreement.pdf (unfccc.int)

3 The future of supply and demand for Australian gas

To outline the future supply needs and demand requirements, we have categorised our key points into the following three areas where Australian gas will have a role in Australia and in LNG export markets:

- Providing energy security;
- Enabling economic development; and,
- Supporting the energy transition.

To support these three roles of gas, we have added a section on policy and regulatory opportunities for the Australian Government to consider for enabling the Future Gas Strategy.

3.1 Providing energy security

a. In Australia, Australian gas will be critical for providing baseload power and grid stability in the energy system as the mix of energy sources increases.

i. Coal currently provides baseload capacity for electricity generation across Australia on both the National Electricity Market (NEM) and Wholesale Electricity Market (WEM). The WEM operates only in Western Australia (WA), is not connected to the NEM.

ii. In the 12 months to 27 October 2023, the NEM used an average of 44% black coal, 18% brown coal and 3% natural gas for electricity generation[20]. Natural gas is a much larger percentage of electricity generation in Western Australia's WEM, which in the 12 months to 27 October, saw a mix of 28% coal and 37% gas[21].

iii. Coal-fired power generation assets will be progressively retired as they near or come to the end of their operational life. The Western Australian government announced in June 2022 that it would retire state-owned coal-fired power stations by 2030[22] as renewable energy generation increases. However, even as the percentage of renewable energy increases, gas-fired power generation including additional gas-fired power generation will be required[23], especially whilst increased network capacity and energy storage is built to manage the fluctuating production of renewable generation.

iv. In the Australian Energy Market Operator's *2022 WA Gas Statement of Opportunities* (WA GSOO) report[24], "AEMO's modelling projects that increasing renewables penetration will be insufficient to fully compensate for the loss of coal-fired baseload power and gas generation will have to increase to complement renewable generation."

v. Gas-fired power generation can provide grid stability and ensure baseload power when renewable energy production is intermittent by

20 AEMO | NEM data dashboard (aemo.com.au)
21 AEMO | WEM data dashboard (aemo.com.au)
22 State-owned coal power stations to be retired by 2030 | Western Australian Government (wa.gov.au)
23 SWIS Demand Assessment 2023 to 2042 (wa.gov.au)
24 2022-wa-gas-statement-of-opportunities.pdf (aemo.com.au)

quickly flexing production up or down as required to ensure safe and reliable energy to our communities.

vi. Australia-wide analysis such as the *How to Make Net Zero Happen* report by Net Zero Australia[25], released in July 2023, found that by 2030 Australia would need to "plan and build a large fleet of gas-fired peaking generation to help accelerate renewable growth, and close coal power on time."

vii. In Western Australia, the government's *SWIS Demand Assessment 2023 – 2042* report[26] sees renewable energy penetration increasing from 34% in 2022 to around 96% in 2042, with electricity demand expected to triple over the same period.

viii. The *SWIS Demand Assessment 2023 – 2042* report identified more than 50GW new generation and storage would be required by 2042 under its 'Future Ready' scenario. According to the report, flexible gas generation is a key component, with an additional 3.9GW of new flexible gas generation (to more than double current gas-fired generation of 3.1GW) and large scale solar paired with long discharge energy storage required to support the 'Future Ready' scenario from 2030.

b. In the Asia Pacific region, growing global energy needs mean demand for Australian LNG will remain for existing customers, but demand will also come from other countries that look to use more LNG in their energy mix.

i. Many Asia Pacific countries rely heavily on imported Australian LNG to meet their energy needs. For example, Japan imports 97% of its gas consumption.

ii. Australia is a safe and politically stable country at both a State and Federal level, which supports the reliability of energy supply to the region. The current geopolitical uncertainty stemming from conflicts in Ukraine and the Middle East elevate the potential for supply disruptions. Europe faced an energy crisis in the wake of the Russia-Ukraine conflict, but its impacts were felt globally resulting in higher energy prices. Just as Australia is seeking to retire coal-fired energy production, many of our international customers for LNG are expected to do similar as they also focus on emission reduction targets.

iii. LNG will continue to play a role in the future energy mix as international customers retire coal assets. Gas will provide the firming capacity needed in their electricity networks as renewables generation increases and support Asia's industrial and residential sectors.

iv. As the hydrogen economy develops, Australian LNG can play a key role as a feedstock to lower carbon intensity hydrogen generation when coupled with CCS. There are a range of scenarios for future global gas supply and demand from third party analysts with a wide range of uncertainty, so it will be important to factor in a range of scenarios in policy development.

25 How to make net zero happen - Net Zero Australia final report 12 July (netzeroaustralia.net.au)
26 SWIS Demand Assessment 2023 to 2042 (wa.gov.au)

3.2 Enabling economic development

a. In Australia, Australian gas will facilitate ongoing economic development, supporting current and new industries and jobs.

i. Gas is an important feedstock in numerous chemical and industrial processes such as steel, aluminium, petrochemicals, and cement. This is expected to continue for decades[27] due to the significant investment required to replace gas-fired equipment and challenges in electrifying industrial processes requiring high heat temperatures achieved by hydrocarbon fuels.

ii. Transitioning to alternative feedstocks will take time so reducing the carbon intensity of existing plants (via CCS for example) will likely happen in parallel to new plants incorporating the alternative technology being built.

iii. In WA, AEMO's *2022 WA GSOO* report shows gas facilitates many other industries in WA, particularly mining and minerals processing, which consumes more than 50% of WA's gas. These industries, enabled by the availability of reliable and affordable energy, provide significant royalties to government and support tens of thousands of jobs. Indeed, in its *Major Commodities Review 2022-23*[28], the WA Department of Mines, Industry Regulation and Safety found the WA's resources sector (including petroleum production) delivered record sales of $254 billion and employed a record 126,480 full time workers.

iv. WA is currently by far the biggest consumer of gas of any state or territory in Australia due to demand from mining and minerals processing and the electricity generation sectors. In 2021-22, WA consumed nearly as much gas as Queensland, New South Wales and Victoria combined (673.1 PJ consumed in WA vs 688.5 PJ combined in Qld, NSW, Vic)[29]. Gas also represented 53.5 per cent of total energy consumed in WA in 2021-22.

v. Gas will also enable new industries over the medium to long term. Critical minerals mining and processing which are vital to global efforts to achieve net zero emissions will need significant energy inputs. As referenced in the Australian Government's *Critical Minerals Strategy 2023-2050*, "critical minerals mining and processing requires significant amounts of energy, particularly gas"[30]. In addition, use of gas can reduce the emissions intensity of these processes. According to McKinsey & Company in an article on Australia's potential in the lithium market, Australia's "new refining plants will instead use gas, which could reduce total mining and refining emissions by approximately 50 percent, bringing it almost in line with brine operations emissions"[31].

vi. Gas will also be important to the production of hydrogen, ammonia and methanol, where emissions are reduced through CCS. This is true for both the Australian market and countries in the Asia Pacific region where customers are seeking these products for their own

