



01 December 2021

Submission: Extending the national gas regulatory framework to hydrogen blends & renewable gases: Changes to the NGL, NERL and Regulations Consultation Paper

The Australian Pipelines and Gas Association (APGA) represents the owners, operators, designers, constructors and service providers of Australia's pipeline infrastructure, with a focus on high-pressure gas transmission. APGA's members build, own and operate the gas transmission infrastructure connecting the disparate gas supply basins and demand centres of Australia, offering a wide range of services to gas producers, retailers and users.

APGA welcomes the opportunity to contribute to the Extending the national gas regulatory framework to hydrogen blends & renewable gases: Changes to the NGL, NERL and Regulations Consultation Paper (the **Officials Paper**) and supports the overall objective of the combined consultations to extend the National Gas Regulatory Framework (NGRF) to cover hydrogen and other renewable gases.

APGA supports a net zero emission future for Australia by 2050¹. Renewable gases represent a real, technically viable approach to lowest-cost energy decarbonisation in Australia. As set out in Gas Vision 2050², 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 CRC³, which has over 80 research projects dedicated to leveraging the value of Australia's gas infrastructure to deliver decarbonised energy.

The proposed extension of the National Gas Law (NGL) and broader NGRF to Natural Gas Equivalents (NGEs) is a critical step to enabling a future renewable gas industry and has APGA's full support. The approach proposed in the combined consultation papers is a well-considered method for removing any regulatory barriers impeding blending of renewable gases into the domestic gas market. The definitions of NGE, Other Gas Product (OGP) and Constituent Gas (CG) effectively address the need for more versatile definitions without tying definitions to specific types of gas.

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

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

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

APGA is concerned however with the way in which the NGL and broader NGRF is proposed to apply to CG and OGP infrastructure.

Renewable gas markets of the future will be very different to existing gas markets. Renewable gas is a manufactured product and the location of production facilities and transmission infrastructure to transport them to market is highly flexible. This contrasts with the limited flexibility of natural gas markets, given natural gas is a resource that is extracted from specific locations. This key difference will manifest in markets in many ways. From a gas transmission infrastructure perspective, it means gas transmission infrastructure services offerings must be highly competitive or renewable gas producers will locate facilities closer to markets to avoid transmission costs.

If there is a circumstance where a renewable gas producer must be placed distant to a market and will require access to existing transmission infrastructure, the renewable gas producer will be competing with renewable gas producers closer to market, limiting any market power a transmission infrastructure service provider could hold.

As the competitive hydrogen and renewable gas markets grow, it is apparent to APGA that the forms of regulation for Scheme and Non-Scheme pipelines may not necessarily be appropriate in the context of the level of competition that will exist in these new markets. Where the NGRF extension consultations propose immediate application of economic regulation, other international jurisdictions are taking more of a wait and see approach⁴. It is appropriate that flexibility built into the framework of the NGL and NGR to ensure suitable treatment of renewable gases, renewable gas infrastructure and services in the presence of effective competition.

In the short-term, the renewable gas industry needs significant investment and development. Service providers are developing the first CG and OGP infrastructure assets as fundamental parts of existing gas distribution networks subject to the economic regulatory framework in the NGL. The hydrogen and other renewable gases industries are in their infancy and the development of these industries is considered by many to be directly relevant to the longevity of today's gas distribution networks. The development of these first assets, essential to demonstrate the viability of the future renewable gas industry, should be able to be considered as part of the regulated gas networks they supply rather than individual pipeline assets.

Regarding OGPs specifically, APGA considers it important that an OGP inclusive NGL be clear about the boundaries within which a jurisdiction can define an OGP. This will be critical for investor certainty in what is or is not open to being brought into regulation as an OGP asset. The Officials Paper hints towards this, noting that an OGP *may in future be supplied to consumers for use in appropriate appliances*. Ensuring that only the compositional aspects of the NGL definition of natural gas are differed from when creating the new NGL OGP definition will be key reflecting the policy intent set out in the Energy Ministers Objectives.

⁴ When and How to Regulate Hydrogen Networks?, EU ACER 2021
https://documents.acer.europa.eu/Official_documents/Position_Papers/Position%20papers/ACER_C EER_WhitePaper_on_the_regulation_of_hydrogen_networks_2020-02-09_FINAL.pdf

There are clearly significant matters and complex issues to consider in expanding economic regulatory frameworks found in the NGL to CG and OGP infrastructure, especially in seeking to achieve the Energy Minister objectives. In lieu of either industry or governments knowing what the future will hold, the most no-regrets option becomes optionality itself. There are reasonable grounds to consider implementing a level of flexibility in the NGL and broader NGRF to ensure that economic regulation is appropriately adaptable to a range of possible futures.

APGA can envisage a range of simultaneous market conditions arising across the coming decades. From the current natural gas market to highly diverse hydrogen markets with absolute competition, moderately diverse biogas markets reflecting waste management markets as much as energy markets, and the unknown unknowns which we cannot account for right now. The only certainty amongst all this change is that a one size fits all economic regulatory regime is unlikely to result in the most efficient outcomes for consumers in all circumstances over the long-term.

There are a range of options available to policy makers to work flexibility into the existing NGL and broader NGRF to ensure that economic regulation is not applied in the presence of effective competition, and to ensure that where it makes sense, CG and OGP infrastructure can be considered part of otherwise regulated assets. APGA comments on a few possible flexibility options in Section 3 below, and commits to continuing to engage with DISER, the AEMC, AEMO and Energy Ministers to work constructively towards achieving these appropriately flexible ends.

APGA's feedback on other aspects of the combined NGRF extension consultations includes:

- APGA supports the introduction of the new definitions NGE, CG and OGP alongside the definition of Natural Gas (NG) and consider these to represent an effective approach to achieving the goals of the combined NGRF extension consultations.
- Expanding all aspects applied to NG within the NGRF to NGEs represents a reasonable expansion of regulatory scope as there is a direct parallel between NGE and NG for all intents and purposes under the NGRF.
- Market designs which enable the trade of all gases on a per gigajoule basis within a single market best achieve the Energy Ministers objectives. For example, trading gigajoules of NGE in the DWGM would be preferable over trading gigajoules of natural gas and CG separately alongside NGE in the DWGM or STTM; and
- Where the combined consultations pose questions of asset operational assurance (including composition assurance), the operator of an asset is in the best possible position to efficiently provide such operational assurance, as occurs now.

