



24 October 2023

APGA Submission: Future Gas Strategy

The Australian Pipelines and Gas Association (APGA) represents the owners, operators, designers, constructors and service providers of Australia's pipeline infrastructure, connecting natural and renewable gas production to demand centres in cities and other locations across Australia. Offering a wide range of services to gas users, retailers and producers, APGA members ensure the safe and reliable delivery of 28 per cent of the end-use energy consumed in Australia and are at the forefront of Australia's renewable gas industry, helping achieve net-zero as quickly and affordably as possible.

APGA welcomes the opportunity to contribute to the Federal Department of Industry, Science and Resources (DISR) consultation on Australia's Future Gas Strategy (the **Strategy**). The Future Gas Strategy has the opportunity to achieve both supply security and emission reduction goals by facilitating renewable gas supply alongside other measures.

APGA supports a net zero emission future for Australia by 2050.¹ Renewable gases represent a real, technically viable approach to lowest-cost energy decarbonisation in Australia. As set out in Gas Vision 2050,² APGA sees renewable gases such as hydrogen and biomethane playing a critical role in decarbonising gas use for both wholesale and retail customers. APGA is the largest industry contributor to the Future Fuels CRC,³ which has over 80 research projects dedicated to leveraging the value of Australia's gas infrastructure to deliver decarbonised energy to homes, businesses, and industry throughout Australia.

General feedback

Alongside response to questions asked throughout the consultation, APGA provides the following general feedback on the Future Gas Strategy:

The gas infrastructure industry functions in support of security of supply for customers.

The gas pipeline industry supports security of supply and decarbonisation for gas customers. APGA members are ready and willing to invest in infrastructure supported by underlying customer contracts within the contract carriage gas infrastructure market.

Prescriptive policy based on forecasts is the greatest risk of the Future Gas Strategy.

Gas demand projections, including by AEMO, vary by hundreds of petajoules per annum (PJpa) – roughly a quarter of future demand. Proscriptive policy based on one single forecast risks security of supply and decarbonisation for gas customers. Instead, policy is required to incentivise market-based outcomes.

¹ APGA, *Climate Statement*, available at: <https://www.apga.org.au/apga-climate-statement>

² APGA, 2020, *Gas Vision 2050*, https://www.apga.org.au/sites/default/files/uploaded-content/website-content/gasinnovation_04.pdf

³ Future Fuels CRC: <https://www.futurefuelscrc.com/>

Considering both natural and renewable gas supply is the Future Gas Strategy's greatest opportunity.

Expanding the strategy to consider natural gas, biomethane and hydrogen would increase both supply options and emission reduction options available to the strategy. More options to achieve supply and emissions goals will support strategy success.

Aspects of the National Gas Law may not be fit for purpose for the Future Gas Strategy.

The National Gas Law (NGL) introduces revenue risk for pipeline owners, impedes the ability for investment to reach FID in the infrastructure necessary to deliver the strategy. The NGL may not be fit for purpose in the context of the Future Gas Strategy.

Recommendations

APGA provides the following recommendations based on a combination of its general feedback and feedback provided to questions raised within the consultation paper.

- 1. Expand the Future Gas Strategy to include natural and renewable gas supply.**
Provide more supply and emission reduction options to the Future Gas Strategy by expanding the strategy to consider biomethane and hydrogen gas supply.
- 2. Implement a Renewable Gas Target as part of the Future Gas Strategy.**
Drive increased supply and emissions reduction through a renewable gas target. A 10 per cent target by 2030 would deliver 130PJpa of new supply and reduce gas emissions by 10 per cent. This would also help give certainty to future natural gas demand.
- 3. Develop policy with the intent of returning gas markets to being long in supply capacity.**
Return and retain gas markets to having more supply capacity than demand capacity regardless of what demand capacity is. This will ensure the next highest cost gas producer always sets prices, keeping gas prices lower.
- 4. Guarantee the Greenfield Incentive and Price Production for infrastructure investments required to deliver the Future Gas Strategy**
Remove revenue uncertainty from new pipeline and pipeline expansion investments by guaranteeing access to protections possible but not guaranteed within the NGL.

To discuss any of the above feedback further, please contact APGA National Policy Manager, Jordan McCollum, on +61 422 057 856 or jmccollum@apga.org.au.

Yours sincerely,



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General feedback

The Future Gas Strategy sets out a monumental task not previously attempted by any federal government. Gas accounts for 28 per cent of the energy consumed in Australia. To plan the future pathway of the yet-unplanned gas market takes responsibility for the energy security and decarbonisation of gas customers away from the gas industry, putting it in the hands of the Federal Government.

Deploying effective policy through the Future Gas Strategy could deliver net zero emissions by 2050 while ensuring energy security along the way. However, there are substantial hurdles to identifying what effective policy looks like. Luckily, past energy policy performance demonstrates what works. There are clear inherent benefits in the nature of gaseous energy and gas infrastructure, which can support the best possible energy security and emissions reduction outcomes for Australian energy consumers.

With these risks and opportunities in mind, APGA's submission highlights four key messages from the Australian pipeline industry:

- The gas infrastructure market functions in support of security of supply for customers.
- Prescriptive policy based on forecasts is the greatest risk of the Future Gas Strategy.
- Considering both natural and renewable gas supply is the Future Gas Strategy's greatest opportunity.
- The National Gas Law (NGL) may not be fit for purpose for the Future Gas Strategy.

APGA has been at the centre of gas market policy for decades. As midstream infrastructure operators, APGA's members view the gas supply chain from a unique viewpoint. Neither producer or consumer, the entire purpose of a pipeline is to understand and balance the needs of both producers and consumers in an ever-evolving energy market. Gas markets operate through pipelines. We welcome the Future Gas Strategy Taskforce engaging with the association and its members in this context.

Gas infrastructure industry supports security of supply for customers

The gas infrastructure industry can sustain and deliver the infrastructure required to support the Future Gas Strategy. The gas pipeline industry has a strong record of delivering new or upgraded gas pipelines to ensure that new supply is connected to demand. This partly enabled by the contract carriage form of market which the pipeline industry operates under, and partly due to the speed, simplicity and low-cost construction and operation of gas transmission pipelines and associated facilities.

The simplicity of gas pipeline infrastructure also makes pipelines very reliable. Gas pipelines have experienced far fewer loss of supply incidents than transmission powerlines across the recent decade: 0.03 events per annum per kilometre of pipeline, versus 0.42 events for transmission powerlines.⁴ Pipeline reliability is supported by the fact that pipelines both

⁴ GPA Engineering, 2022, *Pipelines vs Powerlines: A Technoeconomic Analysis in the Australian Context*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/pipelines_vs_powerlines_-_a_technoeconomic_analysis_in_the_australian_context.pdf

transport and store gas across hours and days. This means that momentary loss of supply does not require load shedding of the gas system as seen in electricity.

Importantly, the gas infrastructure industry can continue to perform this role into the future, for both natural and renewable gas. The opportunity to consider all gases within the Future Gas Strategy as discussed below can be founded upon a mature renewable gas infrastructure industry founded in the mature natural gas industry of today.

Context

A successful Future Gas Strategy will build upon a sound understanding of existing gas industry context. It is worth noting that the pipelines which supply gas across Australia's gas markets were not built with the purpose of creating an interconnected network. Rather, each individual pipeline was designed for the purpose of providing the capacity to deliver gas under contracts for specific customers, from specific producers to specific locations.

The individual pipelines built to facilitate the eventual interconnection of pipelines into networks were developed on a similar basis – to service contracts which provide capacity to owners of gas to move gas from one pipeline to another. In fact, the final pipeline built to connect the Queensland pipeline network to the South-East Australian pipeline network was built to provide capacity for gas from the South West Queensland Pipeline to be supplied into the Moomba to Adelaide and Moomba to Sydney pipelines, moving gas north to south.

This context is important to note as it means that the East Australian and Western Australian gas pipeline networks were not designed for the purpose of supplying all gas customers. Rather, they were designed to provide gas transport capacity for specific owners of gas, who valued the ability to transport gas to specific customers. This provided a basis to enter into the long-term gas transportation agreements which underwrote investment in pipelines.

Developing a Future Gas Strategy without this context risks policy that levies expectations on infrastructure which are not aligned with the basis on which investments were made.