27 Net-Zero Industry Requires Exponential Growth From Carbon Capture, Hydrogen and Clean Power | BloombergNEF (bnef.com)

28 Latest statistics release (dmp.wa.gov.au)

29 Australian Energy Update 2023 see Australian Energy Statistics 2023 Table C.xlsx (live.com)

30 Critical Minerals Strategy 2023–2030 pg 40 (industry.gov.au)

31 Australia's potential in the lithium mining market | McKinsey (mckinsey.com)

decarbonisation efforts. Facilities built to produce these products would expect to have a plant life of 25 years or more.

vii. Stable gas supply is needed to ensure other sectors in Australia can access gas and be confident to invest in developments that support the energy transition. Gas consumers such as Wesfarmers detailed in their submission to the 2023 Parliamentary Inquiry into the WA domestic gas policy how stability of supply is crucial for WA's ability to participate in downstream processing of critical minerals to support global decarbonisation.[32]

viii. There is potential to leverage LNG and CCS to develop low-carbon hydrogen industries. These could be foundational to Australia's decarbonisation plans for hard-to-abate sectors and could be a growing export sector for regional trading partners if economic and policy settings are favourable. The LNG and CCS to hydrogen pathway is an important opportunity to build out and scale hydrogen value chains in Australia and the broader region.

3.3 Supporting the energy transition

a. In the Asia Pacific region, Australian LNG exports help customer countries reduce their emissions intensity, by switching to gas from more carbon-intensive energy sources.

i. Many of Australia's LNG customers are located within countries with net zero emissions targets by 2050-2060 (including customers based in Japan, Korea, Taiwan, China, and Singapore).

ii. The International Energy Agency (IEA) and others have recognised the value and emissions reductions benefits of switching from coal to natural gas. Per the National Renewable Energy Laboratory's (NREL) analysis, electricity generated from natural gas is approximately 50% of the lifecycle carbon intensity of electricity from coal, inclusive of emissions associated with flaring, venting, fugitives and end use[33].

iii. Without the option of sourcing Australian LNG, some customer countries may continue using higher-carbon energy sources. Australia therefore has the opportunity to support regional decarbonisation.

b. In the Asia Pacific region, Australia's CCS solutions can help customer countries meet their decarbonisation objectives.

i. Australia can help countries in the region abate emissions by sequestering their CO_2 emissions using Australian CCS projects given our suitable geology for offshore and onshore for greenhouse gas geosequestration.

ii. In addition, developing a large-scale CCS industry will enable Australia to continue to benefit from its vast resource base, generating economic benefits whilst reducing the emissions intensity of these activities.

c. In Australia, a significant amount of investment is required to support the energy transition. Australian gas can ensure sufficient contingencies are in place to maintain Australia's energy security via

32 20230811 - Submission 12 - DomGas - Wesfarmers Chemicals Energy Fertilisers_Redacted.pdf (parliament.wa.gov.au)
33 Life Cycle Assessment Harmonization | Energy Analysis | NREL (nrel.gov)

affordable and reliable energy with CCS helping to reduce emissions intensity.

i. The trajectory to net zero emissions by 2050 requires continued work on decarbonising existing energy supplies and systems as well as growing renewables, particularly for hard-to-abate sectors.

ii. Gas will continue to provide reliable, affordable energy to enable Australia's smooth and timely transition to a lower carbon economy. Under all energy transition scenarios presented in the IEA Energy Outlook 2023 there will be continued need for natural gas. In the short to mid-term there may be a need for increased gas consumption to replace coal-fired power generation as seen in the AEMO 2022 WA GSOO forecast for gas use in WA.

iii. Technology will play a major role in shaping the energy mix in both the near and long-term future. Innovative solutions are needed to ensure energy is lower carbon, affordable and reliable. These solutions should consider lifecycle emissions and be cost-effective and scalable.

iv. The Intergovernmental Panel on Climate Change (IPCC) notes numerous potential pathways to achieving the goals of the Paris Agreement in its reports[34]. All pathways include the continued use of oil and gas, even in rapid decarbonization scenarios. To achieve net zero emissions by 2050, direct air CO_2 capture and storage and CCS must be scaled up and globally deployed. Without this technology, these pathways cannot achieve theoretical solutions to reach net zero in the desired time frame.

v. Chevron is working to develop and deploy CCS technologies. Our strategy is twofold: lower the carbon intensity of our existing assets through CCS and grow a CCS business that helps reduce emissions intensity of the industries that enable modern society. This includes examining technologies that are currently uncommercial, such as through direct air capture (DAC) and reducing emissions from energy intensive industries and power generation.

vi. CCS is a proven technology for reducing greenhouse gas emissions. At the Chevron Australia-operated Gorgon natural gas facility on Barrow Island, the CCS facility has safely sequestered more than 8.8 million tonnes of CO_2 equivalent to-date, making it the largest CCS facility of its kind in the world. While the project has had some challenges meeting its design capacity, Chevron Australia continues to invest to optimise its performance.

vii. Chevron Australia is also part of three joint ventures granted three separate greenhouse gas assessment permits for potential CCS in Commonwealth waters offshore north-west Australia.

34 Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by governments — IPCC and AR6 Climate Change 2022: Mitigation of Climate Change — IPCC (ipcc.ch)

3.4 Policy and regulatory opportunities for the Australian Government to consider

a. **Stable, clear and efficient government policy and regulations will be needed to facilitate future investment in gas development in the medium and long term.**

   i. Development of complex and remote offshore gas resources requires substantial technical, commercial, and engineering work over long timeframes. These resources depend on major infrastructure investments to enable access to markets. Security of tenure and confidence in the regulatory approvals process is essential to enabling these long-term investments.

   ii. Australian LNG and domestic gas projects need to compete for international capital investment against other gas-producing jurisdictions. Policy enablement, fiscal and regulatory certainty are key to Australian gas projects remaining competitive.

   iii. Regulatory clarity, certainty and stability can ensure Australia remains an attractive supplier of LNG for its Asian customers, many of whom are major investors in Australia's gas industry and potential major investors in future Australian low carbon energy projects. Australia has a geographical advantage and long-term supplier relationships, however the rapid growth in exports of LNG from the United States to some of Australia's traditional markets, highlights the importance of Australia remaining competitive.

   iv. Bi-partisan political support for regulations and policy settings, where possible, would assure investors of longer-term stability of the policy and regulatory framework.

b. **Improving the efficiency, certainty and predictability of major project assessments and approvals processes should be a priority.**

   i. Chevron Australia welcomes a robust regulatory system which gives the government and community comfort project proponents and operators are conducting their business safely and by managing any environmental impacts.

   ii. However, a key opportunity exists for projects and developments that are critical to energy security and decarbonisation of industry to receive priority for government and regulator assessments and processes. This could be achieved by developing a single agency or 'major project' agency.

   iii. Regulations relevant to gas exploration and development should be reviewed so they provide clear and efficient regulatory processes (for example, offshore environmental regulations and retention lease renewals).