Further detail on this and all above feedback can be found in the Detailed Feedback section below.

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,

A handwritten signature in black ink, appearing to read 'Steve Davies', with a stylized flourish at the end.

STEVE DAVIES
Chief Executive Officer
Australian Pipelines and Gas Association

Detailed Feedback

1. Constituent Gas Transmission Infrastructure services will be highly competitive

CG transmission infrastructure service markets, including blending facilities and CG transmission pipelines, will be highly competitive. Unlike locationally constrained natural gas production, hydrogen (and other renewable gas) production is a manufactured product that can be located almost anywhere, including bypassing existing infrastructure altogether by being located directly at its demand market. Blending facilities are not constrained to a particular location either and are relatively low-cost. As such, any existing CG transmission infrastructure will be in constant competition with new CG infrastructure pathways, as well as non-infrastructure pathways to market (ie tube trailer) and vehicle refuelling.

The difference between natural gas infrastructure and CG infrastructure is described in Figure 1 below which considers new natural gas production and new CG production connecting to an existing NGE transmission pipeline. The existing NGE transmission pipeline (solid purple line) connects an existing natural gas supply (left most purple dot) to an existing customer (yellow dot). The new natural gas production location is constrained to within the purple hashed box, with some room to move but ultimately constrained to a specific area. The new CG production location can exist anywhere, being able to move both up and down the existing transmission pipeline, as well as closer to or further from the existing pipeline as it sees fit.

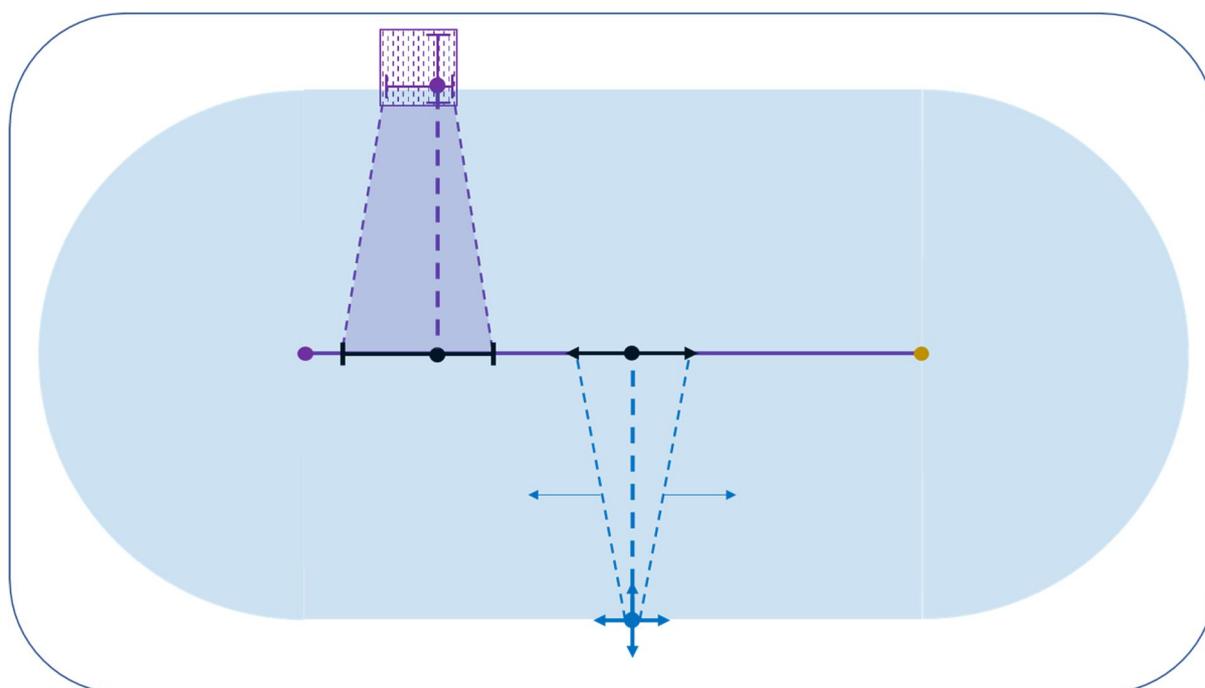


Figure 1: Range of potential competitive pathways for natural gas and CG pipelines

The dashed purple and blue lines represent the possible range of cost-effective lateral pipeline pathways from the proposed production locations; however, the solid purple and

blue areas represent the full range of potential lateral pipeline pathways available to each production option. The range available to the CG lateral pipeline is immensely larger than the range available to the natural gas lateral pipeline and could even be considered infinite. Not only do the initial options available to each lateral differ significantly, but the circumstances which follow their development also differ significantly.

New CG production can be located anywhere and is not necessarily incentivised or required to collocate with existing production. There are many CG production location and resultant infrastructure options, all of which compete with the existing CG infrastructure. Some options will bypass wholesalers and infrastructure services altogether. By way of example, there are already containerised electrolysers available to the market producing 15 to 150kg of hydrogen per day, allowing small users to bypass wholesalers and infrastructure altogether if they choose.

This broader threat of competition will limit any market power possessed by an existing CG transmission infrastructure service provider. If it fails to deliver a competitive offer, the CG producer can simply shift the location of its project.

This contrasts with natural gas production, which must be located where the resource is and where there are likely to be a more limited number of paths to market available.

These issues are explored in more detail at Appendix 1.

If market power of CG transmission infrastructure is effectively constrained by competition, there is limited basis to apply economic regulation. The possibility of effective competition suppressing market power is contemplated in a recent Australian Energy Regulator (AER) information paper which notes that *the basis for economic regulation of infrastructure is when there are conditions in the market which severely limit effective competition*⁵. The AER goes on to identify that *effective competition in a market exists when there is an opportunity for sufficient influences to constrain the market power of suppliers (eg. rivalry amongst existing suppliers, the threat of substitute goods and services, the threat of new entrants, or the buying power of consumers)*.

