APGA Submission

Extending the NGRF to hydrogen and renewable gases and blends

Proposed changes to NGL, NERL and National Regulations

Consultation

19 May 2022

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1 Executive Summary

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 consultation on *Extending the national gas regulatory framework to hydrogen and renewable gases and blends Proposed changes to NGL, NERL and National Regulations Consultation Paper* (the **Officials Paper**) and the *Public consultation draft National Energy Laws Amendment (Other Gases) Bill 2022* (the **Draft Legislation**).

Throughout this submission APGA will refer to pure hydrogen and pure renewable gas transmission pipeline infrastructure which is not part of a declared system (as opposed to infrastructure carrying a blend) as **renewable gas transmission pipelines.** Further, APGA will refer to **efficiently designed pipelines** throughout this submission. While regulators, governments, investors, and customers will all have different views on what an efficiently designed pipeline is, APGA refers to the lower costs for customers achieved through economies of scale in pipeline design as described in Section 3.1 of this submission.

It is APGA's vision to enable the least cost, most rapid development of a hydrogen and renewable gases industry in Australia. This will be enabled by development of widely deployed hydrogen and renewable gas infrastructure, benefiting from economics of scale, offering competitive services to the new and existing markets. APGA envisages a National Gas Law (NGL) which supports investment in hydrogen and renewable gas infrastructure through which competitive hydrogen and renewable gas production and retailing markets can develop.

APGA's vision is aligned with the intent stated within the Officials Paper. APGA supports provisions which bring hydrogen and other renewable gases into the National Gas Objective (NGO), enable the uptake of blended gases in all gas infrastructure, enable the uptake of pure hydrogen and other pure renewable gases in distribution infrastructure and declared transmission systems, and coverage of hydrogen and other renewable gases under the NERL.

APGA is concerned that the Draft Legislation proposes to treat pure hydrogen and other pure renewable gas transmission pipelines exactly as if they were natural gas transmission pipelines. This approach does not recognise some fundamental differences between hydrogen and renewable gases and natural gas:

- Hydrogen and renewable gases are manufactured products. Natural gas is an extracted resource. Manufactured products have much greater flexibility in location and thus infrastructure service markets such as transport and storage are expected to be more competitive than natural gas infrastructure markets. This means there will be significant constraints on any market power possessed by hydrogen infrastructure owners.

- Hydrogen and renewable gas markets do not currently exist. The risks faced by infrastructure service providers to hydrogen and renewable gas markets are materially different to those faced by infrastructure service providers to natural gas markets. The needs of producers and users of hydrogen and renewable gases are likely to be different as well.

In treating hydrogen and renewable gas pipelines exactly the same as natural gas pipelines, the Draft Legislation exposes this new infrastructure to the same risk that regulatory intervention, either through arbitration or price setting, will materially alter the risk profile of an investment. Investors are likely to mitigate this risk by building infrastructure to meet contractable demand. This is a wide-spread practice that works in a mature market like natural gas but is less than optimal when seeking to rapidly develop a new market such as the case for hydrogen and renewable gases.

Renewable gas transmission pipelines becoming subject to the NGL

The importance of economies of scale

Infrastructure regulatory frameworks present risks to investors and it is very difficult to manage the needs of infrastructure service providers and users. This is often managed through the introduction of a greenfield protection for new infrastructure. The NGL is no exception, and a new greenfield exemption is proposed.

It is appropriate that the potential of the regulatory regime to impede investment through regulatory risk is acknowledged and options to limit this are investigated. Given investment in emerging markets already presents challenging risks to investors, any action to reduce regulatory risk will support essential infrastructure investment.

APGA's concerns about renewable gas transmission pipelines becoming subject to the NGL in all circumstances are founded on the core principle that the regulatory framework should look to deliver economies of scale to the market.

Efficiently sized transmission pipelines are the least cost energy transport pathway for pure hydrogen and other pure renewable gases

Energy transport and storage costs decrease as the size of infrastructure increases. To support an emerging hydrogen and renewable gases market, this means that it will often be a more efficient option to build assets with spare capacity.

The NGL increases regulatory risk for transmission pipelines, making them less likely to build uncontracted capacity

The NGL reduces revenue certainty for investments in pipelines beyond capacity secured under foundation contracts. It does so by allowing spare capacity to be open to arbitration under the future Non-Scheme form of regulation, or to price setting under the future Scheme form of regulation. Both forms of economic regulation impede investments in uncontracted capacity as future revenues receivable for the capacity can be subject to significant regulatory uncertainty. Without revenue certainty, future rates of return cannot be known which impedes the ability to make an investment decision to build uncontracted capacity.

Making renewable gas transmission pipelines subject to the NGL risks impeding development of transmission pipelines with spare capacity
The regulatory risk introduced by making renewable gas transmission pipelines subject to the NGL makes it harder to build uncontracted capacity. These investments will already be more risky than natural gas pipelines as:

- They face greater by-pass risk if new production facilities are built closer to market.
- They face greater uncertainty as the future success of the market is unknown.

Only renewable gas transmission pipelines which are fully contracted will have revenue certainty and hence these are the investments most likely to reach Final Investment Decision (FID).

Impeding investment in renewable gas transmission pipelines with uncontracted capacity will result in higher costs for customers and could lead to inefficient infrastructure duplication
If the NGL discourages investments in renewable gas transmission pipelines with uncontracted capacity, smaller, less efficient, and more expensive transmission pipelines are more likely to be developed.

By reducing the likelihood of investment in pipelines with uncontracted capacity, not only will all customers have to pay more than necessary for smaller, less efficient infrastructure or more costly infrastructure upgrades, each new producer will either require upgrading of existing infrastructure or the inefficient duplication of existing infrastructure to access spare capacity. Both pathways will take longer and will be more expensive than accessing spare capacity within efficiently sized transmission infrastructure, and all hydrogen and renewable gas customers will pay more for energy transport services as a result.

A framework that enables the development of renewable gas transmission pipelines with uncontracted capacity will deliver more competitive and lower cost markets.
The hydrogen and renewable gas markets of the future will be more competitive and lower cost if infrastructure service providers are actively competing to secure users for uncontracted capacity on transmission pipelines. Regarding competition, infrastructure service providers will be actively seeking users for uncontracted capacity and will be competing with other service providers with uncontracted capacity. Regarding cost, the unit cost of services decreases as infrastructure size increases, so building larger infrastructure results in lower cost.

These two outcomes, arising from the building of uncontracted capacity, will support the development of hydrogen and renewable gas markets in Australia.

Recommended Solution

APGA recommends that renewable gas transmission pipelines which are not part of a declared system simply not be made subject to the NGL at this point in time. This would be APGA's preferred solution.

It is foreseeable that not addressing investment risk introduced by renewable gas transmission pipelines being subject to the NGL could result in infrastructure developers seeking individual derogations from the NGL for each individual infrastructure project.

Automatic application of the Greenfield Incentive with Price Protection for all renewable gas transmission pipelines
APGA acknowledges that there may not be a simple way to ensure that renewable gas transmission pipelines do not become subject to the NGL while ensuring that the positive aspects of the draft legislation remain intact.

The Greenfield Incentive with Price Protection may address the majority of identified investment risk if applied to renewable gas transmission pipelines. However, the Greenfield Incentive with Price Protection is not guaranteed under the NGL and requires significant regulatory capability to engage with. The availability of the Greenfield Incentive with Price Protection alone may not be sufficient to avoid the dissuasion of potential investors in renewable gas transmission pipelines.