   iv. Federal and State or Territory regulatory agencies are involved in regulating, assessing and approving activities and permits. There are currently instances of differing Federal and State requirements over the same activity, which increases the complexity and reduces the efficiency of the approvals process and subsequent monitoring and reporting of performance against these multiple regimes.

c. Improve the investment attractiveness of Australia for major energy projects, particularly given international investment will be needed for large-scale low carbon energy projects.

i. Australia's transition to a net-zero economy is expected to require "at least a USD$1.9 trillion investment" (AUD$2.4 trillion) in the country's energy system by 2050.

ii. Investment attractiveness could be improved through shared infrastructure and more efficient and streamlined approvals processes. Being an attractive investment destination will enable ongoing economic benefits and jobs for Australia.

d. Promote a market-based approach to decarbonisation that accounts for full life-cycle emissions profiles of various energy technologies, allowing various technology solutions to compete on a level playing field.

i. Refocus support for technological development and lower carbon initiatives to be based on the life-cycle carbon intensity instead of supporting defined technologies only.

ii. Maintain access to high quality, verifiable carbon offsets for hard-to-abate industries to use when further technical abatement is not possible.

e. Promote policies that incentivise investment in energy supply and infrastructure that enables system reliability and measures that promote energy efficiency.

i. Governments should avoid market interventions or policies that discourage investment in Australia's energy system as this will lead to further supply challenges, thereby impacting energy security, and increase the possibility of domestic price volatility.

4 Comments on the consultation paper

Chevron Australia has reviewed the consultation paper for the Future Gas Strategy (Strategy) in detail, and as a general comment, is supportive of its content. However, we would like to make some specific comments on several points made in the consultation paper.

4.1 In the "Introduction" section

The consultation paper states the Strategy's key objectives are to:

- support decarbonisation of the Australian economy;
- promote Australia's energy security and affordability;
- maintain Australia's reputation as an attractive trade and investment destination; and,
- help our trade partners on their own paths to net zero.

Chevron Australia recommends another objective of the Strategy should be to "promote the energy security of countries in the Asia Pacific region which are also key partners in Australia's national security".

4.2 In the "Introduction" section

The consultation paper states that reducing domestic gas demand faster than supply will meet the strategy's first and second objectives.

Whether reducing gas demand can support these objectives depends on the energy mix, full lifecycle emissions associated with other energy sources in the mix, reliability and affordability of other energy sources, and other factors. Further, these objectives could also be met with stable or even increasing gas usage when supported by technical abatement and CCS. Chevron Australia suggests these dependencies be explicitly stated.

4.3 In the "Introduction" section

The consultation paper states, "to avoid these consequences, we need to ensure sufficient - *but not excess* - supply of gas to meet demand at all stages of the energy transition."

Chevron Australia recommends against an objective that gas supply is "not in excess" given the potential consequences of high energy prices and energy shortages if this was the case, particularly in the event of an unanticipated supply disruption or if the demand projection is imperfect. Chevron Australia believes Australia should encourage a competitive market with ample and diverse supply which will help bring down prices through market forces and ultimately benefit consumers with affordable and reliable energy, helping with cost-of-living pressures.

If a company is willing to risk capital investment to supply gas, and in the end the gas is not needed, then this outcome is at the risk of the company whilst the government will have achieved its aim of ensuring sufficient gas supply.

In addition, with Australian gas producers regulated in Australia with conditions that require a downward emissions trajectory to net zero emissions by 2050, the continued use of this gas is consistent with the Australia's transition to net zero.

4.4 In the "Chapter 1: Demand" section

The consultation paper lists the uses of Australian gas in Australia and by our trade partners. Excluded from the list is hydrogen, ammonia and other derivatives manufacture. Chevron Australia recommends these are included in the list of products that use gas as a feedstock in their manufacture in point 4.

4.5 In the "Australian LNG in the world's transition to net zero" section

The consultation paper makes mention of the current role that coal plays in providing energy to Asia (page 17).

Currently, Australia is the world's largest coal exporter, and the Asia Pacific is a major coal consumer. According to the IEA's July 2023 Coal Market Update[35], in 2024 "China will continue to account for more than half of the world's coal use, with the power sector alone consuming one-third". If India is added, "the global share rises to about 70%, meaning that China and India together consume double the amount of coal as the rest of the world combined". Along with recent growth in Southeast Asia, the "dominance of the Asia continent is further increasing. In 2024, the share of China, India and the ASEAN region is expected to reach 76%".

Chevron Australia recommends there be a more significant focus on the role gas plays to displace coal and reduce CO_2 emissions in the Asia Pacific region and beyond. As Australia's coal-fired power assets are retired and renewables penetration increases, gas will be critical for both replacing coal and firming renewable power generation in Australia's energy mix. The availability of gas will therefore ensure our energy security, whilst supporting the growth of energy sources that lower emissions.

In the "Gas-producing regions and reserves" section, the consultation paper notes "at current production rates, our identified reserves will be depleted in about 18 years" (page 21). We believe this is a proven reserves to production ratio and, if it is, Chevron Australia suggests a sentence should be added that brings in overall resource perspective, recognizing some gas resources aren't currently commercially viable but may be in the future. The concern with referencing solely a proved reserve figure is it provides a narrowed view for Australia's gas future. Many of the forecast models, including IEA, assume some of the resources are converted to reserves over time. For example, for the Chevron Australia-operated Gorgon LNG facility, supply is premised on a series of backfill developments, each of which will move 'resources' to 'reserves' over time as the fields are developed to maintain gas supply.

35 Coal Market Update July 2023 (windows.net)

5 Responses to relevant consultation questions within the consultation paper

5.1 Gas Demand

5.1.1 Question 2

What role do you see gas-fired generators playing in supporting Australia's 82% renewable energy targets and beyond?

Response

Gas-fired power generation is critical to the successful growth of renewable energy generation in both the NEM and WEM to provide peaking or firming power generation when renewable energy production is intermittent. This is reflected in Australia-wide analysis such as the *How to Make Net Zero Happen* report by Net Zero Australia[36], released in July 2023, which found that by 2030 Australia would need to "plan and build a large fleet of gas-fired peaking generation to help accelerate renewable growth, and close coal power on time."

Specifically in Western Australia, the WA government announced in June 2022 it would retire state-owned coal-fired power stations by 2030[37] as renewable energy generation increases. However, even as the percentage of renewable energy increases, gas-fired power generation will be required, especially whilst increased network capacity and energy storage is built to manage the fluctuating renewable energy generation. This is because gas-fired power generation can provide grid stability and ensure baseload power when renewable energy production is intermittent by quickly flexing production up or down as required to ensure safe and reliable energy to our communities.

Indeed, in the Australian Energy Market Operator's *2022 WA Gas Statement of Opportunities* (WA GSOO) report[38], "AEMO's modelling projects that increasing renewables penetration will be insufficient to fully compensate for the loss of coal-fired baseload power and gas generation will have to increase to complement renewable generation."