Future Gas Strategy greatest risk: prescriptive policy based on forecasts

The greatest risk for the Future Gas Strategy is the risk of basing policy upon highly variable and uncertainty supply and demand modelling. Boston Consulting Group (BCG) meta-analysis of future gas market projections shows a range of projections between 40 – 90 per cent of current market scale.⁵ AEMO's own projections show a 240 PJpa variation in forecast residential and commercial annual consumption alone.⁶

Large variations in gas demand forecasts create a risk that a strategy based on such forecasting may not be able to secure energy supply for customers or deliver an effective decarbonisation pathway.

⁵ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition*, <https://jemen.com.au/documents/reports/the-role-of-gas-infrastructure-in-australia-s-ener>

⁶ AEMO, 2023, *Gas Statement of Opportunities for central and eastern Australia, March 2023*, https://aemo.com.au/-/media/files/gas/national_planning_and_forecasting/gsoo/2023/2023-gas-statement-of-opportunities.pdf?la=en

The only truth in forecasting is that no forecast is correct

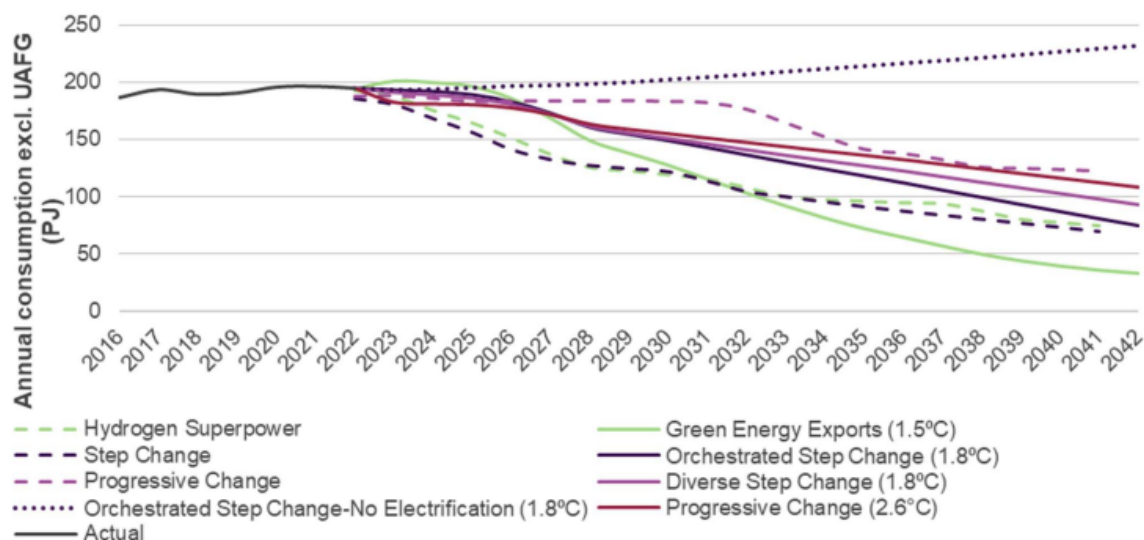
Policy designed around any one forecast risks failing to deliver energy security and effective decarbonisation for energy consumers.

A Future Gas Strategy that seeks to deliver outcomes for only one projection of future gas demand is particularly risky for energy customers and national energy security. Considering the differences in AEMO projections in Figure 1 below, a Future Gas Strategy which only supports sufficient gas supply in line with the *Orchestrated Step Change* scenario risks domestic gas customers experiencing shortfalls of up to 150PJpa in 2040.

The opposite is also true if supply to cover the *Orchestrated Step Change – no electrification* scenario is incentivised, but demand does drop in line with other AEMO scenarios. The gas demand trajectory that actually occurs will likely to be somewhere between either extremes – but neither extreme is off the table. Policy must support customers through all outcomes.

Figure 1: AEMO 2023 GSOO actual and forecast residential and commercial annual consumption, all scenarios and compared to 2022 GSOO, 2016-42 (PJ)

Figure 15 Actual and forecast residential and commercial annual consumption, all scenarios and compared to 2022 GSOO, 2016-42 (PJ)



Notes:

- UAFG means "unaccounted for gas". It is gas lost in the network and not delivered to consumers.
- The 2022 GSOO scenarios are dashed lines, the 2023 GSOO scenarios are solid lines, and the 2023 sensitivities are dotted lines.

Securing supply security and emissions reduction regardless of demand

The above risk can be mitigated by implementing a Future Gas Strategy which secures supply and emissions reduction regardless of what demand scenario unfolds. While planning for all circumstances sounds challenging, there is a strong track record of market-based policy mechanisms delivering energy industry outcomes while allowing for wide variations in customer choice.

Four examples of this are relevant to the circumstances facing the Future Gas Strategy:

- The Renewable Energy Target (RET)⁷
- The Queensland gas scheme⁸
- The Queensland Australian market supply condition⁹
- The Western Australian domestic gas policy.¹⁰

Each of these four successful energy policies have key features in common:

- Each policy supports investment in a solution, rather than preventing investment.
- No policy removes customer choice for the alternative.
- Each policy supports more energy supply capacity, not less energy supply capacity, driving markets towards being long in supply capacity.¹¹

The success of these policy options provides policy makers with evidence of how to best drive energy market supply and emissions outcomes. Policy which enables investment in the right kind of additional supply while not impeding customer choice has consistently delivered positive outcomes in the Australian energy industry.

Future Gas Strategy greatest opportunity: considering natural and renewable gas

Security of supply and emissions reduction are the primary goals of the Future Gas Strategy. These goals can more easily be achieved by considering the entire gas market – including natural and renewable gas – as one combined supply chain within the Future Gas Strategy.

Considering natural and renewable gas as a single market replicates the Federal Government’s approach to the electricity supply chain. Renewable and fossil electricity generation is considered side by side in all electricity supply chain analysis. This holistic approach would also provide the Future Gas Strategy with more solutions to achieve strategy’s goals.

Including renewable gases in the Future Gas Strategy provides significant additional supply volumes for the ECGM. In particular, 26 PJpa worth of biomethane production projects capable of delivery before 2030 have been identified in Victoria. This number exceeds 70 PJpa when considering hydrogen and biomethane projects across all ECGM states.

Each additional PJ of renewable gas supply reduces the carbon intensity of the gas supply chain. Importantly, increased renewable gas supply would reduce gas customer emissions while increasing security of supply. Other approaches proposed for reducing gas emissions

⁷ Clean Energy Regulator, 2023, *About the Renewable Energy Target*, accessed 22 November 2023, <https://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target>

⁸ Government of Queensland, 2023, *Queensland gas scheme proves a winner*, the Hon Geoff Wilson, Minister for Mines and Energy, <https://statements.qld.gov.au/statements/46171>

⁹ Queensland Department of Resources, 2022, *Operational Policy: Complying with the Australian market supply condition*, https://www.resources.qld.gov.au/?a=109113%3Apolicy_registry%2Foperational-policy-australian-market-supply-condition.pdf

¹⁰ Government of Western Australia, 2023, *WA Domestic Gas Policy*, accessed 22 November 2023, <https://www.wa.gov.au/government/publications/wa-domestic-gas-policy>

¹¹ APGA, 2023, *Submission: Reliability and supply adequacy framework for the east coast gas system: Stage 2 framework development*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/230721_apga_submission_-_dcceew_stage_2_supply_adequacy.pdf

seeks to either reduce security of supply or customer choice – neither of which support the best interest of Australian energy consumers.

The opportunity to simultaneously increase gas supply and reduce gas emissions is too good of an opportunity to leave outside of the Future Gas Strategy as is currently the case.

Future Gas Strategy requires a fit for purpose National Gas Law (NGL)

The Future Gas Strategy is founded on Federal Government projections of dwindling supply and customers transitioning from gas to other forms of renewable energy. This foundation is inconsistent with a core assumption on which the NGL is based – that gas pipelines represent enduring monopolies. As such, the NGL may not be fit for purpose to enable pipeline investments in line with the premise of the Future Gas Strategy.