For the Greenfield Incentive with Price Protection to be a genuine protection against the negative impacts becoming subject to the NGL it should be automatically applied to all renewable gas transmission pipelines which are not part of a declared system. Automatic application would help to address the risk of the Greenfield Incentive with Price Protection not being guaranteed and send a strong signal to potential investors of government support for the development of new renewable gas transmission pipelines.

This would allow investors to fully investigate the building of uncontracted capacity and make it more likely that larger size transmission pipelines are built to serve hydrogen and renewable gas markets.

Blending Processing Facilities subject to ringfencing provisions and a lighter form of economic regulation

APGA proposes further engagement on Chapter 5.a. of the Draft Legislation in particular with relation to the application of ringfencing provisions and a third-party access regime to Blend Processing Facilities.

APGA's concerns lie in two conflicting analogies under which to consider how to best regulate Blend Processing Facilities.

- **Gas Processing Facility analogy**
  Leads to application of ringfencing provisions but no third-party access regime; and
- **Interconnect Facility analogy**
  Leads to the application of a third-party access regime when part of a pipeline but no ringfencing provisions.

APGA raises one potential solution which could recognise all aspects of these analogies more wholistically:

- Not applying ringfencing provisions to Blend Processing Facilities;
- Considering a Blend Processing Facility service a pipeline service when a Blend Processing Facility is part of a pipeline;
- Allowing for third party Blend Processing Facilities to be developed under the same regulatory regime as a Gas Processing Plant; and
- Undertake a future review and consultation if deemed necessary to consider whether the application of a third-party access regime is necessary for Gas Processing Plant

and Blend Processing Facilities, potentially similar to the manner undertaken in the October 2021 *Options to advance the east coast gas market* consultation.

APGA invites further conversation on the intersection of the analogies relative to Blend Processing Facilities in order to support Energy Minsters in developing a regime suitable regime.

AER application of Class Orders

Enabling the Australian Energy Regulator (AER) to impose Class Orders risks inappropriate application of orders where a service provider is inappropriately captured within a class. This risk is noted in the AEMC Draft Report but in relation to Class Exemptions. APGA flags that the same risk applies to Class Orders, except that this risk is greater considering that the inappropriate application of regulation is in the context of these developing markets is likely to give rise to higher costs to consumers in the long term than the inappropriate absence of regulation.

APGA recommends that the ability for the AER to apply Class Orders not be implemented under the NGL.

2 Introduction

It is APGA's vision to enable the least cost, most rapid development of a hydrogen and renewable gases industry in Australia. This will be enabled by development of widely deployed hydrogen and renewable gas infrastructure, benefiting from economics of scale, offering competitive services to the new markets. APGA envisages a National Gas Law (NGL) which supports investment in hydrogen and renewable gas infrastructure through which competitive hydrogen and renewable gas production and retailing markets can develop.

In this vision, the blending of limited quantities of hydrogen and other renewable gases into distribution networks is a critical first step in renewable gas industry development. But this is only the beginning of a second renewable energy revolution in Australia. Beyond the first instances of renewable gas blending, it will fast become necessary to undertake lower cost wholesale production of renewable gases to supply the maximum safe blending and eventual 100% transition to renewable gas use. This will only represent the least cost pathway for gas use decarbonisation if all aspects of the hydrogen and renewable gas supply chain are optimised to deliver the lowest cost for customers.

Technoeconomic analysis and history from the natural gas pipeline industry demonstrate that the least cost energy transmission pathway for delivering wholesale quantities of hydrogen and renewable gases will be via hydrogen and renewable gas pipelines[1]. Further, transporting hydrogen and renewable gases via larger pipelines will cost customers less per unit energy delivered than transporting hydrogen and renewable gases via smaller pipelines.

APGA's vision for the least cost, most rapid development of a hydrogen and renewable gases industry in Australia requires investment in hydrogen and renewable gas pipeline infrastructure which is able to be built with uncontracted capacity benefiting from economies of scale.

A competitive production and retail market for hydrogen and renewable gases is mostly likely to arise as fast as possible if it is supported by investment in speculative capacity in renewable gas transmission pipeline infrastructure. A National Gas Law which enables investment in pipelines with uncontracted capacity, bringing the benefits of economy of scale to the market, will promoting the long-term interests of consumers.

Energy Officials' proposed approach, as currently drafted, is likely to encourage investment decisions which mitigate regulatory risk to investors, with transmission pipelines sized to meet contractable demand only. This is likely to lead to the slower development of the market, with high costs of infrastructure services for market participants.

[1] Pipelines vs Powerlines: A Summary, Australian Pipelines and Gas Association 2022 https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/pipelines_vs_powerlines_-_a_summary.pdf

2.1 Cost-Efficient Transmission Pipeline Sizing

A larger diameter pipeline provides energy transport services at a lower cost than a smaller diameter pipeline on a cost per unit energy basis[2].

The NGO seeks to promote the long-term price interests of consumers. As such, the National Gas Regulatory Framework should enable the development of larger pipelines rather than smaller pipelines, where this is the most efficient option.

For the emerging hydrogen and renewable gas industries, it is apparent that the markets will grow over time. It is desirable to encourage infrastructure service providers to invest in pipelines sized for future demand for services rather than the smaller demand at the time of investment. Ideally, investors will invest in uncontracted capacity, for which there is no current demand. In this way, the unit costs of services are lower and future customers will have faster access to infrastructure services rather than needing them to be custom built.

In order to develop more cost-efficient pipeline infrastructure in these circumstances, pipeline investors are required to take on the risk that customers may not arise or that markets will not grow. This is a significant risk that must be managed carefully, with investors well placed to understand their own risk appetite and the returns that must be delivered to justify taking the risk. The prospect of the regulatory framework influencing these returns limits the ability of investors to justify taking the investment risk of building uncontracted capacity.

An NGL will better serve the long-term interests on consumers if it provides a framework that makes investment in uncontracted capacity more likely rather than less likely.

2.2 How the natural gas pipeline industry got started and the differences with a privatised infrastructure industry

Early natural gas pipeline infrastructure was developed predominantly through development by State and Territory Governments prior to the eventual privatisation of the gas infrastructure industry. When building natural gas transmission pipelines, jurisdictions would not only invest in pipelines sized for the potential customers of the day. Rather, they would size pipelines for future gas transport customers which could be expected to arise in proximity of the infrastructure developed in the future. In other words, jurisdictions invested in uncontracted capacity.

Jurisdictions were able to invest in uncontracted capacity because the justification for their investments included advancement of the natural gas industry and hence the broader economy within their jurisdictions. Private companies do not have the same ability to invest in infrastructure for this greater jurisdictional good, instead being legally obliged to act in the best interests of shareholders.

This does not mean that private companies cannot invest in uncontracted capacity. This simply means that private companies need to be able to mitigate the risks of making these

[2] This is elaborated on in more detail in Section 3.1 below.

investments. This is a very important distinction in the makeup of the historical and modern pipeline industries.

Recognising the additional risk carried by private enterprise while wanting new renewable gas transmission pipeline infrastructure to be developed, jurisdictions need to consider the impact that the proposed approach would have on a private pipeline industry. Do they take the industry closer to the circumstances which allowed for early natural gas infrastructure to be developed, or do these changes take the modern industry further away?