The WA government's *SWIS Demand Assessment 2023 – 2042* report[39] released in May 2023 identified more than 50GW new generation and storage would be required by 2042 under its 'Future Ready' scenario. Flexible gas generation is a key component, with an additional 3.9GW of new flexible gas generation (to more than double current gas-fired generation of 3.1GW) and large scale solar paired with long discharge energy storage required to support the 'Future Ready' scenario from 2030.

5.1.2 Question 5

How feasible, and at what scale, are alternatives to natural gas for the electricity sector? You may wish to consider renewable gas alternatives for peaking generation, for example, biomethane and low-emissions hydrogen

36 How to make net zero happen - Net Zero Australia final report 12 July.pdf (netzeroaustralia.net.au)
37 State-owned coal power stations to be retired by 2030 | Western Australian Government (wa.gov.au)
38 2022-wa-gas-statement-of-opportunities.pdf (aemo.com.au)
39 SWIS Demand Assessment 2023 to 2042 (wa.gov.au)

and other forms of grid-firming technologies like batteries and pumped hydroelectricity. What barriers exist to using these alternatives?

Response

Currently, without policy and fiscal support, all alternatives to natural gas are less economic or have other challenges in providing peaking or firming power to intermittent renewables generation. In addition, turnover of existing power assets will take time until they near or come to the end of their operational life, and grid infrastructure investment will be needed to enable alternative technologies, especially those that are decentralised or distributed.

A market-based approach to decarbonization that accounts for full life-cycle emissions profiles of various energy technologies is recommended to allow various technology solutions to compete on a level playing field. Support for technological development and lower carbon initiatives should be based on the carbon intensity of a project or technology instead of defined technologies only.

Alternative technologies are not as mature, and the economics are not as attractive to stimulate investment. In some cases, policy and regulatory frameworks are yet to be developed. Costs are forecast to improve on some elements such as solar panels, batteries, and electrolysers but not for some time and in some cases matched by increases in other components of project cost. Inflationary pressures and key equipment availability driven by global demand is a concern for project sanction.

In terms of the future opportunities for some alternative technologies there are challenges that need to be overcome to be viable as replacement(s) for natural gas, for example:

- Biomethane is difficult to secure in sufficient volume to be material. Although it could have some niche applications to reduce power demands it is unlikely to be at scale.
- Pumped hydro is dependent on suitable locations and nearby resources.
- Hydrogen should be produced close to the consumer as transport is a material cost element. Hydrogen should be used first in hard-to-abate industries such as steel and cement, and the first uses of hydrogen in power generation will likely be in co-firing with gas. There is possibility to produce hydrogen from renewables at times of excess renewables generation, store it, and then use that hydrogen to produce energy when renewable generation wanes. Chevron's investment in the Advance Clean Energy Storage (ACES) project in the US is an example of this concept[40].

5.1.3 Question 9

What role might carbon capture, utilisation and storage (CCUS) and negative emissions technologies (NETs) (for example direct air capture and CO_2 removal) play in decarbonising industrial processes that are hard to abate in your business or industry?

Response

Chevron considers these technologies must be developed and implemented at scale to meet the lower carbon objectives of the Paris Agreement.

40 Chevron acquires majority stake in the Advanced Clean Energy Storage hydrogen project in Delta, Utah (chevron.com)

This view is supported by the Intergovernmental Panel on Climate Change (IPCC) that notes numerous potential pathways to achieving the goals of the Paris Agreement in its reports[41]. All pathways include the continued use of oil and gas, even in rapid decarbonisation scenarios. To achieve net zero emissions by 2050, direct air carbon dioxide capture and storage and CCS must be scaled up and globally deployed. Without this technology, the pathways cannot achieve theoretical solutions to reach net zero in the desired time frame.

Chevron has deployed CCS and continues to do so. Our strategy is twofold: lower the carbon intensity of our existing assets through CCS and grow a CCS business that helps reduce emissions of the industries that enable modern society. CCS can play a dual role in climate change mitigation: it can be used for technology to remove carbon from the atmosphere with direct air capture (DAC) and reduce emissions from point sources in energy intensive industries and power generation as DAC technology becomes economic.

CCS is a proven technology for reducing greenhouse gas emissions. At the Chevron-operated Gorgon LNG facility on Barrow Island, the CCS facility has safely sequestered more than 8.8 million tonnes of CO_2 equivalent to-date. Whilst the project has had some challenges meeting its design capacity, Chevron Australia continues to invest to optimise the performance of the system.

Dealing with CO_2 emissions is a global issue. Australia has a unique opportunity to help provide solutions in sequestering the emissions of our regional neighbours and key trading partners. Australia has the stable political environment as well as an advantaged geology for the storage of both domestic CO_2 as well as CO_2 from overseas if policy settings and fiscal terms are favourable.

There is potential to leverage LNG and CCS to develop low-carbon hydrogen industries with concerted efforts to attract investment in these industries. These could be foundational to Australia's decarbonization plans for hard-to-abate sectors and could be a growing export sector for regional trading partners if Australia can enhance competitiveness. The LNG and CCS to hydrogen pathway could be one way to build out and scale hydrogen value chains in Australia and the broader region.

5.1.4 Question 12

What do you see as the role of gas in Australia's net-zero transformation?

Response

Gas is a reliable, secure, and competitively priced energy resource crucial to our everyday lives in Australia. Gas plays a key role in meeting many of our energy needs, allowing us to heat and power our homes, businesses, schools, hospitals, manufacturing, and industrial processes such as mining and minerals processing.

Our abundant natural gas resources place Australia in an enviable position to maintain long-term, cleaner energy security domestically and internationally. Gas will help enable Australia's smooth and timely transition to a lower carbon economy.

41 Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by governments — IPCC and AR6 Climate Change 2022: Mitigation of Climate Change — IPCC and AR6 Synthesis Report: Climate Change 2023 (ipcc.ch)

Gas will provide important baseload power as coal-fired power assets are retired and to help firm intermittent renewables generation.

The International Energy Agency and others have recognised the value and emissions reductions benefits of switching from coal to natural gas. Per the National Renewable Energy Laboratory's (NREL) analysis, electricity generated from natural gas is approximately 50% of the lifecycle carbon intensity of electricity from coal, inclusive of emissions associated with flaring, venting, fugitives and end use[42].

Gas use in other industries, such as steel, aluminium, petrochemicals, and cement, is expected to continue for decades[43] due to the significant investment required to replace gas-fired equipment and challenges in electrifying industrial processes that need high heat temperatures achieved by hydrocarbon fuels. Gas can also play a key role in helping Australia decarbonise these hard-to-abate energy sectors as a cost-effective feedstock to develop low-carbon hydrogen supply. In addition, developing a large-scale CCS industry will enable Australia to continue to benefit from its vast resource base, generating economic benefits whilst reducing the emissions intensity of these activities.