The assumption that pipelines represent enduring monopolies has led to increasing economic regulation under the NGL, which has reduced revenue certainty for pipeline investments. As of the most recent reforms, the Australian Energy Regulator (AER) can choose to apply price setting regulation to any existing gas pipeline, at any time.

This risk introduces revenue uncertainty to pipeline investments. Revenue uncertainty in turn impedes the ability to reach Final Investment Decision (FID) on investments for new capacity, either through new pipeline installation (greenfield pipeline investments) or existing pipeline augmentation (brownfield pipeline investments).

This risk is acknowledged by the introduction of the Greenfield Incentive and associated Price Protection provision. The provides greenfield pipelines the opportunity to apply for protection against price setting and protection for foundation prices if an arbitration case is brought against the pipeline. While this protection can be applied for, it is not guaranteed, nor is it available to brownfield pipeline capacity expansion investments.

Connecting new gas supply to markets as required by the Future Gas Strategy will likely require both greenfield and brownfield pipeline capacity investments to strike the most efficient balance over the long-term. The NGL risks creating barriers to these investments.

APGA proposes all investments in new pipeline capacity, both new greenfield capacity and brownfield capacity expansions, should have access to the Greenfield Incentive and Price Protection provisions. This would provide a mechanism to reduce revenue uncertainty for investments in new brownfield capacity which can often be more economically efficient than new greenfield capacity. Amending the NGL in this way could help reduce FID risk and lower the cost of critical pipeline capacity investments required to deliver the Future Gas Strategy.

Recommendations

1. Expand the Future Gas Strategy to include natural and renewable gas supply

Expanding the Future Gas Strategy to consider all gas supply, including natural gas and renewable gas, brings additional levers for increasing supply and reducing emissions into the strategy and better aligns with existing, successful electricity supply and emissions policy.

2. Implement a Renewable Gas Target as part of the Future Gas Strategy

Implementing a Renewable Gas Target of 10 per cent by 2030 and net zero gas by 2050 will introduce 137 PJpa of new supply into the market by 2030, while reducing gas sector emissions by 10 per cent. This would build on successful electricity supply increases and emissions decreased delivered by the Renewable Energy Target.

3. Develop policy to ensure Australian customers have access to enough supply

Policy that ensures domestic gas markets have access to flexible gas supply capacity which is able to meet variable demand would build on lessons learned from recent reforms. Such policy could deliver consistently lower gas prices set by the next highest cost gas producer, not the highest paying customer. There are many forms which such policy could take, including a supply capacity target above cumulative demand capacity combined with support for investments in domestic supply capacity to meet targets.

4. Enable new brownfield pipeline capacity investments access to the Greenfield Incentive and Price Production

Revision of the NGL is needed to expand Greenfield Incentive and Price Production provisions to also apply to brownfield pipeline capacity investments. The importance of lower cost new pipeline capacity to the strategy necessitates the Greenfield Incentive and Price Protection be accessible to brownfield pipeline capacity investments as well. Providing new brownfield pipeline capacity investments access to these protections is necessary to avoid consumers paying for higher cost new pipeline infrastructure where lower cost pipeline augmentations would suffice.



Response to Consultation Questions

Demand

Gas use in Australia

Responses to consultation questions

Consumers (domestic)	
<p>1. Do you use any international and/or domestic forecasts to inform your outlook of the gas market? We want your views on which scenarios best reflect the demand outlook. Are there any limitations or additional factors impacting the demand outlook you would like to note?</p>	<p>The gas transmission infrastructure industry does not rely on outside forecasts of supply and demand for the purposes of developing gas transmission infrastructure.</p> <ul style="list-style-type: none">• Under the contract carriage form of market for gas infrastructure:<ul style="list-style-type: none">○ Gas shippers purchase pipeline capacity from pipeline owners. Pipeline owners ensure that capacity is available when needed.○ Shippers are responsible for their own forecasting of supply and demand and identifying whether or not they require additional pipeline capacity.• This form of market has functioned effectively to meet Australian demand to date. Shippers have effectively secured sufficient supply and transport to meet their needs and that of their customers.• Pipeline owners use forecasts of supply and demand of specific customers who wish to ship gas to inform infrastructure development.• In particular, the industry does not consider AEMO forecasts to be reflective of customer demand. Under-forecasting in AEMO demand forecasting can be seen in Figure 15 of the 2023 GS00 and historical trends in gas-powered generation demand forecasting in the ISPs.

	<ul style="list-style-type: none"> • There are no government-produced forecasts, be they AEMO, ACCC or otherwise, which effectively reflect the functionality of gas supply and infrastructure investment under the contract carriage form of market.
<p>2. What role do you see gas-fired generators playing in supporting Australia’s 82% renewable energy targets and beyond?</p>	<p>Gas-powered generation (GPG) is critical to maintaining security of supply in an electricity system with majority variable renewable electricity (VRE) generation.</p> <ul style="list-style-type: none"> • GPG secures the NEM when demand peaks and when variable renewable generation is unavailable.¹² The role of GPG are variable renewable generation penetration increases is best seen in South Australia, where GPG ensures security of the South Australian NEM.¹³ • VRE firmed by GPG can support the phasing-out of coal-fired generation and achieving 82 per cent renewable electricity by 2030.¹⁴ Energy Minister the Hon Chris Bowen MP acknowledged this role: <ul style="list-style-type: none"> ○ “I have mentioned our plan to lift the energy mix to 82 per cent renewable by 2030. As big and ambitious as this lift is, it would leave 18 per cent of our electricity mix as non-renewable. And as aging coal-fired power stations leave the grid, that 18 per cent will increasingly be focussed on gas. Gas is a flexible fuel necessary for peaking and firming as we undertake this transformation.”¹⁵ • GPG produces electricity at half the emissions intensity of coal, and any increase in GPG relative to coal-fired generation will immediately result in a reduction in emissions. • Minimising electricity demand by allowing gas customers to stay on a decarbonising gas system will also help achieve 82 per cent renewable electricity by 2030.

¹² Frontier Economics, 2021, *The role of gas in the transition to net-zero power generation*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/frontier-economics-report-stc.pdf

¹³ OpenNEM, 2023, accessed 2 November 2023, <https://opennem.org.au/energy/sa1/?range=28d&interval=30m&view=discrete-time>

¹⁴ Grattan Institute, 2021, *Go for Net Zero: a practical plan for reliable, affordable, low-emissions energy*, <https://grattan.edu.au/wp-content/uploads/2021/04/Go-for-net-zero-Grattan-Report.pdf>

¹⁵ The Hon Chris Bowen MP, Minister for Climate Change and Energy, 2023, *Address to the Sydney Institute*, <https://minister.dcceew.gov.au/bowen/speeches/address-sydney-institute>

	<p>Transitioning gas customers to electricity increases the magnitude of the already challenging prospect of achieving 82 per cent renewable electricity in Australia. Not unnecessarily transitioning gas customers away from a decarbonising supply chain helps keep this goal in reach.</p>
<p>3. How will the expected trends in demand from gas-fired generators impact other gas users?</p>	<p>As the importance of GPG increases, new infrastructure will be developed to meet additional supply contracts and increase pipeline capacity for all users.</p> <ul style="list-style-type: none"> • If additional supply is required for GPG, they contract supply which is delivered via pipelines. Those firm contracts underwrite the construction of that pipeline. • Supporting the underwriting of gas supply and infrastructure investments is key to supporting all gas users. APGA discusses this further relative to gas supply in Q23 and Q24. • The GPG market gains its flexibility in part through accessing a fuel supply chain much larger than the sum of all GPG demand. While increased need for secure GPG supply supports gas supply chain investment for all gas customers, decreased demand from the broader gas market reduces the size of the market which GPG draws its fuel from, reducing the ability for GPG to respond flexibly to electricity supply shortfalls. • It is worth considering that of the over 6000 PJ per annum gas produced in Australia, 383 PJ was used for GPG and 994 PJ was used for final domestic energy consumption in FY2021-22.¹⁶ Australia has significant gas reserves and resources. The natural gas production potential is not a scarce resource - natural gas production capacity is. • The gas market is well placed to meet future demand in the absence of government intervention so long as investments to produce available resources and reserves are not impeded (see comments in Q4).