2.3 Hydrogen and other renewable gases are different from natural gas

Hydrogen and other renewable gases display two significant differences in comparison to natural gas which are relevant to the NGL - Hydrogen and renewable gases are manufactured products; and Hydrogen and renewable gas markets do not currently exist.

2.3.1 Hydrogen and renewable gases are manufactured products

Being a manufactured product, hydrogen and renewable gases poses one competitive advantage which natural as does not – locational flexibility. Natural gas production is constrained to locations where natural gas exists. Manufacturing of hydrogen and renewable gases however can occur across a much greater range of locations in Australia.

While the locational flexibility of hydrogen and renewable gas production is not infinite, it is only constrained by commercial factors, rather than the physical factors constraining natural gas production. For example, it is not only commercially impractical to drill a gas well from the Canberra CBD to the natural gas reservoirs in the Bass Strait, it is not physically possible. In comparison, the Canberra CBD may not be the most commercially viable location to producing hydrogen, but it is physically possible. In fact, it is physically possible to produce hydrogen anywhere in Australia, if not commercially viable, through transporting the necessary components to any location.

This locational flexibility creates a different circumstance for associated infrastructure industries. Due to these differences in circumstances, APGA does not consider it appropriate to consider the hydrogen and renewable gas transmission pipeline industry to behave in the same way as the natural gas industry today. On this basis it does not make sense to apply the same economic regulation as is applied to the natural gas industry today.

2.3.2 Hydrogen and renewable gas markets do not currently exist

The hydrogen and renewable gas market however is in its infancy. This provides a very different set of risks for private investment in hydrogen and renewable gas production and transport compared to the risks facing the mature natural gas market, and it would be reasonable to consider the risks of investment in a new market as being higher than the risks involved in investing in a mature market.

The result of this is slower investment than seen in a mature market. This is reflected in the diffusion of innovation curves seen in industries such as the solar PV industry. New industries develop slowly at first, but as investment experience grows so does investment certainty and hence the pace of investment which leads to market maturity.

The hydrogen and renewable gas production and infrastructure industries are at the very start of this process. While changes within the proposed approach seek to reduce investment risk in the production sector, it seeks to increase investment risk in the infrastructure sector. The introduction of additional risk in a burgeoning renewable gas infrastructure industry is the opposite of what is needed to ensure the least cost, most rapid development of hydrogen and renewable gas infrastructure in all Jurisdictions.

3 Regulation of renewable gas transmission pipelines

APGA is concerned that making renewable gas transmission pipelines subject to the NGL in all circumstances will undermine the least cost, most rapid development of the hydrogen and renewable gas industry in Australia.

While the ultimate solution would be to ensure that renewable gas transmission pipelines are not subject to the NGL in all circumstances, APGA proposes additional solutions reflecting the Draft Legislation as it currently stands.

3.1 The importance of economies of scale

3.1.1 Efficiently sized transmission pipelines are the least cost energy transport pathway for pure hydrogen and pure renewable gases

In February 2022 APGA released a study which investigated the least cost energy transport and storage pathway for renewable gases. This study derived two important conclusions. Both methane and hydrogen transmission pipelines were found to be able to provide energy transport services at a lower cost per unit energy compared to HVAC or HVDC powerlines (Figure 1).

Doubling the diameter of a circle or cylinder quadruples the surface area of that circle or the volume of that cylinder. This principle applies to the geometry of pipeline infrastructure and is the reason why larger pipelines provide cheaper transport services than smaller pipelines. This is because pipeline construction costs tend to increase in relation to pipeline diameter but capacity increases with relation to pipeline volume. The GPA study provides a demonstration of this relationship between pipeline size and transport costs (Figure 2).

3.1.1.1 Infrastructure Upgrade

An existing pipeline can increase its capacity by investing in infrastructure upgrades. This can come in the form of pipeline looping, midline compression, or a combination of the pair.

Pipeline looping can be reasonably assumed to cost more than if the pipeline had originally been designed for a higher flow rate. This is due to the relationship between circumference and surface area of the circular cross section of a pipe. For every doubling of the circumference of a pipeline, the surface area of the circular cross section quadruples. This result in a quadrupling of the throughput capacity of the pipeline and generally only costs around twice that of the original pipeline.

To achieve quadruple the throughput capacity compared a theoretical ‘original’ pipeline, the design could either be changed to a single pipeline with double the circumference compared to the original, or four parallel pipelines at the original circumference. The option of installing four parallel pipelines is clearly more capitally intensive compared to designing a single efficiently sized pipeline in the first place. It follows that to loop an existing pipeline to introduce a new customer would cost more for both customers compared to if the original pipeline was designed with spare capacity which the second customer could contact at a later date.

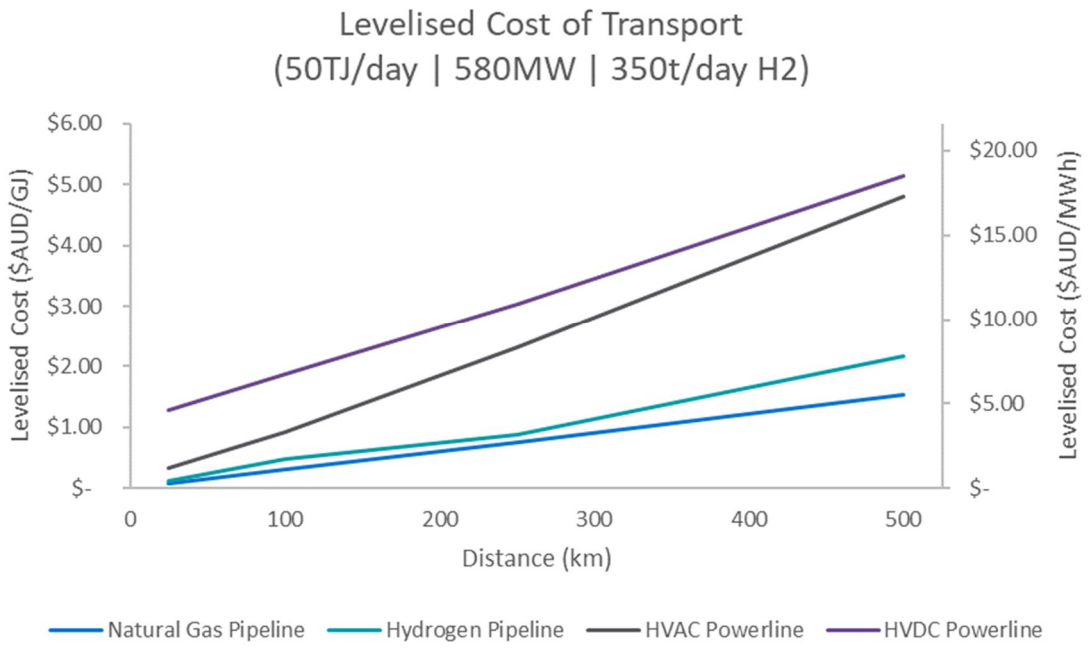

Figure 1: Levelised Cost of Energy Transport
(Throughput Capacity of 50TJ/day = 580MW = 350t/day H2)[3]