Gas will also enable new industries important to Australia's net-zero transformation. Critical minerals mining and processing which are vital to global efforts to achieve net zero emissions will need significant energy inputs. As referenced in the Australian Government's recently released *Critical Minerals Strategy 2023-2050*, "critical minerals mining and processing requires significant amounts of energy, particularly gas"[44].

5.1.5 Question 13

What action is your industry or company taking to reduce greenhouse gas emissions and does gas use have a role to play?

Response

Chevron Corporation supports the goals of the Paris Agreement and is committed to helping to address climate change while continuing to deliver energy security. Chevron Corporation believes climate policy should achieve emissions reductions as efficiently and effectively as possible, at the least cost to economies, and that the optimal approach is to drive the most efficient and cost-effective reductions economy-wide, paired with natural and technological emissions removals.

Specific to Chevron Australia, as per State Ministerial Statements[45] and Safeguard Mechanism legislation the Chevron Australia-operated Gorgon and Wheatstone LNG facilities are required to reduce emissions on a five-yearly basis on a trajectory to net zero scope 1 emissions by 2050.

Targets to reduce CO_2 intensity of our operations (scope 1 and 2) are supported by centralised funding, and asset-by-asset assessment. Chevron has also outlined a net zero aspiration for its upstream scope 1 and 2 emissions by 2050 and is outlining efforts to meet that overall objective. We are also working to reduce methane emissions across our operations.

---

42 Life Cycle Assessment Harmonization | Energy Analysis | NREL (nrel.gov)

43 Net-Zero Industry Requires Exponential Growth From Carbon Capture, Hydrogen and Clean Power | BloombergNEF (bnef.com)

44 Critical Minerals Strategy 2023–2030 pg 40 (industry.gov.au)

45 1732 Statement 1201 for publishing Wheatstone.pdf (epa.wa.gov.au)
1729 Statement 1198 for publishing.pdf (epa.wa.gov.au)

Chevron seeks to develop and deploy lower carbon technologies on the scale needed for meaningful carbon reduction in hard-to-abate sectors, including its own. Actions that Chevron Australia is taking to reduce greenhouse gas emissions:

- The Gorgon CCS system is currently the largest CCS project of its kind in the world and is an integral part of Gorgon's emissions reduction strategy. Chevron Australia is sharing the lessons we have learned with the WA and Australian Governments, research institutes and other energy producers to assist in the deployment of CCS in Australia. Since commencement of the CCS system Chevron Australia has:
  - Safely sequestered more than 8.8 million tonnes of CO_2-equivalent; and
  - invested more than $3.2 billion in the Gorgon CCS system with further investment in the coming years to improve system performance and increase injection/storage rates.
- It is recognised that the LNG sector is a 'hard-to-abate' sector. Economic technical abatement solutions are still being developed for our gas assets. Chevron anticipates there will be a multi-faceted suite of short and long-term solutions for lowering carbon emissions across its assets and continues to investigate technology advances and options across energy efficiency, electrification and fuel switching, in addition to operating Gorgon CCS.

Chevron's WA facilities operate an islanded grid electrical system with a continuous plant load demand. This requires reliable generation to avoid plant upsets and trips resulting in large emissions increases from venting or flaring. This presents a challenge to incorporating increasing quantities of renewable energy generation and storage as the islanded grid is more susceptible to variability in renewable electricity generation than an interconnected system. There are also technological challenges in developing large power electrical drives capable of replacing existing gas turbine drivers.

In terms of future gas use globally, under all energy transition scenarios presented in the IEA Energy Outlook 2023[46] there will be continued need for natural gas as discussed in other parts of this submission.

5.1.6 Question 14

How can Australian LNG accelerate global decarbonisation without compromising energy security or affordability?

Response

Australian LNG will continue to play a role in the future global energy mix as international customers displace more carbon-intensive fuels (e.g., switch from coal to gas), and where consuming countries, in some cases, have limited opportunity to import or produce renewable energy. Many developing Asia Pacific countries are unable to develop renewable energy options (for economic reasons or because they geographically or geologically are not well disposed to do so) and are therefore looking to LNG to reduce their emissions through replacement of coal and other biomass energy sources[47]. When existing infrastructure can be utilised, the switch to gas can allow for immediate emissions reductions.

46 World Energy Outlook 2023 – Analysis - IEA

47 Natural Gas Crucial as Global Energy Transition Efforts Poised to Intensify - News and Views: ERIA

Australian LNG is advantaged given its regional proximity to the Asia Pacific. Currently 70% of Australian gas is exported (primarily to Japan and Korea) as LNG and 30% is consumed for domestic use. As international countries look to decarbonise their economies, there will be an ongoing need for LNG. In the medium to long term, as the hydrogen economy accelerates, Australian LNG can play a key role as feedstock to lower carbon hydrogen generation when coupled with CCS.

Understanding the greenhouse gas emissions from the LNG value chain is also important when understanding LNG's place in lower carbon energy system. Chevron has worked with partners to develop the Statement of Greenhouse Gas Emissions (SGE) methodology[48] which seeks a consistent approach to greenhouse gas (GHG) emissions calculations throughout the LNG value chain. Through independent verification, it enables GHG transparency and credibility of reporting. Such a consistent reporting approach on measurement, reporting and verification is necessary for the industry to be better aware and therefore better manage emissions. Although generic product life cycle accounting standards are well established, this initiative reflected the lack of a specific approach to LNG that would govern consistency and verifiability of the SGE on a cargo-by-cargo basis.

As Australia and its regional partners seek to decarbonise their economies, gas can displace more carbon intensive fuels and provide firming capacity in electricity networks as renewables generation increases. Continuing to develop Australian gas resources will also enable reliable and affordable supply. Aside from having a policy and regulatory framework that enables gas development, Australia should also promote policies that help to incentivise investment in energy supply and infrastructure; that ensures system reliability; and promotes energy efficiency.

5.1.7 Question 15

What measures will increase the transparency of LNG supply chains, including their environmental, social and governance impacts?

Response

The first step would be the development of market-based mechanisms that incentivise emissions reductions and are linked across countries or regions. Linked carbon pricing and markets would be one mechanism to reduce carbon leakage and reduce the potential that LNG production moves to jurisdictions with no carbon pricing mechanism. Stronger industry standards that help benchmark various energy sources on a full life-cycle emissions basis will also allow energy sources to compete for market share linked to their overall emissions footprint.

Chevron Corporation has developed the Statement of Greenhouse Gas Emissions (SGE) methodology[49] in collaboration with QatarEnergy LNG and Pavilion (Singapore gas utility). The SGE methodology is one of the first published methodologies specifically developed to quantify the greenhouse gas emissions (GHG) associated with a delivered LNG cargo. It provides a measurement, reporting and verification methodology which complements common GHG reporting processes to deliver a consistent, verified SGE for each delivered LNG cargo. The SGE methodology is intended for industry-wide adoption and is applicable across the LNG value chain - from wellhead to delivery point. It can be

48 SGE-methodology.pdf (chevron.com)

49 SGE-methodology.pdf (chevron.com)

used by integrated producers and operators of individual segments that contribute to the value chain GHG footprint.