¹⁶ DCCEEW, 2023, *Australian energy update 2023*, https://www.energy.gov.au/sites/default/files/Australian%20Energy%20Update%202023_0.pdf

<p>4. What should government do to consider managing these impacts and to mitigate energy peaks caused by regional or seasonal variations?</p>	<p>Government should support a gas market long in supply, incentivise GPG investment, and avoid forcing gas customers to convert to electricity if not necessary.</p> <ul style="list-style-type: none"> • GPG can help Australia get off coal fired generation by supporting NEM reliability as renewable generation approaches 82 per cent market share. <ul style="list-style-type: none"> ○ The South Australian NEM is testament to this role where GPG has enabled full coal shutdown and strong renewable uptake in the state. ○ GPG needs investment in reliable gas supply to play this role. • Lower prices occur in markets when producers compete for customers, rather than customers competing for production. <ul style="list-style-type: none"> ○ A market ‘long in supply’ has more supply capacity than demand capacity. ○ In a market long in supply, the next highest cost producer sets prices; in a market short in supply, the next highest paying customer sets prices. ○ A gas market long in supply will always have enough supply for GPG.¹⁷ ○ Allowing the market to respond to demand supports more gas supply. • Inclusion of GPG in the Capacity Investment Scheme would incentivise GPG investment and help mitigate the cost of supplying peak energy demand through higher cost means. • Enabling as many current gas users as possible to stay on gas, and decarbonise through renewable gas, will reduce peak demand in the electricity system.¹⁸
<p>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,</p>	<p>The lowest-cost energy generation system will be one based on renewable electricity supported by GPG.¹⁹</p> <ul style="list-style-type: none"> • An electricity generation mix which includes variable renewable electricity will necessarily require gas to provide network firming support at lowest cost. It will also

¹⁷ APGA, 2023, *Submission: Reliability and supply adequacy framework for the east coast gas market – Stage 2 Framework Development*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/230721_apga_submission_-_dcceew_stage_2_supply_adequacy.pdf

¹⁸ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia’s energy transition*, <https://jemen.com.au/documents/reports/the-role-of-gas-infrastructure-in-australia-s-ener> ; Frontier Economics, 2021, *The role of gas in the transition to net-zero power generation*.

¹⁹ CSIRO, 2023, *GenCost 2022-23*, https://www.csiro.au/-/media/EF/Files/GenCost/GenCost2022-23Final_27-06-2023.pdf. We note CSIRO’s costing estimates do not include the cost of additional electricity transmission infrastructure.

<p><i>biomethane and low-emissions hydrogen and other forms of grid-firming technologies like batteries and pumped hydroelectricity. What barriers exist to using these alternatives?</i></p>	<p>be necessary to decarbonise that gas, for which renewable gases provide a viable option.</p> <ul style="list-style-type: none"> • Government policy support is required to develop this, such as the renewable hydrogen for electricity generation target in Western Australia.²⁰ • As noted in Q4, enabling gas use decarbonisation through renewable gas, rather than strictly through electrification, can reduce electricity sector demand. • Gas infrastructure, both for natural gas and renewable gas, can provide grid-firming energy storage in pipelines and in depleted gas fields²¹ much more cheaply than either BESS or PHES technologies.
<p><i>6. How much longer will you continue using gas as a fuel source or feedstock for your business? Do you think your consumption of gas will decline over time, and if yes, at what rate?</i></p>	<p>Gas use, including natural and renewable gas use, will continue beyond 2050. Even natural gas is likely required in 2050 in a net zero Australia.</p> <ul style="list-style-type: none"> • There are many current users of gas who cannot electrify. • BCG predicts future gas use of between 50-90 per cent of current demand. This includes renewable gas supply but excludes the potential for new gas customers.²² • The total combined gas use will depend on customer choices, including existing natural gas customers who decarbonise through renewable gas, and existing natural gas customers which choose to electrify. • Industrial customers currently using coal or liquid fuels, may choose to transition first to natural gas, then to renewable gas,²³ or move directly to renewable gas. • It is likely that natural gas will still be used in 2050 in a net zero Australia. Forecasts of exactly how much will be required at this point are highly speculative.

²⁰ Government of Western Australia, 2023, *A Renewable Hydrogen Target for Western Australia*, <https://www.wa.gov.au/government/document-collections/renewable-hydrogen-target-western-australia>

²¹ AGIG, 2023, *Tubridgi Gas Storage*, <https://www.agig.com.au/articles/tubridgi-gas-storage>

²² Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition*.

²³ "At this stage, the use of natural gas as a first step in the transition to green hydrogen in the Direct Reduced Iron (DRI) process is considered by our industry to be the most prospective pathway to low or zero emissions iron and steelmaking." BlueScope, 2023, *Sustainability Report FY23*, https://www.bluescope.com/content/dam/bluescope/corporate/bluescope-com/sustainability/documents/2023_BlueScope_Report_Sustainability_Report.pdf

<p>7. Are there alternatives that your business can use instead of gas (for example electrification, hydrogen, biomethane or circular economy inputs)? What barriers exist to using these alternatives? How can the substitution of gas be accelerated?</p>	<p>Renewable gas can help decarbonise gas infrastructure. CCS can also help decarbonise gas customers.</p> <ul style="list-style-type: none"> • Gas transmission pipelines require energy to operate compressor and other facilities. Today, this energy is provided as natural gas transported along the very same pipelines which these facilities help to operate. • Pipeline operators are working to decarbonise the gas they use through transitioning to using biomethane or other renewable gases, or even electrification if economic. <ul style="list-style-type: none"> ○ Electrification would require complete replacement of the compressor engines at a cost that may be prohibitive. ○ Biomethane or other renewable gases could be directly substituted for natural gas and supplied via pipeline. • NGER only recognises the emissions intensity of biomethane supplied into pipelines as a blend. Not being able to attribute all renewable gas purchased by a pipeline to its own fuel use is a barrier to decarbonisation. This could be resolved by: <ul style="list-style-type: none"> ○ Introducing an effective domestic certification scheme for renewable gases;²⁴ ○ Replicating Section 7.4 of the National Greenhouse and Energy Reporting (Measurement) Determination 2008 for gas combustion emissions.²⁵ • CCS technologies could also be used to decarbonise gas transmission infrastructure gas use where close to CCS infrastructure.²⁶
<p>8. What factor/s influence your willingness to adopt electric appliances or processes? How could governments support small businesses to decrease gas consumption?</p>	<p>In the absence of other factors, if customers are allowed to choose gas, many will do so where electrification is more expensive or less desirable.</p> <ul style="list-style-type: none"> • The combined cost of new electric appliances and electricity is often more than the combined cost of gas appliances and gas today, and some customers simply prefer to use gas.²⁷

²⁴ APGA, 2023, *Submission: Guarantee of Origin Scheme Emissions Accounting*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/231114_apga_submission_-_go_emissions_accounting.pdf

²⁵ *National Greenhouse and Energy Reporting (Measurement) Determination 2008* (Cth) available at <https://www.legislation.gov.au/Details/F2023C00879>

²⁶ International Energy Agency, 2023, *Carbon capture, utilisation and storage*, <https://www.iea.org/energy-system/carbon-capture-utilisation-and-storage>

²⁷ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition* – Exhibit 5a.

	<ul style="list-style-type: none"> • Customers could access cost competitive gas use decarbonisation options if they are able to choose between gas appliances and renewable gas or new electric appliances and electricity.²⁸ • Governments should not force customers to choose, but rather enable a range of decarbonisation options including renewable gas. This is especially the case for low-income customers and customers which do not have a choice to change appliances. • Natural gas is lower emission than coal, diesel, and most NEM regions. This combined with the cost competitiveness of renewable gas makes decarbonisation choices for all energy customers less clear than electrifying all possible energy demand.
<p>9. What role might carbon capture, utilisation and storage (CCUS) and negative emissions technologies (NETs) (for example direct air capture and CO2 removal) play in decarbonising industrial processes that are hard to abate in your business or industry?</p>	<p>CCS combined with renewable gases like biomethane represent a strong NET opportunity.²⁹</p> <ul style="list-style-type: none"> • APGA members pioneered CO₂ pipeline design research in Australia, including the enshrinement of safe CO₂ pipeline design within AS2885. • APGA defers to CSIRO CCS experts regarding the strength and opportunity of CCS in Australia,³⁰ however APGA anticipates that CCS applied to GPG fuelled by renewable biomethane will allow for simple, cost-effective negative emissions outcomes. • This opportunity is yet to be considered in Federal Government consideration of both renewable gas policy and CCS policy to date.
<p>Community</p>	
<p>10. If your home or small business gas appliances (stove, heating, or hot water system) stop working, would you prefer to keep using gas or switch to an electric appliance? If you are unsure, what would help you decide? What</p>	<p>Governments should maintain customer choice to minimise household cost and disruption.</p> <ul style="list-style-type: none"> • In contrast to rhetoric that consumers can save money by switching from gas to electric appliances, the reality of this is more complex.