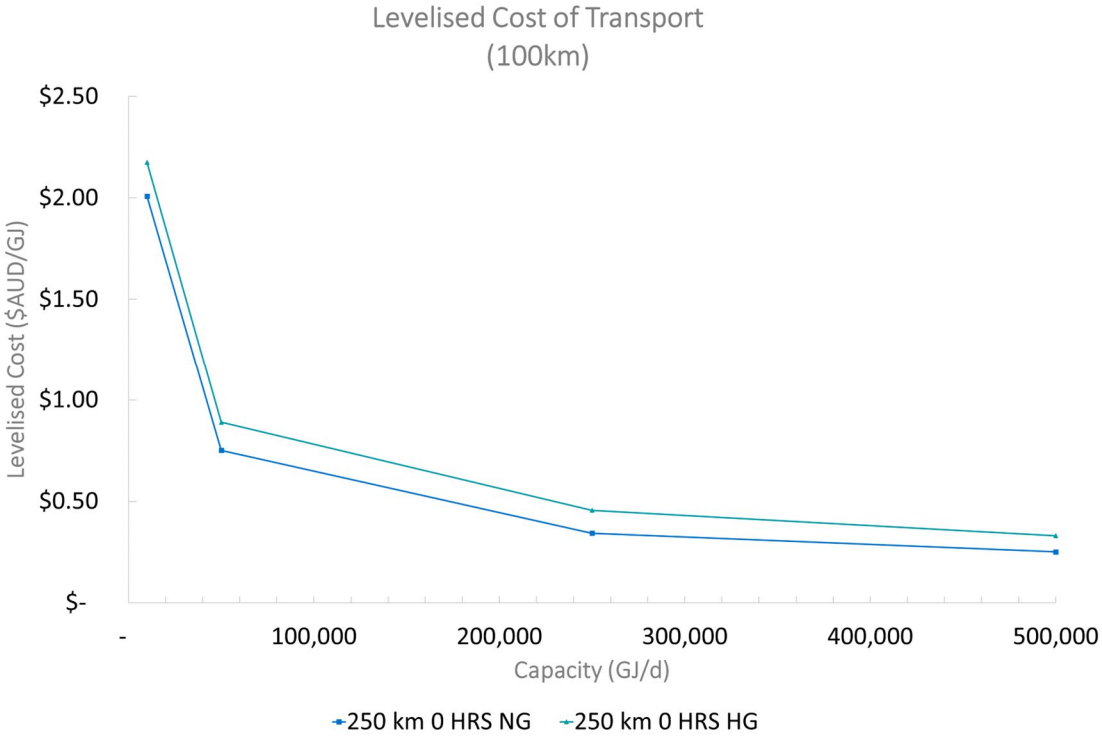

Figure 2: Levelised Cost of Energy Transport via Hydrogen or Methane Pipeline
(100km transport distance)

[3] Pipelines vs Powerlines – Appendix 3A and 3B Results Summary
https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/appendix_3a_and_3b_results_summary.xlsx

More complex than the geometric explanation for why pipeline looping costing more than including spare capacity in original pipeline design is the basis for compression upgrades costing more than including spare capacity in original pipeline design. This can be demonstrated however through sensitivity analysis undertaken as part of the Pipelines vs Powerlines study published in February 2022[4].

Within this sensitivity analysis, GPA Engineering compared technoeconomic analysis of hydrogen and methane pipelines delivering equivalent volumes over equivalent distances but comparing one key design feature – installing a larger diameter pipeline with no midline compression or a smaller diameter pipeline with a single midline compressor. This analysis clearly shows that the larger pipeline without midline compression was the least cost option.

This data can be used as a proxy for an original pipeline being upgraded by adding compression. By costing more than the larger pipeline without compression, this demonstrates that both pipeline customers are paying more than would otherwise be necessary if this original pipeline were designed with spare capacity for the second customer to contract at a later date.

When a pipeline upgrade occurs, the pipeline service provider will identify the least cost combination of these two upgrade options. However, it will always cost the new customer more to upgrade the pipeline compared to if the pipeline had originally been designed to include uncontracted capacity for the new customer to contract at a later date. Further, the original customer would also be paying more for pipeline services by having contracted capacity through a smaller, less cost-efficient pipeline in the first place.

3.1.1.2 Infrastructure Duplication

Taking the pipeline looping option from Section 3.1.1.1 above to its extreme conclusion, third option that the subsequent customer has at their disposal is to duplicate the original transmission pipeline infrastructure through either the same or an alternative pipeline service provider. Not only does this result in infrastructure duplication, recognizing that a single larger pipeline is more cost-efficient than two smaller pipelines for the same throughput capacity leads to the conclusion that this result in inefficient infrastructure duplication.

3.1.2 The Draft Legislation risks impeding investment in uncontract transmission capacity

An investor requires a sufficient degree of revenue certainty upon which to base its Final Investment Decision (FID) to build a new pipeline. Revenue certainty is able to be secured through commercial gas contracts prior to reaching FID. If an investor requires absolute revenue certainty, the pipeline will be sized only to meet contractable demand at the time of investment. These contracts are called foundation contracts. The regulatory framework

[4] Pipelines vs Powerlines: A Technoeconomic Analysis in the Australian Context, GPA Engineering 2022
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

does not interfere with commercial contracts, so a pipeline sized only to meet foundation contracts will not face regulatory risk until foundation contracts expire.

This is not the case when investing in pipelines designed to include uncontracted capacity beyond the capacity required by foundation shipper(s). In the absence of the NGL, a pipeline investor could secure sufficient revenue certainty over part of the investment via commercial gas contracts prior to reaching FID and from there determine the likelihood of additional customers arising across the life of the asset. The possibility of additional customers not arising does introduce revenue risk, however a sufficiently high likelihood of further customer interest can be combined with an ability to set prices that reflect the investment risk to achieve sufficient revenue certainty to proceed with FID.

Being subject to the NGL introduces a second source of revenue uncertainty for investors seeking to invest in uncontracted capacity – price uncertainty arising from regulatory intervention. Under the Draft Pipeline Legislation[5], both the Non-Scheme and Scheme forms of regulation under the NGL introduce price uncertainty arising from regulatory intervention for uncontracted capacity. While price setting under the Scheme for of regulation more aggressively erodes price certainty, exposure to the arbitration framework also erodes price certainty for investors.

When considering investment in uncontracted capacity while subject to the NGL, transmission pipeline investors need to consider both the likelihood of additional customers *and* the likelihood that tariffs sufficient to achieve necessary returns on investment to justify FID (hurdle rate) could be secured. With tariffs no longer only set through negotiation with customers alone, certainty of being able to secure sufficient tariffs reduces due to the possibility of arbitration or price setting reducing prices. This risk presented by price uncertainty significantly increases the risk of investing in spare capacity by multiplying with the risk that additional customers may not arise.

The combination of customer risk and price risk together reduces the likelihood of investment in spare capacity significantly when compared to the likelihood of investment in spare capacity where only customer risk exists (ie without being subject to the NGL).

3.1.2.1 Greenfield Incentive and Price Protection

The risk to transmission pipelines investment due to being subject to the NGL is evidenced by the existence of the Greenfield Incentive and the associated Price Protection Mechanism.

Both address the erosion of revenue certainty under the NGL by providing tariff price certainty for new transmission pipeline investments which include spare capacity. Protecting greenfield investors from the negative impacts of price setting via the Greenfield incentive is reasonably well understood. The new Price Protection Mechanism being introduced through Draft Legislation later this year also addresses the erosion of revenue certainty by protecting tariff pricing for services equivalent to those provided under foundation contracts.