Chevron Corporation believes lifecycle analysis (LCA) is a powerful tool to enable data-driven decisions. A lifecycle approach to carbon accounting facilitates informed decision making throughout the value chain. Carbon data that is consistent, reliable, and transparent across sectors, products, and firms of all sizes can be used to understand the carbon performance associated with a good or service at each stage of the lifecycle, from production to manufacturing to transport. Aggregating the data enables a full lifecycle assessment that can improve the quality of decision making at each point at which policy, manufacturing or purchasing decisions are made. Such an approach could enable policymakers to drive the most pragmatic policy, incentivise producers to abate more, inform buyers on making lower carbon choices in a standardised manner and identify more cost-efficient emissions reduction options.

5.1.8 Question 19

What options should the Australian Government consider to ensure international investment in Australian LNG projects remains competitive?

Response

There is intense global competition for energy investment capital. In addition to competing against alternative energy investments, Australian LNG projects will need to compete for capital against the US and other LNG producing jurisdictions, where the time from investment decision to projects coming online is more compressed.

International investors place high value on a free market with fiscal and regulatory stability. These have historically been key differentiators that have enabled Australia to attract significant investment, despite the high cost of building and operating projects in Australia. That said, there is increasing competition for international investment funds. The shift in global investment trends, led by the US Inflation Reduction Act (IRA), demonstrates how enabling policy settings are critical to attracting international investment. It is leading many energy companies to review their investment decisions and future portfolios, given the incentives on offer. However, economic incentives, like those provided by the IRA, are only one of a complex set of factors and policy settings that encourage investment.

There have been several regulatory and policy changes in Australia impacting LNG projects in relatively quick succession. These include changes to the Safeguard Mechanism and changes to the fiscal regime. There has also been government intervention in the East Coast gas market, including price caps, which contradicts the fundamental economic principles applied when making investment decisions. While any one change may not deter future investment singlehandedly, the cumulative impacts of multiple changes can impact Australia's competitiveness as a place in which to invest in future energy supply.

While Chevron welcomes a robust regulatory system for all facets of our business, it needs to be navigable within an acceptable timeframe, and provide certainty that once approvals are granted and conditions established, they will be adhered to by all parties.

This is particularly relevant as we consider future investments in Australia, with both Federal and State or Territory regulatory agencies being involved in regulating, assessing and approving activities and permits. There are currently instances of differing Federal and State requirements over the same activity, which

increases the complexity and reduces the efficiency of both the approvals process and the subsequent monitoring and reporting of performance against these multiple regimes. Regulatory clarity, certainty and stability will ensure that Australia remains an attractive supplier of LNG for its Asian customers, many of whom are also investors.

Securing long term sales contracts underpins investment decisions in long term large-scale LNG projects, and without the customers, the investments will not be made. Efficient and effective regulation is also critical to enabling development of new energy industries and reducing the carbon intensity of existing assets.

Specific options the Australian Government could consider are:

- Create a single agency to coordinate the required approvals for projects that support energy security for Australia and the region;
- Align Federal and State regulations, to increase efficiencies for all parties;
- Ensure optionality is available to meet compliance requirements, such as the use of emission reduction technologies, offsets and credits to meet the Safeguard Mechanism requirements;
- Policy enablement for trans-border carbon movement for sequestration that will assist the region to decarbonise;
- Regulatory certainty and streamlining of permitting processes, including reviewing regulations relevant to gas exploration and development to provide clear and efficient regulatory processes (for example, offshore environmental regulations, and application of regulations in relation to renewal of retention leases); and,
- A bi-partisan approach to regulation and policy settings, where possible, to assure investors of longer-term stability of policy and regulatory frameworks.

Chevron Australia would welcome the opportunity to discuss these options with government in more detail.

5.2 Gas Supply

5.2.1 Question 21

What is the role of offshore acreage releases in the context of consumer demand and emissions targets? What factors should the Australian Government consider when releasing acreage?

Response

Offshore acreage releases and acreage awards are important to underpin future gas supply and backfill of existing LNG export and domestic gas supply facilities.

The lead-time from the release of exploration acreage to development of any discoveries is typically at least a decade. Acreage releases this decade therefore underpin next decade's supply and hence future energy security and affordability.

Delays or uncertainties in acreage releases may lead to less competitive exploration service provision, higher costs for developers and less attractive investments, and ultimately less future supply options.

Supplying Australia's and the world's future energy needs should see gas resources developed that are both cost effective, and which are intrinsically lower carbon compared to other fossil fuels such as coal. If these low cost and lower

carbon resources exist outside existing acreage, then the release of such acreage would support both demand for affordable energy and emissions reduction compared to more carbon intensive fossil fuels.

5.2.2 Question 22

How could the offshore petroleum regime be improved to meet the objectives of the strategy?

Response

To provide energy security, improvements could be made to the offshore petroleum and retention leases regimes.

Greater regulatory facilitation support via agencies at Federal and State levels would assist proponents navigate government approvals. Agencies could coordinate the timely approvals of major resource projects needed to provide firming for renewables, reliable supply to mining processing facilities and to power the growing critical minerals and rare earths sector.

Regulatory amendments improvements could be made regarding:

- Stakeholder consultation:
  - Amendments to NOPSEMA oil spill guidelines[50] to provide a more appropriate geographical area for the environment that may be affected which in turn informs the stakeholders that need to consulted.
  - Amendments to Offshore Petroleum Greenhouse Gas Storage Environment Regulations to provide certainty on consultation requirements for both proponents and stakeholders.
- Streamlining opportunities and removing duplication:
  - Consistency between State and Federal requirements.
  - Streamlining approval mechanisms for non-significant changes.

Investor certainty could be improved by lengthening the renewal term of retention leases[51] for gas fields (e.g. from 5 to 10 years or more) where operators have:

- existing infrastructure in the basin;
- minimal current capacity available in the facility;
- viable plans to develop the resources; and
- a track-record of ongoing development.

Future backfields, currently under retention lease, have underpinned the investment decisions for major LNG and domestic gas supply projects in Australia. For example, for the Gorgon LNG facility, the availability of Gorgon-aligned backfill fields to maintain gas supply underpinned the LNG investment. The Gorgon Joint Venture[52] has spent considerable investment exploring and appraising these resources. Timing of these backfill developments is dictated by available plant capacity, and where the goal is to keep a plant full for its design life (40-plus

50 A382148 | Oil Pollution Risk Management Guidance Note, National Offshore Petroleum Safety Environmental Management Authority (nopsema.gov.au)

51 Guideline: Retention leases (nopta.gov.au)

52 The Chevron-operated Gorgon Project is a joint venture of the Australian subsidiaries of Chevron (47.3 percent), ExxonMobil (25 percent), Shell (25 percent), Osaka Gas (1.25 percent), Tokyo Gas (1 percent) and JERA (0.417 percent).

years), so the 5-year duration for renewals for retention leases could be seen as a risk to security of long-term gas supply.