Innovative asset developers investing in CG and OGP transmission infrastructure should be able to operate in commercial, competitive markets without regulatory intervention where effective competition exists. Maximising innovation and risk taking within developing markets will be key to the future growth of the Australia hydrogen and renewable gases industries. Issues of effective competition have also been considered in the preceding Pipeline Regulation Decision RIS process. Competitive processes and the ability of infrastructure service providers to deliver outcomes consistent with those expected in a workably competitive market are being considered as a basis to regulatory exemptions for greenfield infrastructure.

APGA notes that the above principles also apply to OGPs and OGP infrastructure. The current round of NGRF extension consultation papers does not contemplate the *immediate*

⁵ Regulating gas pipelines under uncertainty – Information paper, AER 2021
<https://www.aer.gov.au/networks-pipelines/performance-reporting/regulating-gas-pipelines-under-uncertainty-information-paper>

application of the economic regulatory frameworks found within the NGL to OGP pipelines, proposing to require jurisdictions to opt-in to defining an OGP. In defining an OGP, Jurisdictions will need to consider the possibility that doing so risks the application of economic regulation in the presence of effective competition, which in turn increases regulatory based revenue uncertainty and reduces commercial flexibility for investments in OGP infrastructure.

APGA accepts that it is possible to envisage a specific scenario where market power does exist for a CG or OGP transmission infrastructure asset. However, APGA considers that there are many more scenarios where effective competition will exist. As such, the regulatory framework should be developed in a manner that does not apply economic regulation in all circumstances to this new infrastructure.

2. Supporting development of the renewable gas industry through the regulatory framework.

There is a need in the immediate term to support service providers to develop early CG and OGP infrastructure as part of assets subject to economic regulatory frameworks found within the NGL. The hydrogen and other renewable gases industries are in their infancy with no existing basis for investment revenue security. These first early foundations of a future renewable gas industry need to be able to access the revenue certainty of regulated incomes as part of a broader, already regulated asset base.

CG supply chains will generally include three components – CG production, CG transmission infrastructure downstream of CG production, and NGE infrastructure downstream of CG transmission infrastructure. This section to this point considers the full spectrum of potential CG infrastructure service provider configurations, including CG infrastructure service providers which are:

- Extensions of CG producers;
- Entirely separate from the service providers for the downstream NGE infrastructure; and
- Service providers which are also the service providers for the downstream NGE infrastructure.

There are major differences between these types of service providers and at different stages of the development of the renewable gas industry it is apparent they should be treated differently. As highlighted in Section 1, CG transmission infrastructure service providers will be operating in a highly competitive renewable gas market once it is established.

In cases where early CG infrastructure service providers are also the service providers for the downstream NGE infrastructure, it would be a major boost to the development of the renewable gas industry if they were provided the ability to obtain an exemption to the ringfencing provisions in the NGL. With such an exemption, the investments necessary to develop the industry and decarbonise gas networks could be included as a part of existing natural gas networks. Under these circumstances, Service providers should effectively be able to choose between ringfencing the CG infrastructure business separately from NGE infrastructure or considering CG Infrastructure as an extension of NGE infrastructure (hence extending economic regulation to the CG Infrastructure).

There is precedent for facilities which would otherwise not be subject to the economic regulatory frameworks found within the NGL being considered part of an asset base which is covered by these economic regulatory frameworks⁶. This is achieved without the economic regulatory frameworks found within the NGL being extended to all assets of the same type. This correlates with the purpose of economic regulation where a) a broader asset base combining many components may experience market conditions which severely limit effective competition; but while b) acknowledging that each component type may not

⁶ An example of this precedent is the circumstance of measurement facilities, which may or may not be subject to economic regulation dependant on whether they are considered part of a pipeline or part of a supply or demand facility.

experience market conditions which severely limit effective competition when they are not part of a broader asset base.

3. The need for flexibility in the framework

There are clearly significant matters and complex issues to consider in expanding economic regulatory frameworks found in the NGL to CG and OGP infrastructure, especially in seeking to achieve the Energy Minister objectives. Foundation asset development needs to be supported by the ability to include adjoining CG and OGP infrastructure within an existing regulated asset, while the innovative investors that follow are more likely to be impeded by economic regulation in a highly competitive market.

The gas market of tomorrow will not uniformly reflect the gas market of today. Coming decades will see broad reaching competition growing across a number of unique gas markets alongside continuation of the gas market of today. While a one size fits all regulatory regime has been determined as necessary for the gas market of today, it cannot be seen as a reasonable fit to the diverse gas market of tomorrow.

At this early stage, it is not possible to know what the best regulatory options are for the future market. The most we can hope to achieve at this stage is to deliver no-regrets outcomes which do not impede the development of hydrogen or other renewable gas markets in the process. Locking in a set of economic regulations designed for existing natural gas markets early on in industry development risks suppression of early industry growth. APGA is concerned that simply expanding like for like economic regulation to CG and OGP infrastructure at this stage poses exactly this risk, especially where it is already apparent that these industries will experience different competitive dynamics.

In not knowing what the best regulatory option is for each and every circumstance, APGA proposes that a level of flexibility be considered when developing economic regulation for CG and OGP infrastructure. In order to deliver on the Energy Ministers Objectives, regulation must be fit for purpose, hence the ability to determine which purpose to target with which regulatory approach should be built into the regulatory framework. Creating flexibility in regulation would need to be done with care as to avoid uncertainty, however this can be achieved through the implementation of well-defined rules to determine the outcomes of flexible regulatory aspects.

While APGA is comfortable in stating that it does not have all of the answers yet, in contemplating possible flexibility options, two areas have arisen as possible areas for flexibility:

- Criteria to determine application of economic regulation in the presence of effective competition
Development of criteria for CG and OGP infrastructure such that economic regulation only applies in the absence of effective competition.; and
- Exemption from ring fencing provisions to allow service providers to include CG and OGP infrastructure as part of an existing regulated asset
Service Providers of an existing gas asset which is subject to the economic regulatory frameworks found within the NGL should be able to choose to incorporate directly connected CG and OGP infrastructure as part of the asset.