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Importantly, neither the Greenfield Incentive nor the Price Protection Mechanism are guaranteed. The default position of the NGL is for these protections to not apply, and application requires significant regulatory capability to engage with. As such, their existence does not remove the risk to investment imposed by making transmission pipelines subject to the NGL. Rather, it provides the possibility that the risk to investment may or may not be able to be mitigated via the mechanisms provided.

3.1.3 Making renewable gas transmission pipelines subject to the NGL risks impeding development of transmission pipelines with uncontracted capacity

The price risk introduced by making investments in transmission pipelines inclusive of spare capacity subject to the NGL will carry across to renewable gas transmission pipelines if they become subject to the NGL. As such, revenue certainty and hence investment certainty will be reduced in renewable gas transmission pipelines designed to include uncontracted capacity.

This will result in a larger gap in revenue certainty between renewable gas transmission pipelines with and without uncontracted capacity. As a result, the relative probability of achieving FID on renewable gas transmission pipelines with and without spare capacity will change in favour of pipelines without spare capacity.

The result of foundation-customer-only new pipelines being favoured over new pipelines with spare capacity is that smaller pipelines will be favoured over larger pipelines. As detailed in Section 3.1 above, larger pipelines are more cost-efficient at transporting hydrogen and methane compared to smaller pipelines. Not only will making renewable gas transmission pipelines subject to the NGL reduce the relative likelihood of investment in uncontracted pipeline capacity, but the pipelines that are built will be less cost-efficient than if they were built with additional uncontracted capacity.

3.1.4 Building uncontracted capacity delivers lower cost infrastructure services and limits inefficient duplication

Investment in smaller, less cost-efficient renewable gas transmission pipelines will clearly result in higher energy transport prices, and hence higher hydrogen and renewable gas cost for customers. However, this is not the only way in which making renewable gas transmission pipelines subject to the NGL could result in higher costs for customers and even inefficient infrastructure duplication.

Without any spare capacity, new hydrogen or renewable gas producers in proximity to a newly commissioned renewable gas transmission pipeline would have one of two options to secure transport to market. Infrastructure upgrade or infrastructure duplication. As detailed in Section 3.1 above, each of these options result in a higher cost of transport for customers.

3.1.5 The presence of spare capacity is likely to accelerate market development

Increasing the relative probability of developing inefficiently sized renewable gas transmission pipelines without spare capacity risks impeding development of competitive hydrogen and renewable gas production and retailing markets in two ways – by increasing barriers to market entry, and by increasing costs to customers.

Firstly, markets are more likely to develop faster if they have low costs of entry and few barriers to entry. A market than unutilised capacity for infrastructure services will be easier for new entrants to participate in.

Secondly, by incentivising smaller, less cost-efficient renewable gas transmission pipelines, energy transport costs will be higher than necessary. In a burgeoning renewable energy industry struggling against high prices to develop, every layer of unnecessary cost increases the cost of hydrogen and renewable gases to customers and impedes the development of a thriving hydrogen and renewable gas industry.

3.2 Recommended Solution

APGA recommends that renewable gas transmission pipelines which are not part of a declared system simply not be made subject to the NGL. For the avoidance of doubt, this would be APGA's preferred solution.

It is foreseeable that not addressing investment risk introduced by renewable gas transmission pipelines being subject to the NGL could result in infrastructure developers seeking individual derogations from the NGL for each individual infrastructure project.

APGA acknowledges however that there may not be a simple way to ensure that renewable gas transmission pipelines do not become subject to the NGL while ensuring that the positive aspects of the draft legislation remain intact. In lieu of the ability to effectively draft legislation without unintended consequences, APGA proposes protections be automatically applied to mitigate the risk of the NGL negatively impacting the development of the least cost, most rapid development of a competitive hydrogen and renewable gases industry in Australia.

Noting the potential concerns which automatic proposals may raise, APGA would recommend a review of automatically applied protections on a five-year basis and in 2030 to ensure that a basis for applying economic regulation still has not arisen. In the event that a genuine observed a basis for economic regulation arises, APGA proposes that a full regulatory review and regulatory impact statement considering whether observed conditions warrant making renewable gas transmission pipelines subject to the NGL or some other more targeted form of economic regulation would result in the greatest net value for Australia.

3.2.1 Automatic application of the Greenfield Incentive with Price Protection for all renewable gas transmission pipelines

For the Greenfield Incentive with Price Protection to be a genuine protection against the negative impacts becoming subject to the NGL it must be automatically applied to all renewable gas transmission pipelines which are not part of a declared system.

4 Blend Processing Facilities subject to ringfencing provisions and a lighter form of economic regulation

The lighter form of economic regulation proposed to apply to Blend Processing Facilities within the Official's Paper seeks to provide protections for access seekers in relation to information transparency, a requirement for the facility owner to negotiation in good faith and a prohibition on the hindering of access.

APGA questions the approaches proposed under Chapter 5.a. of the proposed approach as there appears to be significant uncertainty and differences in opinion around where Blend Processing Facilities will sit in the future gas market. In particular, there are two facility types which exist in the pipeline industry today which are in ways analogous to a Blend Processing Facility:

- Gas Processing Plant
- Pipeline Interconnect Facility

APGA recommends that greater consideration and understanding is needed before implementing Chapter 5.a. due to the fact that these two analogous facility types are subject to very different forms of regulation under the NGL.

4.1 Gas Processing Plant

A Blend Processing Facility is analogous to a Gas Processing Plant as both are currently excluded from the definition of a pipeline under the NGL. Due to this, both are not subject to pipeline economic regulation under the NGL. This similarity to a Gas Processing Plant has been used in Box 3.c. to justify the implementation of ringfencing provisions to separate Blend Processing Facility service providers from Pipeline service providers.

However, this is not the only conclusions that can be drawn through this analogy. The October 2021 *Options to advance the east coast gas market* consultation undertaken on behalf of Energy Minsters flagged potential further consideration of whether a Gas Processing Plant should become subject to a third-party access regime similar to that being applied to Blend Processing Facilities within the proposed approach. The consensus of submissions to the *Options to advance the east coast gas market* consultation was to not apply a third-party access regime to Gas Processing Plant.

APGA questions whether an analogue strong enough to propose the application of ringfencing requirements should also be strong enough to carry the results of consensus from submissions that the application of a third-party access regime should not be applied to Gas Processing Plant or analogous Blend Processing Facilities.

4.2 Pipeline Interconnect Facility

Blend Processing Facilities are also analogous to pipeline Interconnect Facilities which facilitate connections between pipelines, producers and customers in the natural gas industry today. Both Interconnect Facilities and Blend Processing Facilities:

- Facilitate the flow of a gas from an upstream source or pipeline to a downstream customer or pipeline;
- Measure and control the flow of gases through the facility
- Monitor for safe operating limits including safe gas composition and initiate control where safe operating limits are breached
- Are of equivalent scale and cost.

Further detail of similarities in Blend Processing Facility and Interconnect Facility design can be found in Appendix 1.

Similar to Interconnect Facilities, there are three types of party which could own and operate Blend Processing Facilities today prior to implementation of the ringfencing provisions proposed under the Draft Legislation:

- Upstream producers or pipelines as integrated with upstream infrastructure;
- Downstream pipelines or customers as integrated with downstream infrastructure; or
- Third parties as standalone facilities unrelated to upstream or downstream infrastructure.