Development of these gas resources via existing infrastructure is typically the most cost-effective, avoids the duplication of infrastructure and associated environmental impact, and is the most commercially aligned solution.

5.2.3 Question 23

What are the major barriers and opportunities for new supply? How can the Australian Government prioritise, mitigate or manage these?

Response

Timely regulatory review and response is important to ensuring future developments can be planned effectively and with certainty, so new gas supplies can be brought into production as required.

Development of complex and remote offshore gas resources requires substantial technical, commercial, and engineering work over long time frames. These resources depend on major infrastructure investments to enable access to markets. Security of tenure and confidence in the regulatory approvals process is essential to enabling these long-term investments.

Several recommendations on what the Australian Government could do to prioritise, mitigate, or manage these barriers and opportunities are given in the answer to question 19.

Similarly, fiscal regime stability and certainty underpins these long-term investments through providing confidence that the investment returns anticipated at project sanction can ultimately be achieved.

5.2.4 Question 24

What are some of the opportunities for gas production in Australia in the medium (to 2035) and long term (to 2050)? How could these necessary developments support decarbonisation consistent with achieving emissions reductions goals?

Response

Oil and gas reservoirs and resources decline naturally over time when in production. Investment is needed to maintain production in order to meet projected demand, even in lower carbon scenarios. Given this, we will continue to develop resources to help fulfill Australia's demand for energy.

For example, to continue supply feed gas to the Gorgon Project, fabrication is now underway on the $6 billion Jansz-Io Compression (J-IC) project, which is a key investment to maintain production from the Jansz-Io field using proven, world-leading subsea compression technology, with expected start-up in 2027.

Chevron is also planning the next phase of development of the Gorgon Gas Backfill Fields[53], with activities to start the development of the next field proposed to commence in 2025. Gorgon is expected to have a lifespan of more than 40 years, providing long term reliable gas supply to domestic and global customers.

In parallel with the J-IC and Gorgon Gas Backfill Fields developments to maintain feed supply to the existing Gorgon LNG and domestic gas plant, where we are also

53 Information on the Gorgon Gas Development backfill fields (australia.chevron.com)

progressing plans to optimise the Gorgon CCS system and are exploring technical abatement solutions that can be developed and deployed at scale, in addition to using verifiable offsets.

Growing a CCS industry in Australia can support decarbonisation efforts, reducing the emissions impact of gas production while supporting the energy needs of our domestic and global customers.

An emerging opportunity for Australian gas is the potential usage, combined with CCS technology, as a feedstock for hydrogen or ammonia production to support decarbonisation of hard-to-abate sectors. Australia's large gas resource base, suitable geology for CCS, and proximity to Asian markets makes Australia ideally positioned to capture this future export opportunity.

5.2.5 Question 27

How can all levels of governments better support the industry to engage with First Nations people and community groups?

Response

Chevron Australia is committed to meaningful consultation and the development of long-term relationships with First Nations People.

With respect to forthcoming projects and developments, Chevron Australia has significant resources and robust stakeholder consultation processes in place. Chevron Australia has been consulting, and strengthening our relationships, with Traditional Owner groups whose functions, interests or activities may be affected by our activities.

However, Chevron Australia is concerned about the impact on reliable energy supply and the burden on First Nations People as a result of the uncertainty of the current consultation requirements.

Chevron Australia is committed to working with Government and First Nations People to co-design an appropriate consultation framework that meets the requirements of all stakeholders.

Under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS(E) Regs), Chevron Australia has proposed recommendations to improve the stakeholder consultation process. These would provide more certainty, reduce relevant persons 'fatigue' by providing more focussed consultations and address timeframes.

These practical proposals would bring clarity and certainty, while upholding consultation rights, that are aligned with the Federal Court decisions in 2022.

Chevron Australia would welcome the opportunity to provide additional information on these proposals if required.

5.3 Reducing Emissions

5.3.1 Question 28

How can Australia support the potential for cost-effective, safe and verifiable CCS projects, including for the gas sector, other industries and our region?

Response

The Gorgon CCS system has safely stored more than 8.8 million tonnes of greenhouse gas emissions to date, demonstrating the meaningful contribution

CCS technology can play in the pursuit of a lower carbon future. Australia has a natural competitive advantage to implement CCS with known high quality, stable geological storage basins, existing infrastructure, well-established technical expertise and regulatory regimes (environment protection, carbon accounting and reporting, financial services). Low-cost carbon abatement can see Australia maintain its position as a leading energy exporter and ensure international competitiveness in a lower-carbon future. CCS provides the potential to deliver competitive, large-scale abatement for existing industries and new industries such as hydrogen and ammonia.

Australia can support the potential for cost-effective, safe and verifiable CCS projects by:

- Enabling low emissions technology funding. Low emissions technology funding is an important element of any national climate change policy approach. Existing funding and potential future funding could provide important measures to support low emissions technology development and accelerate a range of innovative emissions reduction opportunities.
- A clear and stable regulatory environment is required which ultimately encourages investment (incentivising greater levels of investment by the private sector) and the rapid, at-scale development of technologies that are in line with climate change imperatives.
- Targeted government policies that promote support for research, development and deployment of technologies to enable scalable solutions, drive down cost and improve performance in relation to carbon capture.
- Avoiding policies that limit or exclude specified sectors from participation to avoid potential ineffective frameworks.
- Investment in shared infrastructure such as networks of CO_2 pipelines will help drive down capex cost and potentially connect hard-to-abate sectors to identified CCS hubs.
- Policy enablement for transborder carbon movement for sequestration that will assist the region to decarbonise.

5.4 Australia's Gas Workforce & LNG Facilities

5.4.1 Question 34

Are you able to attract and retain the workforce and skills you need? How will these shift as we transition to net zero emissions?

Response

Chevron Australia is currently able to attract employees and the skills required, however, there is a shortage in petroleum and earth science (geology and geophysics) engineering graduates. This is in part because universities are reducing or no longer offering courses in these areas. For example, the University of Western Australia no longer offers a Petroleum Engineering degree due to declining enrolments. Many of the skills obtained by these degrees are transferable to low carbon energy or emission abatement projects such as CCS.

Our ability to retain our workforce may be impacted by our actions in the energy transition and in particular our ability to engage the younger working generations in finding solutions to deliver ever-cleaner, reliable and affordable energy. However,

workforce retention has not been a problem with a very low turnover rate of employees.

Diversified skill sets and a continuous learning and upskilling will also be important for employees to stay relevant.

5.4.2 Question 35

What are your long-term business and investment plans beyond 2035? How might these affect local economies, employment and communities?

Response

The Chevron operated Gorgon and Wheatstone facilities are multi-decade developments.