APGA is still developing its views on how to structure the above exemptions to best achieve the Energy Ministers objectives. Some of the options which APGA note may be reasonable around the above core exemptions include:

- Differences in exemption application to distribution pipelines and transmission pipelines

It is possible for there to be differences in the way which effective competitive interacts within distribution pipeline and transmission pipeline contexts. If effective competition arises in future CG and OGP transmission infrastructure but not in future CG and OGP distribution infrastructure, it may be reasonable to provide different exemption frameworks for transmission pipeline markets relative to distribution pipeline markets.

- Automatic Exemptions

Where the basis for an exemption becomes prevalent, it may be reasonable to apply exemptions on an automatic basis. This would require the Relevant Regulator to identify that the basis for exemption does not exist in order to terminate the exemption. This would be preferable in the presence of prevalent effective competition in the future CG and OGP infrastructure industries in order to avoid the application of economic regulation where effective competition is prevalent.

- Opt-In Exemptions

Where the basis for an exemption is uncommon, it may be reasonable to apply exemptions on an opt-in basis. This would require the Relevant Regulator to identify that the basis for exemption does exist in order to grant the exemption. This would be preferable where a service provider wishes to extend their primary asset to include CG or OGP infrastructure for the purposes of demonstrating the future viability of the primary asset.

APGA welcomes further discussion on possible options for create flexibility within the NGL and broader NGRF.

Appendix 1: Fundamental Concepts

Differences in the market dynamics and therefore in the likelihood that market power might be held by hydrogen and other renewable gas infrastructure are founded upon four concepts:

- The locationally constrained nature of natural gas production;
- Distributed nature of hydrogen and other renewable gas production;
- Minimum barrier to entry for new hydrogen and other renewable gas production; and
- Minimum barrier to entry for new blending facilities.

These points are combined to form a basis for the influence of distributed CG production on transmission infrastructure market power

Locationally Constrained Nature of Natural Gas Production

Natural gas cannot be produced just anywhere in Australia. Even following the identification of large conventional and unconventional natural gas reservoirs beneath significant expanses of Australian territory, natural gas is only able to be produced from wells in extremely precise locations. Identifying the specific location of viable natural gas production is feat of science and engineering, with natural gas exploration combining the technical capabilities of exploration reservoir engineers with the scientific expertise of geoscientists from the likes of CSIRO's Exploration Geosciences & Reservoir Dynamics department⁷.

The risks of getting the science wrong are high as demonstrate in the 2018 failure of ExxonMobil's \$120M "Dory" exploration drilling program⁸. The failure of this program and programs like it demonstrates that natural gas isn't even guaranteed in regions containing extensively explored reservoirs.

Locational constraints are regularly seen in unconventional gas reservoirs as well. Both Coal Seam Gas (CSG) and Shale Gas reservoirs are highly susceptible to reservoir disruption by fissures, leading to the potential for well failing to produce only hundreds of meters from successfully producing wells. Not only this, but the propensity for CSG reservoirs to intersect with coal mining leases presents additional locational challenges.

Whether conventional or unconventional, natural gas production is locationally constrained for the most part to within units of kilometres. Once a viable production location has been identified, the expense of transporting raw gas relative to transporting consumption quality gas incentivises natural gas processing plants to be located within tens of kilometres of raw gas production. Preparing natural gas for transport, including compression and alteration of raw natural gas composition to comply with the requirements of consumer appliances is a reasonably costly task. Doing so however makes natural gas easier to transport and

⁷ CSIRO Exploration Geoscience & Reservoir Dynamics Webpage, CSIRO 2021

<https://research.csiro.au/oilandgas/conventional-resources/exploration/>

⁸ Exxon's \$120m Bass Strait bet fails to deliver gas, Chambers 2018

<https://www.theaustralian.com.au/business/mining-energy/exxons-120m-bass-strait-bet-fails-to-deliver-gas/news-story/72d9abadea92b2c2f350b5e79a860f74>

tradeable as an interchangeable natural gas commodity, further incentivising processing to occur early in the supply chain.

Distributed Nature of Hydrogen and Other Renewable Gas Production

The production of hydrogen and other renewable gases can occur anywhere in Australia. In particular, green hydrogen can be produced anywhere a source of renewable electricity can be accessed. The areas in which either solar PV or wind power generation is possible covers all Australian territory⁹. Areas of potential access to water also cover the entire country, making it a competitive factor defined by the price of access to water at any given location.

Another key category of renewable gas is renewable sources of methane. The best-known source of renewable methane is biogas, which is also able to be produced virtually anywhere in Australia. Only requiring a viable source of biomass, biogas is able to be produced either anywhere that agricultural activity is occurring, or anywhere where an energy crop can be produced. Renewable synthetic methane can also be produced via the methanation of green hydrogen and atmospherically sourced carbon dioxide. Green hydrogen and atmospheric carbon dioxide can both be sourced anywhere in Australia, providing a second distributed renewable methane production option if biological sources of methane are unavailable.

Whether renewable hydrogen or renewable methane, the distributed nature of the production of these gases means that competition between producers is not bounded to specific locations. This allows investors to optimise the choice of location for their investments alongside all other factors, reducing their susceptibility to the application of market power for infrastructure services based on locational constraint.

This ability to optimise choice of location effectively neutralises the market power of infrastructure service providers. Not only can an individual project locate itself to avoid accessing infrastructure, but the producers who are closest to market will be setting the most competitive prices for renewable gas products. Infrastructure service providers must offer highly competitive prices to any customers to ensure that customers can compete in renewable gas markets.

There are also forms of renewable and decarbonised hydrogen and methane production which are locationally constrained. One such example would be blue hydrogen produced from specific gas or coal resources. These will be similarly locationally constrained as natural gas production. However, due to some (or even a majority of) potential producers being distributed, the restrictions experienced between these specific renewable or decarbonised hydrogen or methane producers is simply part of the robust competition within a diverse market, rather than the experience of the entire market. The competitive pressures from those producers that are not constrained may limit the market power of infrastructure service providers.

⁹ National Solar and Wind resource maps as available via databases accessible via National Map <https://nationalmap.gov.au/>

New Hydrogen and Other Renewable Gas Production do not need to collocate

The potential market power of infrastructure service providers is further limited as renewable gas production does not tend to derive efficiency from collocation with other production.