When integrated into a pipeline, services provided via Interconnect Facilities are treated as a pipeline service. This is discussed within the AEMC Draft Report Section 3.1.2. In these instances, services provided via an Interconnect Facility would today either be considered:

- A pipeline service subject to the NGL if part of a pipeline; or
- A service provided by a facility owned and operated by the customer of services of the adjacent pipeline.

When integrated as part of a pipeline, services provided via an Interconnect Facility are today considered a pipeline service subject to the NGL, noting that protocols exist within the NGL to protect customers in the event that a pipeline service provider unreasonably prohibits access to a pipeline service or the right to connect in the first place.

Instead of the approach considered under Chapter 5.a. of the Draft Legislation, some Blending Facilities could be considered as any other Interconnect Facility when developed as part of a pipeline. In this case it would follow that services provided by a Blending Processing Facility could be treated as a pipeline service in the same way as services provided by an Interconnect Facility are as part of a pipeline are today.

This would however leave the third-party ownership model under which an Interconnect Facility such as a Blend Processing Facility may not be subject to the NGL due to being licenced as a facility rather than a pipeline subject to the NGL. Box E.2. identifies that the application of the light-handed third-party access regime is to be implemented to facilitate third party access, similar to the justification for the third-party access regime which applies to pipelines today.

APGA questions whether an analogue strong enough to propose the application of a third party access regime should also be strong enough to allow for facilities including

Interconnect Facilities and Blend Processing Facilities to be able to be considered part of a pipeline.

4.3 Intersection of Analogies

The two analogies identified above lead to conflicting regulatory outcomes.

- Gas Processing Facility analogy leads to application of ringfencing provisions but no third-party access regime; and
- Interconnect Facility analogy leads to the application of a third-party access regime when part of a pipeline but no ringfencing provisions.

Chapter 5.a. appears to both ringfence Blend Processing Facilities away from pipelines and apply a third-party access regime similar to a pipeline. APGA questions whether this is in the best interests of hydrogen and renewable gas industry development and considers this a necessary point of further discussion.

One potential solution would be to recognise all aspects of these analogies more wholistically by:

- Not applying ringfencing provisions to Blend Processing Facilities;
- Considering a Blend Processing Facility service a pipeline service when a Blend Processing Facility is part of a pipeline;
- Allowing for third-party Blend Processing Facilities to be developed under the same regulatory regime as a Gas Processing Plant; and
- Undertake a future review and consultation if deemed necessary to consider whether the application of a third-party access regime is necessary for Gas Processing Plant and Blend Processing Facilities, potentially similar to the manner undertaken in the October 2021 *Options to advance the east coast gas market* consultation.

APGA invites further conversation on the intersection of the analogies relative to Blend Processing Facilities in order to support Energy Minsters in developing a regime which ensures that existing regulatory arrangements and protections continue to work as intended where these products are supplied without risking regulatory barriers which restrict proposed investments in Blend Processing Facilities.

5 AER application of Class Orders

The application of Class Orders introduces the risk implementation of an order which is contrary to the National Gas Objective (NGO). The AEMC describe the risk of making a ruling based on a Class within its associated Draft Report:

While a class exemption process may be administratively efficient, it may increase the risk that an exemption is granted to a party when it shouldn't be compared to using the current case-by-case approach. This is because under a class process the regulator is no longer considering the specific circumstances of a service provider, or the impact an exemption may have on competition in that case.

APGA agrees with this statement but believes that is it just as applicable to Class Orders as Class Exemptions.

While a class order process may be administratively efficient, it is likely to increase the risk that an additional ringfencing requirement is inappropriately applied to a party compared to using the current case-by-case approach. This is because under a class process the regulator is no longer considering the specific circumstances and attributes of a service provider, or the impact an order may have on each service provider.

APGA recommends the ability for the AER to apply Class Orders not be implemented under the NGL.

Appendix 1: What is a Blend Processing Facility?

Gas composition is specified and maintained in gas infrastructure to ensure a safe gas composition is received by customers. A Blend Processing Facility blends gases at a specific location to ensure the safety of gas customers by being designed to ensure thorough and measured blending suited to a specific composition range and blending ratio for an off-specification gas source.

Blend Processing Facilities fall under the broad category of facilities which connect different service provider infrastructure across the gas supply chain referred to as Interconnect Facilities. Interconnect Facilities includes simple facilities such as custody transfer meter stations, and more complex facilities such as gate stations, flow-controlled Interconnect Facilities or pressure-controlled Interconnect Facilities. Blend Processing Facilities are no more complex, costly, or impactful on the cost of transporting gases in comparison to all other Interconnect Facilities.

To help understand the differences between typical Interconnect Facilities and a Blend Processing Facility, Figure 3below includes high level Process Flow Diagrams (PFDs) of typical Interconnect Facility configurations and a Blend Processing Facility. Pipeline facilities across Australia have dozens of facilities designed along these lines. Note the similarities and relative complexities between these facilities.

Australia's first Blend Processing Facility for blending Hydrogen into Natural Gas has been developed as part of AGIG's HypSA facility. Figure 4 identifies the Blend Processing Facility within the broader HypSA hydrogen production facility grounds. The small parallel cookie-coloured pipes and attached equipment to the left of the highlighted area is the Blend Processing Facility itself, with the white roofed shelter containing instrumentation which needs to remain immediately adjacent to the facility. There is also a passenger vehicle and a tube trailer in this image to provide the scale of this Blend Processing Facility which sits between the size of these two vehicles.

For context, Figure 5through Figure 8 below are aerial photographs of different Interconnect Facilities which exist across the natural gas pipeline industry today. These facilities do not attract economic regulation under the NGL despite often being more complex and costly in comparison to the Blend Processing Facility above. While Blend Processing Facilities will increase in scale as the quantity of gas blended increases, it is highly unlikely that they will become bigger, more complex, or more expensive than the facilities shown in the images below.