²⁸ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition* – Exhibit 8.

²⁹ Climate Change Authority, 2023, *Reduce, remove and store: the role of carbon sequestration in accelerating Australia's decarbonisation*, https://www.climatechangeauthority.gov.au/sites/default/files/Sequestration%20Insights%20Paper%20-%20Publication%20Report_0.pdf

³⁰ CSIRO, 2021, *CO₂ Utilisation Roadmap*, https://www.csiro.au/-/media/Services/Futures/21-00285_SER-FUT_REPORT_CO2UtilisationRoadmap_WEB_210810.pdf

<p><i>factors influence your willingness to switch to electric appliances?</i></p>	<ul style="list-style-type: none"> ○ Appliance replacement costs are highly variable between homes. Most pro-electrification research has not recognised variable cost implications.³¹ ○ Research that does consider variable appliance costs concludes renewable gas and renewable electricity are cost competitive for residential needs. ○ JWS Research shows that the overwhelming majority (90 per cent) of householders choose to replace existing appliances with gas appliances.³² ○ When industry tells customers about renewable gas, they want to know when and how they can get it. Given the choice, most customers would stay on renewable gas.³³ <ul style="list-style-type: none"> ● Governments should maintain consumer choice by supporting renewable gas as it has done for renewable electricity.³⁴ ● Mandating electrification risks hardship on some customers and may prove impractical for others including renters and residents of multi-unit buildings.³⁵ ● Ultimately, governments should not be picking winners for customers where multiple cost competitive options .
<p><i>11. How can governments, industry and households work together to manage impacts for homes?</i></p>	<p>Governments can reduce the challenges and impacts of full electrification by supporting customer choice between electrification and renewable gases.</p> <ul style="list-style-type: none"> ● Allowing customer choice between these two options reduces many of the challenges and impacts of constraining customer choice to electrification alone.

³¹ Frontier Economics, 2022, *Cost of switching from gas to electric appliances in the home*, <https://gamaa.asn.au/wp-content/uploads/2022/07/Frontier-Economics-Report-GAMAA.pdf>

³² JWS Research, 2021, *Household energy preferences: Research report*, Prepared for the Department of Environment, Land, Water and Planning, <https://engage.vic.gov.au/download/document/27749>

³³ Please engage with the Future Fuels CRC regarding Research Programs 2.1 and 2.2 which extensively demonstrates public interest in hydrogen and biomethane.

³⁴ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition*.

³⁵ ACT Government, 2023, *Towards a net zero emissions city – Integrated Energy Plan position paper*, https://hdp-au-prod-app-act-yoursay-files.s3.ap-southeast-2.amazonaws.com/1216/9138/6293/Integrated_Energy_Plan_Position_Paper_ACCESS_FA2.pdf

	<ul style="list-style-type: none">• Please see APGA’s comments within its submission to the Senate Economics References Committee Inquiry into Residential Electrification.³⁶• In this Future Gas Strategy, the Australian Government has the opportunity to show leadership by acknowledging the ongoing critical role natural and renewable gas plays in the economy and the equally critical role it will play in decarbonising all sectors – commercial, industrial and residential.
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³⁶ APGA, 2023, *Inquiry into residential electrification: Senate Economics References Committee*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/20230929_apga_submission_-_submission_to_federal_residential_electrification_enquiry_compressed.pdf

Australian LNG in the world's transition to net zero

Responses to consultation questions

Producers	
<p>12. What do you see as the role of gas in Australia's net-zero transformation?</p>	<p>Natural and renewable gases will play a critical role in Australia's net-zero transformation.</p> <ul style="list-style-type: none"> • Natural and renewable gases will continue to play a role in delivering secure, cost competitive energy through the energy transition, moving from predominantly natural gas today to predominantly renewable gas tomorrow. • Throughout the transition and beyond 2050, the gas supply chain will: <ul style="list-style-type: none"> ○ Provide secure, cost competitive energy many or today's gas consumers.³⁷ ○ Support the NEM by firming variable generation³⁸ and reducing demand through directly supplying energy to gas customers around the NEM. ○ Providing a simpler and cost competitive decarbonisation avenue for customers consuming higher emitting fossil fuels such as coal and diesel.³⁹
<p>13. What action is your industry or company taking to reduce greenhouse gas emissions and does gas use have a role to play?</p>	<p>APGA supports a net zero emission future for Australia by 2050.</p> <ul style="list-style-type: none"> • APGA members are actively working to decarbonise through reducing operational and fugitive emissions and enabling customers to decarbonise via access to renewable gas. • Please also see Q43.
<p>14. How can Australian LNG accelerate global decarbonisation without compromising energy security or affordability?</p>	<p>LNG can act as a stepping stone from higher emission energy to renewable energy</p> <ul style="list-style-type: none"> • Where Australia's LNG customers use LNG in place of more emissions-intensive options, Australian LNG exports actively supporting decarbonisation of those customers.

³⁷ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition*.

³⁸ Frontier Economics, 2021, *The role of gas in the transition to net-zero power generation*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/frontier-economics-report-stc.pdf

³⁹ *National Greenhouse and Energy Reporting (Measurement) Determination 2008* (Cth) available at <https://www.legislation.gov.au/Details/F2023C00879>

	<ul style="list-style-type: none"> • Liquification facilities in today’s LNG supply chains are technically capable of liquifying renewable methane with no modifications, enabling export customers to choose to purchase renewable LNG to decarbonise their LNG demand.⁴⁰ • Transitioning from LNG to other renewable energy exports (i.e. liquid hydrogen or ammonia) would be technically simpler for Australia’s LNG export partners than direct transition from higher emitting fossil fuels such as coal or diesel.
<p>15. What measures will increase the transparency of LNG supply chains, including their environmental, social and governance impacts?</p>	<p>Existing reporting frameworks are extensive and provide sufficient transparency on LNG and other gas supply chains.</p> <ul style="list-style-type: none"> • These frameworks include the Gas Bulletin Board; Regulatory Information Notices; Pipeline Information Disclosure reforms; the Gas Wholesale Market Monitoring and Reporting framework; the East Coast Gas System reforms; the Mandatory Gas Code of Conduct; the ACCC Gas Inquiry 2017-30; derivatives from the Australian Financial Markets Association; retailer reliability obligations for the AER; over the counter gas contracts for ASIC, and other bespoke information orders.
<p>16. Does current gas transport and storage infrastructure support the changing role of gas in the residential and commercial sector? If inadequate, what is needed and who should provide the change?</p>	<p>Australia’s current gas infrastructure is designed to meet the needs of current and future gas customers.</p> <ul style="list-style-type: none"> • The contract carriage form of market which gas transmission infrastructure operates under ensures gas infrastructure is inherently built to meet the needs of its customers when and where they need it. This form of market will ensure new infrastructure is also developed to meet the needs of new customers. • Energy transport and storage in current and new gas and renewable gas infrastructure cost customers less than its electricity alternatives.^{41,42}

⁴⁰ Santos, 2023, Santos and Tokyo Gas to collaborate on carbon-neutral e-methane in Australia, <https://www.santos.com/news/santos-and-tokyo-gas-to-collaborate-on-carbon-neutral-e-methane-in-australia/>

⁴¹ APGA, 2023, Submission: Inquiry into the feasibility of undergrounding transmission infrastructure for renewable energy projects, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/230714_apga_submission_-_nsw_undergrounding_electricity_infra.pdf

⁴² GPA Engineering, 2022, Pipelines vs Powerlines: A Technoeconomic Analysis in the Australian Context, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/pipelines_vs_powerlines_-_a_technoeconomic_analysis_in_the_australian_context.pdf