For hydrogen, the economic advantages of collocation are considered minimal. Considering hydrogen production from behind the meter solar PV, both solar PV and hydrogen electrolyzers are modular at a scale many times smaller than the size of wholesale natural gas production, with electrolyzers being the larger of the two. As such, each linear step up in electrolyser capacity required an equally linear increase in solar PV capacity, with the economies of scale of the rest of the facility being minimal.

Similarly, biogas experiences linear production uplift through the increase in anaerobic digester capacity, with some economies of scale in processing to upgrade to biomethane. Renewable synthetic methane would similarly experience some economies of scale in increased methanation capacity, however the cost of methanation is predicted to be an order of magnitude lower than the cost of hydrogen production¹⁰.

With these linear relationships for the key capital costs of hydrogen and renewable gas production, there is very little reason for the next production facility to be developed alongside an existing production facility. This allows investors in new hydrogen and renewable gas production to consider a wide range of factors other than collocation with existing production in determining the location of the next production facility, including the competitiveness of infrastructure options.

Minimum Barrier to Entry for New Blending Facilities

Blending of gases occurs at every supply and interconnection point on every pipeline today. When this occurs at a location where custody of gas is being transferred, both sides of the transfer monitor and operate their infrastructure to ensure the blending of gases does not result in an off-specification mixture, generally in line with contractual obligations which are guided by jurisdictional safety requirements. Currently, this mostly comprises composition monitoring and associated shutdown equipment, or a commitment to undertake such arrangements well upstream of a specific custody transfer point.

In today's market, new wholesale connections to natural gas infrastructure are not economically regulated. Relative to the infrastructure both upstream and downstream of a connection point, the cost of a connection point is economically trivial, often costing orders of magnitude less than associated infrastructure or the annual value of product passing through the point. Recently proposed changes to the economic regulatory frameworks found within the NGL have secured the right for any request to connect to a pipeline to be

¹⁰ Renewable Methane Economics, Oakley Greenwood November 2021
http://oakleygreenwood.com.au/wp-content/uploads/2021/11/OGW-Renewable_Gas_Economics_23November2021.pdf

reasonably considered, ensuring there is no way for a natural gas pipeline service provider to apply market power to a potential connection.

Similar to existing pipeline connections, blending facility connections between CG pipelines and NGE pipelines are expected to be similarly economically trivial.

While more expensive than a typical connection, the cost of blending facilities is still expected to be orders of magnitude lower cost than associated infrastructure or the annual value of product passing through the point. Additionally, the distributed nature of CG production means that blending facilities will be linearly distributed. That is to say that, while they will need to be connected to existing NGE infrastructure, they will be able to be located anywhere across the entire length of NGE infrastructure, only to be constrained by their relative proximity to distributed CG production and the ability for the NGE pipeline to have additional CG blended into it – an aspect which will be regulated under proposed NGE infrastructure regulation.

Influence of distributed CG production on transmission infrastructure market power

The natural gas supply chains of today are fundamentally different to the CG (hydrogen or other renewable gas) supply chains of tomorrow. This is predominantly due to the distributed nature of CG production and the minimal advantages in collocating production. These factors lead to many possible CG production locations, which in turn lead to many possible pathways to market. Each of these potential CG supply chains compete with each other, as well as with existing CG supply chains.

In APGAs view, this competition between CG supply chains is sufficient to address the potential for application of market power by any particular CG infrastructure asset or service provider.

The impact of distributed CG production is in stark contrast to the impact of locationally fixed natural gas production and processing. In addition to very high up-front capital costs for producers, natural gas is characterised by minimal flexibility in the successful placement of gas wells and is incentivised to collocate processing with production. Natural gas producers cannot choose to simply set up shop elsewhere like CG producers, with an effective range of potential natural gas supply locations constrained to within tens of kilometres. With gas customers generally being locationally constrained as well, the range of potential least cost pathways to market for natural gas are constrained to a narrow corridor between supply and demand.

This constrained nature of economically viable natural gas transport corridors has the potential to lead to conditions in the natural gas pipeline market which limit effective competition from new natural gas pipeline alternatives. Distributed CG production does not experience these same infrastructure constraints as natural gas. Able to be located anywhere in Australia, each of the infinite potential production locations creates its own competitive CG infrastructure options between its location and potential markets. These directly compete with any existing CG infrastructure.

This difference in potential competitive pathways to market for natural gas and CGs increases further when considering greenfield lateral pipelines connections to existing pipelines. The connection point of a natural gas lateral pipeline is constrained by the location consistent with the least cost lateral pipeline from the constrained production location. Distributed CG production can connect to linearly distributed CG blending facilities through infinite possible lateral pipeline pathways, with both production and connection points being able to move to optimise for the least cost lateral pipeline pathway.

Based on the above, it is apparent that the market power of natural gas pipelines does not extend to CG Pipelines and their associated blending facility infrastructure. The distributed nature of hydrogen and other renewable gas production erodes the basis of the market power claim upon CG infrastructure. As such, automatic application of the economic regulatory frameworks found within the NGL to CG transmission infrastructure should be considered carefully.

Attachment 1: Consultation Feedback Form

Attachment 1: Officials' Consultation Paper – Stakeholder feedback template

Submission from Australian Pipelines and Gas Association

The template below has been developed to enable stakeholders to provide feedback on how the NGL, NERL and, where relevant, the Regulations made under the NGL and NERL, could be amended to:

- extend the application of the national gas regulatory framework to NG equivalents; and
- where it is appropriate to do so, provide for OG products to be accommodated by the national gas regulatory framework over time

Officials strongly encourage stakeholders to use this template, so that it can have due regard to the views expressed by stakeholders on each issue. If you wish to provide additional feedback outside the template, wherever possible please reference the relevant question to which your feedback relates.