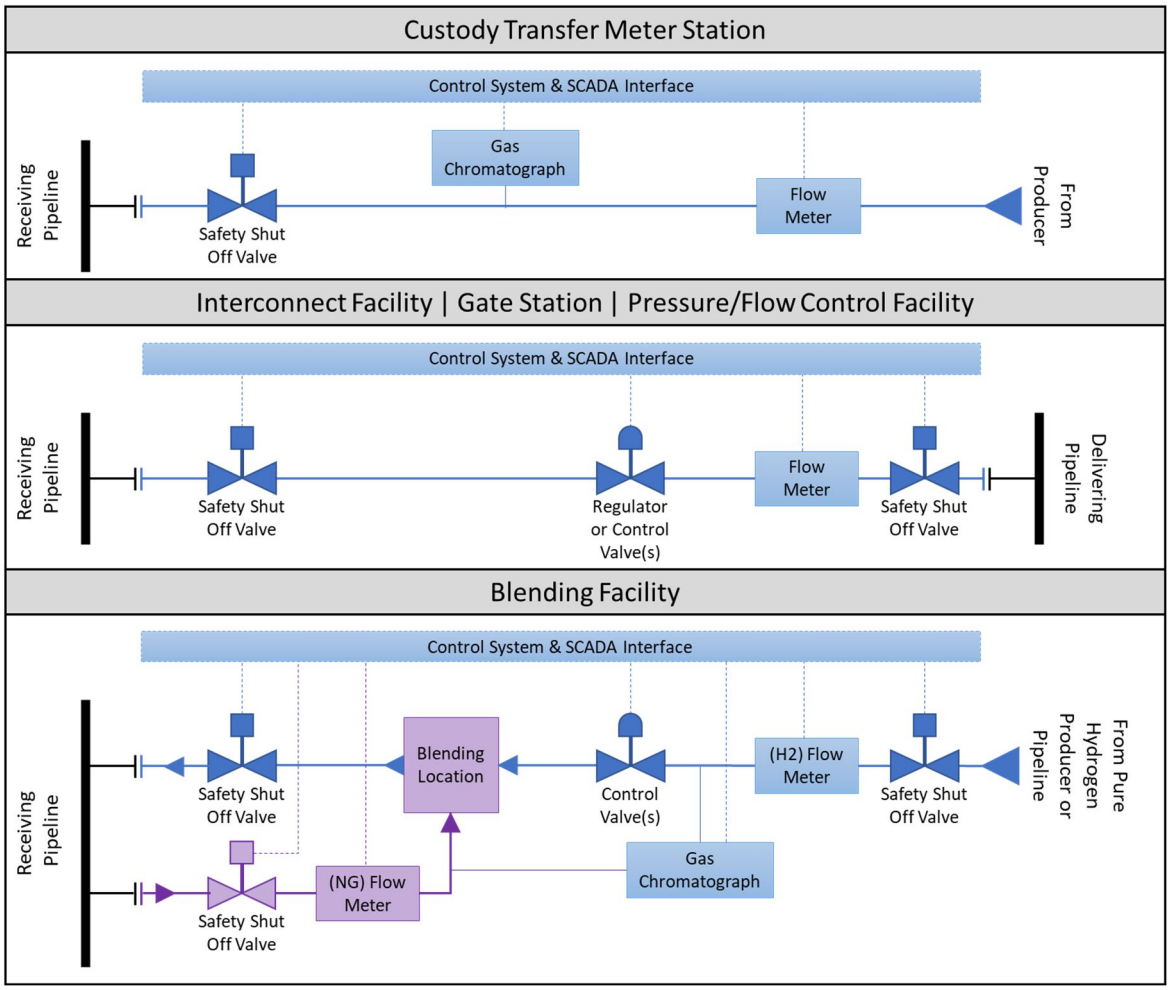

Figure 3: Comparison of Process Flow Diagrams of typical pipeline facility designs

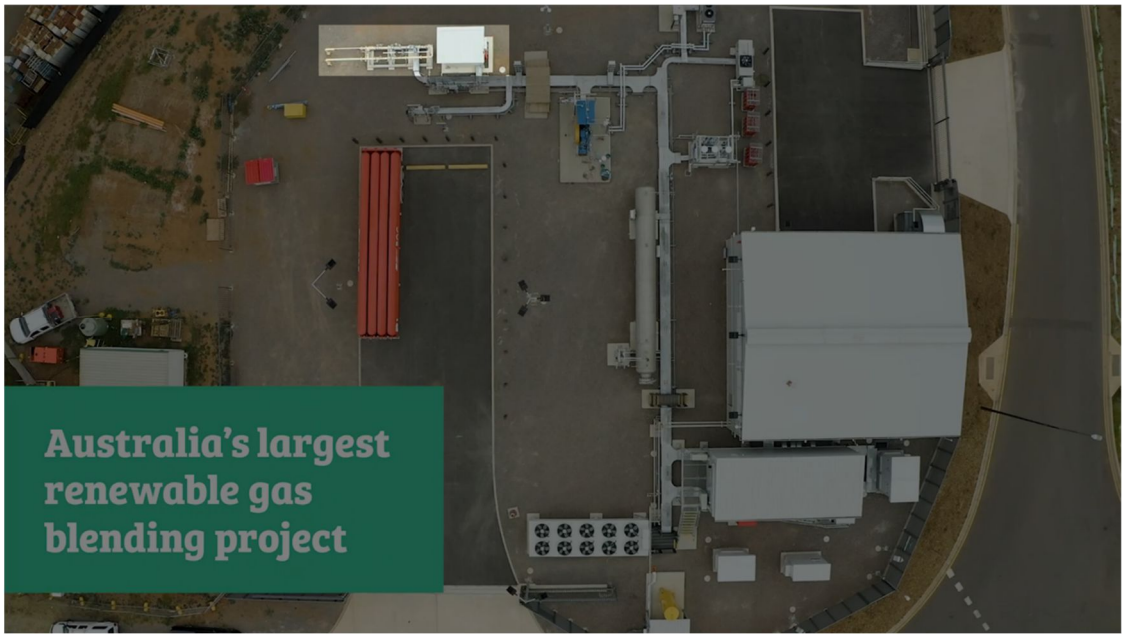

Figure 4: The Blend Processing Facility within the HypSA Hydrogen Production Facility[6]

[6] AGIG Video of the HypSA Project
https://vimeo.com/554545092

Figure 5: Ellengrove Gate Station on the Roma to Brisbane Pipeline[7]

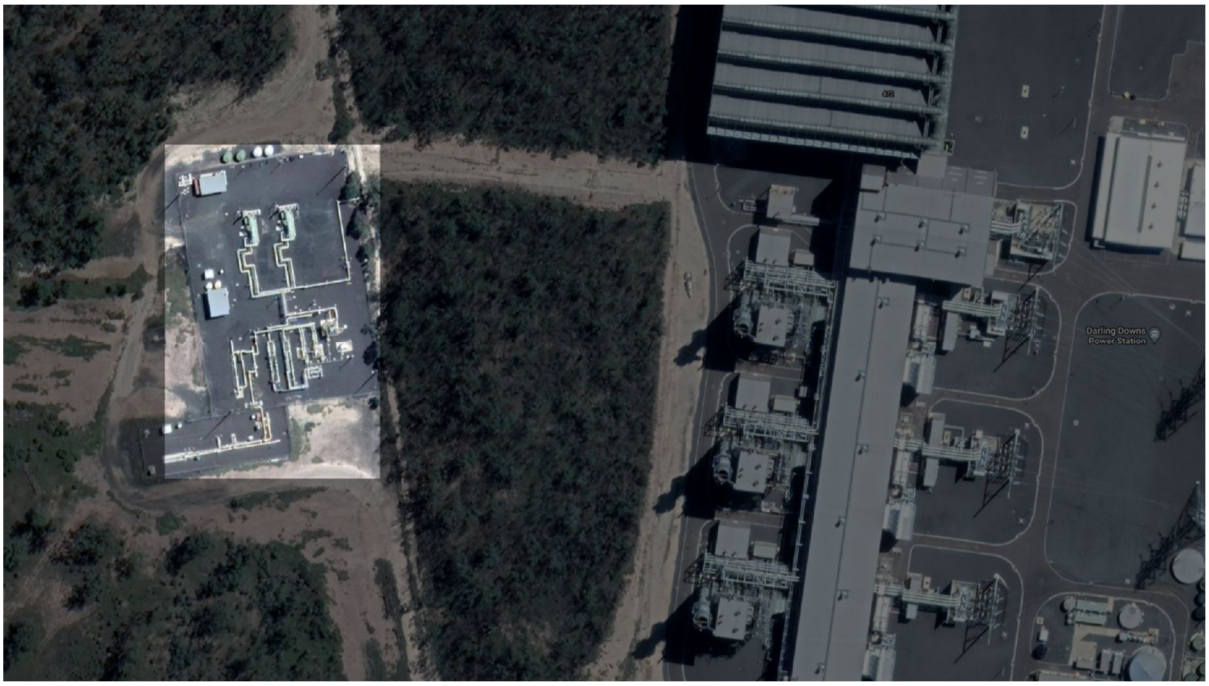

Figure 6: Darling Downs Power Station Custody Transfer Meter Station[7]

[7] Areal images captured using Google Maps

Figure 7: Orana Gas Processing Facility Custody Transfer Metering Facility[7]

Figure 8: Talinga Meter Station Custody Transfer and Pressure Control Facility[7]

In looking at existing Interconnect Facilities across existing pipeline infrastructure, very little difference between can be seen between Blend Processing Facilities and facilities which already exist. These facilities have been considered as part of a Pipeline for the full extent of the NGL and have not been brought under any form of bespoke economic regulation. It is common practice for a new facility to be developed when a new pipeline customer arises in a unique location, and for multiple pipeline customers to be provided pipeline services via facilities where multiple customers wish to use these facilities.