	<ul style="list-style-type: none"> Gas distribution network efficiencies mean that networks with more customers cost customers less to deliver energy. This is important to consider alongside the drive to electrify residential customers which currently support networks relied upon by hard to abate gas customers.⁴³ All current gas infrastructure can deliver renewable methane and blended hydrogen today with change, and could transport renewable hydrogen with moderate change.^{44,45}
Consumers (international)	
17. <i>What role will LNG – and Australian LNG in particular – play in your economy’s energy transition?</i>	<ul style="list-style-type: none"> APGA defers to the expertise of international consumers. We note that the export of Australian LNG directly supports the decarbonisation of those customers where they are currently reliant on higher emitting fuels such as coal or oil. This will be even more true when renewable gases and blends are also exported as LNG or other renewable energy exports.
18. <i>What is your economy’s current LNG demand and how do you predict this will change through to 2035 and beyond to 2050?</i>	<ul style="list-style-type: none"> APGA defers to the expertise of international consumers, other than to note that LNG demand from Australia may increase in response to international decarbonisation strategies and/or availability of LNG from renewable gases.
19. <i>What options should the Australian Government consider to ensure international investment in Australian LNG projects remains competitive?</i>	<ul style="list-style-type: none"> APGA defers to the expertise of international consumers.
20. <i>What value do you place on low or net zero emissions LNG production?</i>	<ul style="list-style-type: none"> APGA defers to the expertise of international consumers, but notes that low/net-zero LNG production may attract a higher premium.

⁴³ AGIG, 2023, *Victorian Renewable Gas Consultation Submission - October 2023*, <https://engage.vic.gov.au/download/document/33278> - Figure 4

⁴⁴ ARENA, 2023, *Knowledge Bank – Australian Hydrogen Centre*, accessed 22 November 2023, <https://arena.gov.au/knowledge-bank/?keywords=Australian+Hydrogen+Centre>

⁴⁵ APA Group, 2023, *Parmelia Gas Pipeline Hydrogen Conversion Technical Feasibility Study*, https://www.wa.gov.au/system/files/2023-05/3419_apa_public_pipeline_conversion_v6.pdf

Supply

Gas-producing regions and reserves

General feedback to section:

APGA wishes to flag that the consultation paper omits some identified reserves. Development of these identified supply sources could ensure security of supply for all gas customers beyond 2050. Development of two of these supply sources could ensure security of supply and deliver net zero emissions for all gas customers beyond 2050. All three fundamentally change the basis on which the Future Gas Strategy is developed, and their exclusion impedes the Future Gas Strategy from achieving its stated goals.

Renewable gas production potential (biomethane and hydrogen)

- By not considering both natural and renewable gases, this paper does not consider renewable gas production potential. This includes two additional avenues for gas supply:
 - 500 PJpa worth of biomethane feedstock potential,⁴⁶ and
 - Hydrogen production potential only limited by the quantity of renewable electricity able to be produced in Australia.
- Including biomethane and hydrogen production potential would significantly change the Future Gas Strategy view on security of supply.

Beetaloo Basin

- The paper appears to reference Geoscience Australia data in determining its 18 year estimate of remaining reserves. However, Geoscience Australia data does not consider potential reserves in the Beetaloo Basin. With over 200,000PJ of resources identified, the potential identification of substantial additional reserves could substantially impact the trajectory of natural gas reserves into the future.⁴⁷
- The Future Gas Strategy would benefit from considering the historic rate resources have been able to be converted to reserves through the history of the Australian gas industry.

APGA recommends that the above sources of supply be considered within the Future Gas Strategy to avoid unintended consequences of a strategy based on incomplete information.

⁴⁶ ENEA Consulting, 2022, *2030 Emission Reduction Opportunities for Gas Networks*, <https://www.energynetworks.com.au/miscellaneous/2030-emission-reduction-opportunities-for-gas-networks-by-enea-consulting-2022/>

⁴⁷ DISR, 2021, *Beetaloo gas resources*, accessed 22 November 2023, <https://www.industry.gov.au/publications/beetaloo-strategic-basin-plan/beetaloo-sub-basin/beetaloo-gas-resources>

Responses to consultation questions

Producers	
21. <i>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?</i>	<ul style="list-style-type: none"> • APGA defers to the expertise of producers on this topic.
22. <i>How could the offshore petroleum regime be improved to meet the objectives of the strategy?</i>	<ul style="list-style-type: none"> • APGA defers to the expertise of producers on this topic.
23. <i>What are the major barriers and opportunities for new supply? How can the Australian Government prioritise, mitigate or manage these?</i>	<p>The major barriers for investment in new supply are the difficulty in seeking equity and debt in an unstable regulatory environment.</p> <ul style="list-style-type: none"> • Differing directions from the Federal Government and state and territory governments introduces policy uncertainty. Policy uncertainty introduces revenue risk which impedes reaching FID for new supply investments. • The Australian Government needs to provide expectation certainty for gas supply chain investors in the medium and long term. This includes supply side expectations and demand side expectations: <ul style="list-style-type: none"> ○ Gas customers need to understand government expectations of gas producers to have certainty in gas consuming investments; ○ Gas producers need to understand government expectations of gas customers to have certainty in gas production investments; and ○ Gas infrastructure needs to understand government expectations of gas customers and producers to have certainty in gas infrastructure investments. • The Australian Government should provide expectations through policy which supports private sector investment in new natural and renewable gas supply while also setting expectations of gas customer decarbonisation pathways.
24. <i>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</i>	<p>Australia has considerable gas resources and reserves, both of natural gas and renewable gases.</p> <ul style="list-style-type: none"> • At current gas demand rates:

<p><i>consistent with achieving emissions reductions goals?</i></p>	<ul style="list-style-type: none"> ○ Australia’s identified gas reserves and resources are sufficient to supply the domestic market and LNG export market through 2050; or ○ Australia’s identified gas reserves and renewable gas production potential are sufficient to supply the domestic market and LNG export market through 2050. ● Pursuing development of renewable gas supply where possible and natural gas supply where necessary can prioritise emissions reduction while securing supply.
<p>Community</p>	
<p><i>25. How can the Australian Government better communicate and provide more transparency to local communities regarding gas projects?</i></p>	<p>The gas infrastructure industry is a leader in community consultation for gas infrastructure projects.</p> <ul style="list-style-type: none"> ● The gas infrastructure industry has a strong and positive history of ongoing engagement with local communities and stakeholders, at all stages of gas infrastructure projects. ● It is not the Australian Government’s responsibility to undertake local community engagement. It does however have a responsibility to act as a single source of truth to the community and regulate efficacy of engagement approach. This includes providing accurate and effective messaging on the role of natural and renewable gas in the Australian economy in support of a better-informed national discourse.
<p><i>26. What opportunities exist to improve engagement and consultation processes with industry?</i></p>	<p>The Federal Government can provide national leadership to support the domestic gas supply chain and its decarbonisation pathway through renewable gas.</p> <ul style="list-style-type: none"> ● National leadership on the gas industry is required to provide the necessary market signals to support investment in new supply and infrastructure. ● This Future Gas Strategy process provides an important opportunity to step forward, towards national coordination to secure supply and emissions reduction. ● National agreement and coordination is especially necessary to support the development of renewable gases and carbon capture and storage technologies.
<p><i>27. How can all levels of governments better support the industry to engage with First Nations people and community groups?</i></p>	<ul style="list-style-type: none"> ● APGA defers to individual pipeline businesses on the specifics of this topic, however identifies the <i>South Australian Hydrogen and Renewable Energy Bill 2023</i> as providing

	a useful model for coexistence of planning, Native Title, preservation of Aboriginal heritage and maximising benefits for Aboriginal people.
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Geological storage of carbon dioxide

Responses to consultation questions

Producers	
<i>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?</i>	The Federal Government needs to set a policy framework conducive to the development of CCS projects. <ul style="list-style-type: none">• Similar to the development of the renewable gas industry, CCS projects require coordination and legislative support for investments to be economically viable.• This does not necessarily mean grants. Rather, support starts with a policy environment where the product of CCS, negative emissions, holds value which can be commercialised.
Community	
<i>29. How can the Australian Government better communicate and provide more transparency to local communities regarding CCS projects?</i>	The Federal Government has the opportunity to demonstrate national leadership on CCS, leaving individual project community consultation to the proponents. <ul style="list-style-type: none">• APGA considers its feedback to questions 25 and 26 also applies to CCS industry development.