Chapter 4: Extending the NGL and NERL to natural gas equivalents

No.	Questions	Feedback
Section 4.3: Potential approach to extending the NGL		
Section 4.2.1: Extension to NG equivalents and related facilities and activities		
1	What are your views on the potential approach to extending the application of the NGL to NG equivalents and related facilities and activities? Are there any other approaches that you think would better achieve the objectives of Energy Ministers (see section E.3)?	<p>Where direct parallels are drawn between Natural Gas and Natural Gas Equivalents (NGEs) within the potential approach to extending the application of the NGL to NGEs, APGA considers that the approach broadly achieves the objectives of Energy Ministers in Section E.3 of the Officials Paper.</p> <p>APGA is concerned with the proposal to bring blending facilities and other activities within the scope of the NGL and potentially subject to economic regulation. Please refer to APGA's cover letter for more detail.</p>

No.	Questions	Feedback
2	<p>What are your views on the policy intention to enable all elements of the national gas regulatory framework to apply to NG equivalents and their related facilities and activities in the same way that they do to natural gas?</p>	<p>APGA views this as core to achieving the Energy Ministers objectives in line with the Energy Ministers principles.</p> <p>However, APGA notes that this policy intention must be applied in an absolute manner. All elements of the NGRF includes the current boundaries to where economic regulation as it applies to pipelines is contained. These boundaries too must be maintained when enabling all elements of the NGRF to apply to NG equivalents and their related facilities and activities in the same way that they do to natural gas.</p>
3	<p>What are your views on the NGL requiring jurisdictions to make a local regulation to confirm when a gas or gas blend authorised for supply through a pipeline (or part of a pipeline) is an NG equivalent?</p>	<p>This aspect of the potential approach to extending the application of the NGL to NGEs is aligned with Energy Ministers Objectives. It represents a clear and agreeable parallel to the current requirement for jurisdictions to make a local regulation to confirm when a gas or gas blend authorised for supply through a pipeline (or part of a pipeline) is defined as natural gas. Where practical, APGA does hope that jurisdictions are able to maintain alignment in defining NGEs and note that industry will seek to engage with jurisdictions directly on this topic.</p>

4	<p>Who is likely to operate the blending facilities involved in the creation of NG equivalent blends?</p>	<p>The hydrogen and other renewable gas blending market is in its infancy, and it is not clear how it will develop. Blending facilities involved in the creation of NGE blends may be operated by the following types of parties so long as they are able to demonstrate that they are a reasonable and prudent operator:</p> <ul style="list-style-type: none"> • The service provider of the NGE infrastructure immediately downstream of the blending facility; • The service provider of the NG infrastructure immediately upstream of the blending facility; • The service provider of the CG pipeline immediately upstream of the blending facility who is also the CG production service provider; • The service provider of the CG pipeline immediately upstream of the blending facility who is independent of the CG production service provider; or • A service provider independent of any of the above options. <p>The ability for this range of potential operators is created by NGL provisions which prevent a pipeline service provider from unreasonably refusing a new connection to a pipeline. A new blending facility can be a new connection to a pipeline regardless of the relationship between the blending facility service provider and any other aspect of the NG – CG – NGE supply chain.</p> <p>In fact, this range of potential asset operators exists for all manner of current gas processing and pipeline interconnect facilities which exist in the natural gas value chain today. In all existing instances, the operational relationships and commercial gas contracts defining the delivery of NG (and, in the future, NGE) into the downstream pipeline from the processing facility have been sufficient to address any and all safety and commercial operational requirements, including but not limited to the safe provision of gas within the safe allowable gas specification defined by the jurisdiction.</p> <p>Typical contemporary connection agreements across the gas pipeline industry include provisions for both parties to a connection to be able to monitor and action closure of isolation valves from both parties operational asset control rooms in the event that either party to the connection agreement observe the delivery of gas which is outside the safe allowable gas specification. There is no reason to assume that NGE blending facilities will operate any differently from existing gas processing facilities which are responsible for the safe delivery of gas within the safe allowable gas specification today.</p>
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No.	Questions	Feedback
5	<p>Do you think blending facilities should be subject to the same economic regulatory framework that applies to pipelines? Please explain your response to this question.</p>	<p>No. The Proposal that blending facilities may be subject to the same economic regulatory framework that applies to pipelines should be examined carefully in light of Energy Ministers objectives.</p> <p>As detailed in Section 1 of APGA's detailed feedback, Constituent Gas Infrastructure (including blending facilities) will be highly competitive. As identified by the Australian Energy Regulator, <i>the basis for economic regulation of infrastructure is when there are conditions in the market which severely limit effective competition</i>. The application of economic regulation to blending facilities used to create NGEs should be examined carefully in line with the Energy Ministers Objective stating <i>competition and market signals will generally lead to better outcomes than regulation, but if regulation is required, it should be targeted, fit for purpose and proportionate to the issues it is intended to address</i>.</p> <p>The exception to the above is where an otherwise un-covered asset type/component is used to provide a service which effectively forms part of an existing/other pipeline service. In these instances, there is broad precedent for the otherwise unregulated asset type/component to be considered part of the pipeline asset as discussed in APGA's submission cover letter. This correlates with the purpose of economic regulation where a broader pipeline asset combining many components may experience market conditions which severely limit effective competition, while acknowledging that each component type may not experience market conditions which severely limit effective competition in other circumstances where they are not part of a broader pipeline asset.</p> <p>As noted within its cover letter, APGA can envisage a range of simultaneous market conditions in which a one size fits all regulatory approach no longer makes sense. APGA notes that there are a range of options available to policy makers to work flexibility into the existing NGL and broader NGRF to address the range of possibilities mentioned and proposes a handful of these within the cover letter. Recognising that it has yet to form a firm view on the best way to proceed, APGA commits to further discussion on possible options across the coming months.</p>

No.	Questions	Feedback
6	Are there any specific physical characteristics of NG equivalents or the supply chain for these products that you consider should be taken into account when extending the natural gas regulatory framework to NG equivalents?	<p>No.</p> <p>Part of the effectiveness of the potential approach to extending the application of the NGRF is that all regulatory aspects relating to the physical characteristics of NGEs remains in the hands of the jurisdictions. This is where all regulatory aspects relating to the physical characteristics of natural gas currently lay. It is entirely consistent with the Energy Ministers objectives for the extension of the NGRF for regulatory aspects which are currently in the hands of individual jurisdictions to remain in the hands of individual jurisdictions.</p>
7	Are there any other observations you would like to make about the potential approach to extending the application of the NGL to NG equivalents and related facilities and activities?	Please refer to APGA's cover letter for further observations about the potential approach to extending the application of the NGL to NGEs and related facilities and activities.
8	Are there any other changes that you think need to be made to the NGL to accommodate NG equivalents and related facilities and activities?	