We continue to progress design work on future subsea projects, which remain subject to regulatory approvals and investment decisions by Chevron and its joint venture participants.

In the near term, our focus is to continue to safely produce reliable and affordable natural gas for our customers – both in Western Australia and across the Asia Pacific region.

To do that, we're progressing our major projects, and starting work to bring on new supply for our existing Gorgon and Wheatstone assets.

For Gorgon, we've now identified the next fields that will supply the plant over the next 40 years and commenced consultation to start the environmental approvals process. At the same time, we're optimizing the Gorgon CCS system to sequester more of the associated reservoir CO_2 emissions.

Chevron is part of three joint ventures that have been granted an interest in three offshore greenhouse gas (GHG) assessment permits. The permits authorise us to explore an area covering nearly 7.8 million acres – an area larger than Belgium – for potential GHG storage formations or injection sites.

Chevron has invested with Carbon Sync, a soil carbon farming project developer, to develop soil sequestration projects in Western Australia. Through holistic management and regenerative farming practices, Carbon Sync aims to improve soil health, enhancing its ability to capture and sequester carbon. Our investment with Carbon Sync intends to provide critical learning and insight related to the commercial and technical aspects of soil carbon projects.

5.4.3 Question 36

Describe the projects or best practice examples of industry engagement with the local community, as well as the benefits these projects bring to the people and regional economy?

Response

In 2021, the Chevron-operated Wheatstone Project commissioned an independent consultant to assess the community needs and aspirations in Onslow – the Onslow Community Perception Survey. The process consisted of a discovery phase, involving stakeholder mapping, communication material development, and a literature review to understand the community's demographics. The design phase included stakeholder interviews, focus groups, and community engagement events to collect insights.

The collected data was analysed thematically to identify social needs and service gaps, resulting in a Social Needs Analysis and Program Evaluation Report delivered to Chevron with key findings and recommendations for service and program improvement in Onslow. This report informed Chevron's funding decisions going forward.

We're committed to working in partnership with local communities to help them thrive. Our social investment is traditionally focused on improving health, education and economic outcomes.

In 2023, we will contribute A$14 million to social investment in Australia. We're also a founding contributor of the joint State Government and industry Resources Community Investment Initiative (RCII), pledging to contribute $50 million to support social and critical infrastructure investment in WA.

5.5 Domestic Gas Supply

5.5.1 Question 39

What are the risks to Australia's domestic gas security in the medium (to 2035) to long term (to 2050) for your industry and how can these be addressed?

Response

The Chevron Australia-operated Gorgon and Wheatstone gas plants produce approximately 45% of the gas supplied to the Western Australian domestic market. Chevron Australia is not a participant in East Coast domestic gas markets.

The key risk to domestic gas security for Western Australia is that the ongoing investment required to develop new gas fields will be delayed or may not be committed at all due to instability in the policy and regulatory environment and delays in project assessment and approvals. If this was to occur, gas supplies would not be available in a timely manner, potentially creating a supply shortage for both Australian and international customers.

As noted previously, the WA Government's *South West Interconnected System Demand Assessment 2023 to 2042*[54] showed that under the 'Future Ready' scenario new renewable generation and retiring the state-owned coal generation assets will require support from an additional 3.9GW of new flexible gas generation capacity.

Chevron Australia recently submitted our views on the Western Australian domestic gas market in response to the terms of reference of the WA Parliamentary Inquiry into the WA Domestic Gas Policy[55]. The WA domestic gas policy aims to secure WA's long-term energy needs and ongoing economic development by ensuring that LNG exporters also make gas available to the domestic market. Our submission outlined the risk that changes to the policy may have unintended longer-term consequences for investment decisions and ultimately gas prices in the WA domestic market.

Policy stability has played an important role in bringing significant volumes of LNG-linked domestic gas to the WA market, by providing the regulatory certainty needed to make long-term, multi-billion-dollar investments in co-developed LNG and domestic gas projects. We therefore encouraged the WA Government to

54 SWIS Demand Assessment 2023 to 2042 (wa.gov.au)
55 20230814 - Submission 13 - DomGas - Chevron Australia_Redacted.pdf (parliament.wa.gov.au)

recommit to the current policy settings for offshore producers, providing the policy certainty needed to inform future investment to ensure WA has sufficient domestic gas supply to 2030 and beyond.

In the medium-term, this will help support gas supply from operating domestic gas facilities, which require continued investment in developing new fields to backfill, or maintain, feed gas supply as the production from existing fields declines. Equally, increasing the diversity of supply sources, including through new gas developments, such as those of onshore fields in the Perth and Canning Basins, is a key enabler of energy security for WA.

Streamlining and expediting regulatory approvals processes for gas projects, both offshore and onshore, (similar to the WA government Green Energy Approvals Initiative56) would also help accelerate bringing supply into the WA domestic gas market. This is particularly important during the current period of market tightness in which prices have increased, with the most effective way to put downward pressure on prices being to bring more supply to market.

We look forward to reviewing the recommendations of the Inquiry and engaging with the WA Government on its responses.

5.5.2 Question 41

What reforms can be made at a Commonwealth, state, territory, or industry level to allow gas supply to be more responsive to domestic demand signals?

Response

At both the Commonwealth and state level, ensuring gas supply is developed to meet demand signals will require Australia to have a stable, clear, and efficient policy and regulatory framework.

To achieve this, Chevron Australia recommends that the Australian Government should:

- Clarify and amend its major project assessments and approvals processes to improve efficiency, certainty and predictability for major projects whilst maintaining a robust regulatory framework, and review regulations relevant to gas exploration and development to ensure they facilitate gas development (for example, application of regulations in relation to renewal of retention leases). This includes ensuring assessments are streamlined where possible, particularly when both Federal and State government agencies have oversight of a project activity and there is a risk of duplication or inconsistency between Federal and State requirements.
- Provide a pathway to prioritise projects and developments critical to energy security and decarbonisation of energy in Australia and the region for government and regulator assessments and processes. The Western Australian government has recently implemented the Green Energy Approvals Initiative. A similar initiative for gas developments critical to Australia's energy security should be considered.

At the state level, domestic gas supply is a factor of the interplay between investment in LNG projects and the State's domestic gas reservation policy, as well as domestic demand signals. As outlined in Chevron Australia's submission to

56 Green Energy Approvals Initiative | Western Australian Government (wa.gov.au)

the WA Parliamentary Inquiry into the WA Domestic Gas Policy, the stability afforded by the WA domestic gas policy for almost two decades has supported the multi-billion-dollar investments in LNG projects and their associated domestic gas facilities, which has in turn supported a well-functioning WA domestic gas market.

Beyond the policy, the WA Government should allow the market to function and not intervene to artificially reduce prices or, for example, increase the percentage of offshore gas required to be reserved for the WA domestic gas market. Such further interventions, or any other potential government intervention, would be counterproductive to the objective of increasing supply and could discourage additional supply from coming to market. The most effective way to put downward pressure on prices being to bring more supply to market.