Gas transportation and infrastructure

Responses to consultation questions

Distributors and LNG import terminal project proponents	
<p>30. How fit for purpose is Australia's gas transmission and distribution network?</p>	<p>Australia's transmission and distribution networks are fit for the purposes for which they were built. LNG import terminals may require additional infrastructure.</p> <ul style="list-style-type: none">• Australia's gas transmission pipelines provide safe, reliable, cost-effective transport of natural gas for residential, commercial and industrial use since 1969.• Australia's eastern and western pipeline networks were not designed, engineered and invested in with the purpose of forming an interconnected network in mind.<ul style="list-style-type: none">○ Each individual pipeline was developed to deliver to specific foundation gas transportation agreements for capacity between individual supply and demand locations.○ The final pipeline investment connecting the Queensland and South-East Australian networks of pipelines was originally designed to move gas from Queensland to southern markets.• The contract carriage form of the gas market means gas infrastructure can be built where needed – at the place, time and cost determined by market demand – based on an efficient division of risk via bilateral contracts between pipelines and shippers.• Government intervention puts the efficiency of this market at risk. This is seen in the NGL which provides protection from revenue risk created by the NGL for new greenfield pipeline capacity investments but not for often cheaper new brownfield pipeline capacity investments.• Australia's gas infrastructure can supply Australian gas customers now and in the future. Biomethane requires no changes to pipelines, and many existing pipelines can be converted at relatively low cost to carry hydrogen. Other pipelines will require little to no augmentation.⁴⁸

⁴⁸ APA Group, 2023, *Parmelia Gas Pipeline Hydrogen Conversion Technical Feasibility Study*, https://www.wa.gov.au/system/files/2023-05/3419_apa_public_pipeline_conversion_v6.pdf

<p><i>31. What changes should be made to the transmission and distribution network to prepare for the changing profile of gas demand in Australia? What risks and opportunities would this entail?</i></p>	<p>The gas transmission sector can respond to changing gas demand where policy supports commercial investment.</p> <ul style="list-style-type: none"> • The Future Gas Strategy will need to consider interactions between new natural gas supply, new renewable gas supply, and new import terminal supply. • If infrastructure changes are needed they would represent commercial investment decisions which should not be subject to government intervention. • The Federal Government has the opportunity to deliver policy which focuses on enabling the most economically efficient investment through reducing regulatory revenue uncertainty and creating incentives such as targets as detailed in the general feedback section above.
<p><i>32. Could the construction of LNG import terminals contribute to improving energy security in Australia?</i></p>	<ul style="list-style-type: none"> • APGA defers to the expertise of LNG import terminal proponents on this topic.
<p><i>33. Under what conditions would LNG import terminals be commercially viable in Australia?</i></p>	<ul style="list-style-type: none"> • APGA defers to the expertise of LNG import terminal proponents on this topic.

Australia's gas workforce and LNG facilities

Responses to consultation questions

Producers and LNG facilities	
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?	<ul style="list-style-type: none"> APGA defers to the expertise of LNG producers on this topic.
35. What are your long-term business and investment plans beyond 2035? How might these affect local economies, employment and communities?	<ul style="list-style-type: none"> APGA defers to the expertise of LNG producers on this topic.
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.	<ul style="list-style-type: none"> APGA defers to the expertise of LNG producers on this topic.
Community	
37. How has the oil and gas industry impacted the local economy and employment opportunities in your region?	<p>The gas industry is significant in the Australian economy, and renewable gases will provide an ongoing stream of employment and economic development.</p> <ul style="list-style-type: none"> The Australian gas industry supply chain directly employs 1 in every 54 Australians.⁴⁹ Across the Australian economy, the gas supply chain represents 3 cents for every dollar of economic activity. The gas industry invests over \$11.1 billion annually for future jobs and community funding and enables over \$470 billion in economic activity in Australia each year. The gas industry supply chain provides considerable support for regional economies: <ul style="list-style-type: none"> For every 100 jobs, the gas industry supply chain supplies 11.4 jobs in the Northern Territory and 7.3 jobs in Western Australia

⁴⁹ Australian Economic Advocacy Solutions, 2022, *Economic and Employment Contribution of the Australian Gas Industry Supply Chain: 2020-21*, https://www.gfcq.org.au/wp-content/uploads/2022/02/APPEA_AGIT-SUPPLY-CHAIN-REPORT-FINAL_Feb-2022.pdf

	<ul style="list-style-type: none"> ○ For every dollar of economic activity, the gas industry supply chain accounts for 14.6 cents in the Northern Territory and 7.6 cents in Western Australia. ● Renewable gas production jobs will also predominantly be in the regions: <ul style="list-style-type: none"> ○ Biomethane is produced at lowest cost when in proximity to feedstocks, the most plentiful of which come from agriculture. ○ Outside opportunistic production, hydrogen is delivered to customers at least cost when transported and stored in pipelines, leading to production adjacent to utility scale renewable electricity generation located in regional Australia.
<p>38. <i>What actions will assist workforce retention, upskilling and mobility in your community as the economy transitions to net zero emissions?</i></p>	<p>The Future Gas Strategy has the opportunity to provide a coherent vision for the future of the gas infrastructure industry – and its workers.</p> <ul style="list-style-type: none"> ● The existing gas workforce is the foundation of the future renewable gas workforce, including workforces for hydrogen and biomethane supply chains. Renewable gas provides opportunities for workforce transition and distribution into rural Australia.⁵⁰ ● Development of a domestic hydrogen workforce further supports Australia’s opportunity to become a major hydrogen exporter in much the same way as the development of a domestic-focused CSG industry helped found Queensland’s LNG export capability. ● Broader opportunities lay in advanced manufacturing of components for renewable gas production and utilisation (i.e. electrolysers, process equipment, and appliances) ● Significant construction workforces will be required during renewable gas industry scale up. With low overlap between gas and electricity production and infrastructure construction workforces, developing renewable gases alongside renewable electricity increases the rate at which Australia can build renewable energy supply. ● Uncertainty around future role of gas complicates ability to plan for the future of this workforce – including domestic talent attraction and retention, and skilled migration.

⁵⁰ Jobs and Skills Australia, 2023, *The Clean Energy Generation: workforce needs for a net zero economy*, <https://www.jobsandskills.gov.au/download/19313/clean-energy-generation/1957/clean-energy-generation/pdf>

Domestic gas supply

Responses to consultation questions

Consumers (domestic)	
<p>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?</p>	<p>The primary risk to domestic gas security is a lack of cohesive government direction around gas supply security combined with a lack of support for renewable gases.</p> <ul style="list-style-type: none"> • Current government policies risk impeding investment to secure gas supply for existing or projected gas customers. Intervention into gas markets to date as disincentivised domestic investment – further intervention must avoid this outcome. • Long-term stability of policy, aimed at producing an abundance of gas supply capacity, is necessary to incentivise ongoing investment. By including both natural gas and renewable gas supply, this can occur while reducing gas emissions. • The Australian Government needs to consider how further intervention affects other policy goals, such as Australia's industry and advanced manufacturing policies under the National Reconstruction Fund. Gas is often a critical input into many of these advanced industries. These industries need a secure domestic gas supply in order to develop Australia's sovereign advanced manufacturing capability.
<p>40. What do you see as the biggest risk to the ongoing affordability of Australia's domestic gas supply? For example, what are risks to affordability in the wholesale or retail market?</p>	<p>Policies which permit the market to remain short in supply, and the disconnect in natural gas and renewable gas policy, are the major parallel risks to affordability.</p> <ul style="list-style-type: none"> • The transition to a market short in gas supply has impacted the affordability of gas in the domestic market. The next highest cost producer sets prices in a market long in supply, where the next highest paying customer sets prices in a market short in supply. Shortness of supply in the east coast gas market has been influenced by progressive gas market reforms which have disincentivised investment in gas production and infrastructure (see answer to Q41). • Affordability of natural gas supply and renewable gas supply is put at risk by industry development policies that disconnect natural and renewable gas markets.