No.	Questions	Feedback
Section 4.2.2: Extension to constituent gases and related facilities and activities		

No.	Questions	Feedback
9	<p>What are your views on the proposal to amend the NGL to enable the national gas regulatory framework to apply to the constituent gases and related facilities and activities involved in the supply of NG equivalents (where appropriate to do so) set out in section 4.2.2?</p>	<p>APGA's views are that the proposal to amend the NGL to enable the national gas regulatory framework to apply to the constituent gases and related facilities and activities involved in the supply of NG equivalents as set out in section 4.2.2 should be examined carefully in light of Energy Ministers objectives.</p> <p>As detailed in Section 1 of APGA's detailed feedback, Constituent Gas Infrastructure, including blending facilities and CG pipelines, will be highly competitive. As identified by the Australian Energy Regulator, <i>the basis for economic regulation of infrastructure is when there are conditions in the market which severely limit effective competition</i>. The application of economic regulation to blending facilities used to create NGEs should be examined carefully in line with the Energy Ministers Objective stating <i>competition and market signals will generally lead to better outcomes than regulation, but if regulation is required, it should be targeted, fit for purpose and proportionate to the issues it is intended to address</i>.</p> <p>The exception to the above where an otherwise un-covered asset type/component is used to provide a service which effectively forms part of an existing/other pipeline service. In these instances there is broad precedent for the otherwise unregulated asset type/component to be considered part of that pipeline asset as discussed in APGA's submission cover letter. This correlates with the purpose of economic regulation where a broader pipeline asset combining many components may experience market conditions which severely limit effective competition, while acknowledging that each component type may not experience market conditions which severely limit effective competition in other circumstances where they are not part of a broader pipeline asset.</p> <p>As noted within its cover letter, APGA can envisage a range of simultaneous market conditions in which a one size fits all regulatory approach no longer makes sense. APGA notes that there are a range of options available to policy makers to work flexibility into the existing NGL and broader NGRF to address the range of possibilities mentioned and proposes a handful of these within the cover letter. Recognising that it has yet to form a firm view on the best way to proceed, APGA commits to further discussion on possible options across the coming months.</p>

No.	Questions	Feedback
10	What are your views on the proposal that pipelines involved in the transportation of a constituent gas (e.g. a hydrogen pipeline) be subject to economic regulation under the NGL and NGR?	<p>APGA does not agree that pipelines involved in the transportation of a constituent gas (e.g. a hydrogen pipeline) be subject to economic regulation under the NGL and NGR due to the opportunity for effective competition in both the CG production and CG infrastructure markets.</p> <p>Please refer to APGA's response to Question 9 above as an explanation for this position.</p> <p>APGA proposed approaches to addressing this in the Cover Letter attached to this submission, but notes that it has not come to a firm conclusion of the best possible path forward except for that path to include sufficient flexibility to enable the broad range of possible simultaneous future markets which are expected to arise across the coming decade.</p>
11	Are there any other observations you would like to make about the potential approach to extending the application of the NGL to constituent gases and related facilities and activities?	Please refer to APGA's cover letter for further observations about the potential approach to extending the application of the NGL to constituent gases and related facilities and activities.
12	Are there any other approaches that you think would better achieve the objectives of Energy Ministers (see section E.3)?	As noted within its cover letter, APGA can envisage a range of simultaneous market conditions in which a one size fits all regulatory approach no longer makes sense. APGA notes that there are a range of options available to policy makers to work flexibility into the existing NGL and broader NGRF to address the range of possibilities mentioned and proposes a handful of these within the cover letter. Recognising that it has yet to form a firm view on the best way to proceed, APGA commits to further discussion on possible options across the coming months.
13	Are there any other changes that you think need to be made to the NGL to accommodate constituent gases and related facilities and activities?	

No.	Questions	Feedback
Section 4.2.2: Extension of market bodies' functions and powers		
14	<p>What are your views on the potential approach to extending market body functions and powers set out in section 4.2.3 to:</p> <p>(a) NG equivalents and related facilities and activities?</p> <p>(b) constituent gases and related facilities and activities?</p>	<p>APGA agrees with the potential approach to extending market body functions and powers set out in section 4.2.3 to NGEs as this is core to achieving the Energy Ministers objectives in line with the Energy Ministers principles.</p> <p>APGA raises concerns about potential approach to extending market body functions and powers set out in section 4.2.3 to CGs and related facilities and activities. Fluid NGE markets are more likely to be effective in enable the liquid trade of all gases in the one market. Introducing the possibility of distinct CG and NGE markets has the potential to lead to boundaries in liquid trading of gaseous energy. This approach should be examined carefully in light of Energy Ministers objectives.</p>