	<ul style="list-style-type: none"> ○ Doing to fails to take advantage of economies of scale and opportunity for integration between natural and renewable gases the likes of which has been leveraged for renewable electricity industry development. ○ No government would consider addressing fossil and renewable electricity strategy as separate strategies for separate markets. Nor should be the case for natural and renewable gas.
<p>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?</p>	<p>Reforms are required to consider natural and renewable gases as one market, while recent reforms have increased revenue risk for gas related investments.</p> <ul style="list-style-type: none"> ● Consideration of natural gas and renewable gas as part of the one combined supply chain will help to ensure that more supply and emission reduction levers are available to all gas customers. <ul style="list-style-type: none"> ○ We ask DISR to consider the growing body of evidence in support of parallel renewable electricity and renewable gas supply chains.^{51,52,53,54} ○ The gas infrastructure industry is at the forefront of developing a renewable gas industry in Australia having deployed the only renewable gas assets used to supply domestic gas customers with renewable gas today.^{55, 56, 57, 58, 59, 60}

⁵¹ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition*.

⁵² APGA, 2023, *Total customer cost: supply chain analysis methodology*, https://www.apga.org.au/sites/default/files/uploaded-content/website-content/supply_chain_analysis_methodology_for_total_customer_cost_-_final_1.pdf

⁵³ GPA Engineering, 2022, *Pipelines vs Powerlines: A Technoeconomic Analysis in the Australian Context*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/pipelines_vs_powerlines_-_a_technoeconomic_analysis_in_the_australian_context.pdf

⁵⁴ Frontier Economics, 2020, *The benefits of gas infrastructure to decarbonise Australia*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/frontier-2020-decarbonise-australia_0.pdf

⁵⁵ Jemena, 2023, *Western Sydney Green Hydrogen Hub*, <https://www.gonaturalgas.com.au/renewable-western-sydney-green-hydrogen-hub>

⁵⁶ ATCO, 2021, *Clean Energy Innovation Hub*, <https://www.atco.com/en-au/projects/hydrogen-blending.html>

⁵⁷ Jemena, 2023, *Malabar Biomethane Injection Plant*, <https://jemena.com.au/about/innovation/renewable-gas/key-projects/malabar-biomethane-project>

⁵⁸ AGIG, 2023, *Hydrogen Park South Australia*, <https://www.agiq.com.au/hydrogen-park-south-australia>

⁵⁹ AGIG, 2023, *Hydrogen Park Murray Valley*, <https://www.agiq.com.au/hydrogen-park-murray-valley>

⁶⁰ AGIG, 2023, *Hydrogen Park Gladstone*, <https://www.agiq.com.au/hydrogen-park-gladstone>

	<ul style="list-style-type: none"> • Progressive gas market reforms have introduced stronger regulation on Australia’s gas markets and infrastructure, limiting the ability of industry to respond to demand signals. <ul style="list-style-type: none"> ○ APGA explored this in detail within its submission consultation on the <i>Reliability and supply adequacy framework for the east coast gas market: Stage 2 Framework Development</i>.⁶¹ • Recent amendments to the NGL extended the national gas regulatory framework to hydrogen and renewable gases and blends in lieu of any evidence of market power being exercised in a yet-to-develop market. Please see APGA’s submissions to the AEMC on this topic.⁶² • Federal and State environmental and land access assessment and approval processes also add significant uncertainty to projects, limiting responsiveness to market signals. Processes are often complex, multi-jurisdictional, and lack objective assessment measures. Long processing timelines also increase project delivery timelines.
<p>42. What actions are available to lower gas costs, including substitution and new supply, to provide certainty to consumers? How would these actions further the Australian Government’s decarbonisation goals?</p>	<p>Shifting the gas market from short in supply to long in supply will reduce gas prices experienced by customers.</p> <ul style="list-style-type: none"> • Please see APGA’s response to Q40 relating to the opportunity to return the gas market to being long in gas supply capacity. Importantly, it is the excess in capacity to supply when needed, not oversupply, that reduces costs for customers.

⁶¹ APGA, 2023, *Reliability and supply adequacy framework for the east coast gas market: Stage 2 Framework Development*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/230721_apga_submission_-_dcceew_stage_2_supply_adequacy.pdf

⁶² APGA, 2022, *Extending the NGRF to hydrogen and renewable gases and blends – Proposed changes to NGL, NERL and National Regulations Consultation*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/220519_apga_submission_to_officials_consultation_paper_may_2022.pdf; APGA, 2021, *Submission: Review into extending the regulatory frameworks to hydrogen and renewable gases*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/211202_apga_submission_-_review_into_extending_the_regulatory_frameworks_to_hydrogen_and_renewable_gases_aemc_0.pdf

	<ul style="list-style-type: none"> • In the absence of a need to decarbonise, there are very few circumstances in which substituting another energy source with natural gas will come at lower cost once the cost of converting appliances is considered.⁶³ • Considering the need to achieve net zero emissions by 2050, most Australian gas consumers can achieve cost competitive or cheaper decarbonisation by transitioning from natural gas to renewable gases compared to electrification.⁶⁴
<p>43. <i>What opportunities exist in your industry to decarbonise supply chains?</i></p>	<p>Decarbonising supply chains is a priority for the gas infrastructure industry, which is undertaking work to reduce fugitive emissions and reduce direct emissions through renewable gases.</p> <ul style="list-style-type: none"> • Renewable gases can be used to simultaneously supply and decarbonise domestic gas demand at lower cost than electrification for most gas customers when delivered in line with a least cost pathway to net zero emissions in 2050. • The new emissions reduction objective under the National Energy Objectives will provide a powerful incentive for organisations to invest in decarbonisation activities, where previously the decarbonisation benefit could not be considered for the purposes of investment decisions. • The gas infrastructure industry is actively pursuing decarbonisation strategies for gas infrastructure and supply chains. APGA has commissioned research into identifying and costing emissions reduction opportunities, including reducing fugitive emissions, which is due to be completed by the end of 2023.
<p>44. <i>Do you use any forecasts of gas supply to inform your outlook of the gas market? If so, what are they?</i></p>	<p>The gas infrastructure industry overall outlook is informed by forecasts like the GS00, but invest on the basis of contracts for transport capacity.</p> <ul style="list-style-type: none"> • To the extent that pipeline operators use forecasts, day to day operations are not based on forecasting but long-term activities are informed by forecasts such as the GS00.

⁶³ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition*.

⁶⁴ Boston Consulting Group, 2023, *The role of gas infrastructure in Australia's energy transition*.

	<ul style="list-style-type: none"> • Pipeline operators do not produce throughput forecasts – the commercial carriage market framework provides customers access to transport capacity, allowing customers to decide what capacity they require for their supply at any point in time. • As noted in the answer to Q1, AEMO has consistently underestimated future gas demand and is not considered accurate by gas market participants. Consistently inaccurate AEMO modelling adds market uncertainty, impacting decisions of gas customers to invest in new supply contracts. This in turn contributes to gas markets being consistently short in supply. Forecasts also rarely reflect the commercial realities of securing gas reserves and resources via contract. • These forecasts and estimates typically do not accurately reflect biomethane and hydrogen infrastructure or production as detailed in general commentary at the start of responses to the Gas Supply section above.
<p>45. Are there any limitations or caveats associated with these scenarios? How do you address these limitations?</p>	<p>The absence of a robust gas market model limits the usefulness of existing gas forecasts for the gas infrastructure industry.</p> <ul style="list-style-type: none"> • There are several entities which produce gas forecasts, including AEMO and the ACCC. These forecasts do not necessarily align, which leads to mixed messaging and uncertainty. Neither of these bodies are informed by a robust gas market model. <ul style="list-style-type: none"> ○ AEMO’s scenario planning generally includes a high level of electrification and declining gas demand. This is based on assumed impacts of government policy rather than reflecting the actual impact of government policy. ○ AEMO and CSIRO have not produced a full, high resolution gas supply chain model on par with models for the electricity supply chain. APGA strongly recommends a full gas and electricity supply chain model be developed to a high level of fidelity considering the implications of failing to effectively model the energy transition. • In reality, the actual rate of electrification does not appear to be matching AEMO’s forecast trajectory, and actual gas demand is consistently higher than forecast.