15	<p>Do you think arrangements are needed for distribution pipelines attached to the DWGM and STTM to provide for independent management of blending limits (or gas specification requirement) imposed by a jurisdiction? If you think AEMO or another third party should be responsible for this function, please explain what costs and benefits you think would be associated with it doing so.</p>	<p>No. Independent management of blending limits (or gas specification requirement) imposed by a jurisdiction is not necessary and increases risk of composition excursions rather than reduces them. This proposal should be examined carefully in light of Energy Ministers objectives, in particular, the Energy Ministers Objectives principle that <i>if regulation is required, it should be targeted, fit for purpose and proportionate to the issues it is intended to address.</i></p> <p>Management of blending limits (or gas specification requirement) imposed by a jurisdiction or commercial gas contract is part of the day-to-day nature of operations for any gas supply location. Successful composition management is key to being a reasonable and prudent operator of gas infrastructure. There is no reason to believe that unique provisions would be required for the specific subset of 'blending facility' within the full set of all gas supply locations.</p> <p>Evidence of this can be found in the frequency of composition limit excursions experienced by pipeline infrastructure today. All gas processing facilities have the potential to mismanage composition assurance and deliver off specification gas into natural gas infrastructure. Energy Ministers should consider available data indicating the frequency and severity of composition assurance mismanagement before introducing regulation to manage composition assurance mismanagement – in doing so, they will find that occurrences are rare and negative impacts to customers are even rarer.</p> <p>Where AEMO is already the primary operator of a pipeline, such as is the case for the Victorian Declared Transmission System, it is appropriate for AEMO to be responsible for this function. Otherwise, it would not be appropriate for AEMO or another third party to be responsible for this function above and beyond the service provider being responsible for this function.</p> <p>Additionally, the practical implications of this proposal need to be considered. Were a third party to be responsible for this function, this would result in a second point of control for all blending facility locations which is separate from the primary service provider point of control. Not only would this be a breach of fundamental 'single point of control' philosophy for the safe operation of gas infrastructure, but the secondary point of control would be disconnected from the broader operation of the infrastructure, risking simultaneous operations</p>
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No.	Questions	Feedback
		<p>misalignment between the service provider and the third party responsible for the function of blending.</p> <p>These aspects would combine to increase safety and composition assurance risk, rather than decrease these risks, as well as leading to the additional expense of duplications of capability which would ultimately be passed on to the customer.</p>
16	Are there any other changes to market body functions and powers required to accommodate NG equivalents, their constituent gases, or related facilities and activities?	
17	Are there any other approaches that you think would better achieve the objectives of Energy Ministers?	
Section 4.3: Potential approach to extending the NERL		
18	What are your views on the potential approach to extending the application of the NERL to NG equivalents set out in section 4.3?	The potential approach to extending the application of the NERL to NGEs set out in section 4.3 contemplates applying the NERL to NGEs in the exact same manner as the NERL is applied to natural gas. As such, APGA considers that the approach achieves the objectives of Energy Ministers in Section E.3 of the Officials Paper.
19	What are your views on the potential approach to extending the AER's and AEMC's functions and powers under the NERL to NG equivalents set out in section 4.3?	The potential approach to extending AER's and AEMC's functions and powers under the NERL to NGEs set out in section 4.3 contemplates extending AER's and AEMC's functions to NGEs in the exact same manner as the extending AER's and AEMC's functions are applied to natural gas. As such, APGA considers that the approach achieves the objectives of Energy Ministers in Section E.3 of the Officials Paper.
20	Are any other changes to the NERL or the market bodies' functions and powers under the NERL required to accommodate NG equivalents?	
21	Are there any other approaches that you think would better achieve the objectives of Energy Ministers (see section E.3)?	

Chapter 5: Accommodating other gas products in the NGL and NERL over time

No.	Questions	Feedback
Section 5.1: Potential approach to accommodating other gas products in the NGL		
22	What are your views on the potential approach to allowing the NGL to accommodate OG products over time, as described in section 5.1?	APGA contends that the potential approach to allowing the NGL to accommodate Other Gas Products (OGPs) over time, as described in section

		<p>5.1, requires some refinement beyond its current framing to achieve the objectives of Energy Ministers in Section E.3 of the Officials Paper.</p> <p>In particular, APGA references the Energy Ministers Objectives principle that <i>competition and market signals will generally lead to better outcomes than regulation, but if regulation is required, it should be targeted, fit for purpose and proportionate to the issues it is intended to address.</i></p> <p>APGA recognises that the potential approach to allowing the NGL to accommodate Other Gas Products (OGPs) only allows for accommodation of OGP's under the NGL, rather than immediately applying the NGL to any OGP.</p> <p>APGA considers it important that an OGP inclusive NGL be clear about the boundaries within which a jurisdiction can define an OGP. This will be critical for investor certainty in what is or is not potentially open to being brought into regulation as an OGP asset. The Officials Paper hints towards this, noting that an OGP may in future be supplied to consumers for use in appropriate appliances. Ensuring that only the compositional aspects of the NGL definition of natural gas are differed from when creating the new NGL OGP definition will be key reflecting the policy intent set out in the Energy Ministers Objectives – aspects under item (a) and (c) of the current definition of Natural Gas will need to be maintained in the definition of OGP.</p> <p>As detailed in Section 1 of APGA's submission cover letter, there is the potential for OGP infrastructure to be subject to the economic regulatory frameworks found within the NGL in the presence of effective competition.</p> <p>APGA can envisage a range of simultaneous market conditions in which a one size fits all regulatory approach no longer makes sense. APGA notes that there are a range of options available to policy makers to work flexibility into the existing NGL and broader NGRF to address the range of possibilities mentioned and proposes a handful of these within the cover letter. Recognising that it has yet to form a firm view on the best way to proceed, APGA commits to further discussion on possible options across the coming months.</p>
23	<p>Could amending the NGL in the manner described in section 5.1 lead to any unintended consequences? If so, please explain what those unintended consequences may be.</p>	<p>Yes, amending the NGL in the manner described in section 5.1 could lead to unintended consequences in the event that the economic regulatory frameworks found within the NGL are applied in the presence of effective competition.</p>

		Please refer to the answer to Question 22 with relation to this response.
24	What are your views on the proposal to apply the economic regulatory provisions to pipelines involved in the haulage of OG products and their constituent gases?	Please note that APGA responses to answers 9 through 12 also apply to OGPs as detailed within APGA's submission cover letter.
25	Are any other changes to the NGL required to accommodate OG products?	
26	Are there any other approaches that you think would better achieve the objectives of Energy Ministers (see section E.3)?	
Section 5.2: Potential approaches to accommodating other gas products in the NERL		
27	What are your views on the potential approach to allowing the NERL to accommodate OG products, as described in section 5.2?	To the extent that an OGP is involved in the retail supply of energy to customers, and to the extent that the potential approach does not contradict the second potential approach, the potential approach to allowing the NERL to accommodate OGPs as described in section 5.2 enables the NERL to accommodate OGPs in the same way as natural gas is accommodated. As such, APGA considers that the approach achieves the objectives of Energy Ministers in Section E.3 of the Officials Paper.
28	What are your views on the second potential approach to allowing the NERL to accommodate OG products, as described in section 5.2?	Ensuring that the second potential approach is an available option for jurisdictions with regard to OGPs as is available for natural gas would also be consistent with the objectives of Energy Ministers in Section E.3 of the Officials Paper.
29	Could amending the NERL in the manner described in section 5.2 lead to any unintended consequences? If so, please explain what those unintended consequences may be.	
30	Are any other changes to the NERL required to accommodate OG products?	
31	Are there any other approaches that you think would better achieve the objectives of Energy Ministers (see section E.3)?	