One purpose of existing Interconnect Facilities is to ensure that the composition of natural gas passing through the facility is on specification. Any facility with a Gas Chromatograph monitors gas specification and either warns service providers of excursions or, in many circumstances, automatically stops flow in the event of off specification gas. The specific difference between any other Interconnect Facility and a Blend Processing Facility will be the expectation of receiving off specification gas as the norm and an ability to exact more finite control over the ratio of gases which blend at the blending location.

Appendix 2: APGA Official’s Paper Submission Template

Attachment B: 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

- the refined approach to extending the national framework to covered gases (see Chapter 3 of the consultation paper); and
- the amendments to the NGL, NERL and National Regulations that are required to give effect to the refined approach (see **Attachment A** for the draft Bill and Chapters 4-5 of the consultation paper for a guide to these changes.

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. It's

Feedback on the refined approach (see Chapter 3)

No.	Questions	Feedback
Related to:	**Proposed approach to specifying the gases and blends within scope of national gas regulatory framework**	**n/a**
1	What are your views on the refined approach to identifying the gases and blends that could fall within the scope of the national framework (see section 3.1)?	Please see APGA's written submission. APGA considers the majority of the refined approach as achieving the intent of the Official's Paper with the exception of: • Making pure hydrogen and other pure renewable gas pipelines which are not part of a declared system subject to the National Gas Law (NGL) • Applying an access regime and ringfencing to blending facilities • Other minor aspects as identified within this document and APGA's written submission.
Related to:	**Proposed extension of the NGL and National Gas Regulations**	**n/a**
2	What are your views on the refined approach to extending the NGL to covered gases (see section 3.3)? Where appropriate, please comment in relation to the subheadings below.	

2.1	What are your views on the proposed extension of the pipeline access regime to all pipelines transporting covered gases (i.e. natural gas, biomethane, synthetic methane, hydrogen and blends of these gases) and the impacts it may have on smaller players or new entrants? In responding to this question please consider: ▪ the proposal to extend to the regime in this way from the commencement of the reforms; ▪ the potential impact on industry development, including where it may support the development a competitive and cost-efficient hydrogen and renewable gas industry, or may create barriers; ▪ the proposed changes to the pipeline ring-fencing arrangements; and ▪ the proposed power to exempt remote pipelines.	Please see response to 1 above. Regarding the potential impact to industry development: **Making pure hydrogen and other pure renewable gas pipelines subject to the NGL** APGA notes the following context which is expanded upon within its written submission: • Hydrogen and other renewable gases are not the same as natural gas. • The least cost energy transport for pure hydrogen and pure renewable gases will be through efficiently sized transmission pipelines. • In new pipeline infrastructure markets such as the pure hydrogen and other pure renewable gases markets, efficiently designed pipelines inclusive of spare capacity be required to avoid the development of smaller pipelines with higher costs for customers or inefficient infrastructure duplication. • Both Scheme and Non-Scheme forms of regulation under the NGL introduce price risk into pipelines subject to the NGL, in turn introducing revenue risk which may impede investment in pipeline infrastructure inclusive of spare capacity. By making pure hydrogen and other pure renewable gas pipelines subject to the NGL, the risk of impeding investments in pipeline infrastructure inclusive of spare capacity is introduced into the burgeoning hydrogen and renewable gas markets infrastructure markets. The introduction of this risk could lead to smaller, less efficient pipelines being developed, increasing the likelihood that subsequent customers would need to either rely on pipeline upgrades (where foundation and subsequent shippers will pay more for transport capacity overall) or rely on inefficient pipeline duplication to secure transport capacity. **Proposed changes to the pipeline ring-fencing arrangements** APGA does not consider administrative efficiency as a reasonable basis to increase the powers of the AER. Further, both Class Orders and Class Exemptions introduce the same risk of applying an order or exemption inappropriately due to not considering specific circumstances. APGA is opposed to the application of Orders by Class.

No.	Questions	Feedback
2.2	What are your views on the proposed new light-handed access regime for blend processing facilities?	APGA proposes further engagement on Blend Processing Facilities noting that two competing analogues to Blend Processing Facilities indicate two different and competing regulatory approaches should be followed. Please see APGA's written submission for further detail.
2.3	When developing the refined approach, a number of steps have been taken to minimise regulatory costs and risks for industry participants and new entrants. Do you think any additional steps are required? If so, please explain what they are and why they are required.	
2.4	Do you agree with the AEMC's recommendations (see section 3.2) that the NGL be amended to: ▪ enable rules to be made so that AEMO can collect information for the purposes of the VGPR and capacity modelling from facilities that do not otherwise participate directly in the DWGM? ▪ limit the potential for the unintended application of the GSOO provisions in the NGL? If you disagree with either of these recommendations, please explain why.	
2.5	Do you agree with the AER's recommendations (see section 3.2) that the NGL be amended to: ▪ accord the regulator the power to impose additional ring fencing requirements on a class of service providers or associates through a ring-fencing order? ▪ allow conditions to be imposed on minimum ring-fencing exemptions issued under the NGR? If you disagree with either of these recommendations, please explain why.	Class Orders and Class Exemptions introduce the same risk of applying an order or exemption inappropriately due to not considering specific circumstances. APGA is opposed to the application of Orders by Class. While a class order process may be administratively efficient, it may increase the risk that an order is granted to a party when it shouldn't be compared to using the current case-by-case approach. This is because under a class process the regulator is no longer considering the specific circumstances of a service provider, or the impact an order may have on competition in that case.
2.6	Are any transitional arrangements required in the NGL to accommodate the extension to covered gases? If so, explain what they are and why they are required.	
Related to:	**Proposed extension of the NERL and National Energy Retail Regulations**	**n/a**
3.0	What are your views on the refined approach to extending the NERL to covered gases (see section 3.3)? Where appropriate, please comment in relation to the questions below.	APGA is supportive of all aspects of the proposed approach with respect to the NERL.
3.1	What are your views on the approach to identifying NGEs and defining prescribed covered gases?	APGA flags the need to appropriately tie the term Natural Gas Equivalents or prescribed gas back to the NGL in some way.

No.	Questions	Feedback
3.2	What are your views on the separate authorisation and exemption of natural gas and NGEs (as one group) and prescribed covered gases (as separate products)?	
3.3	Are any transitional arrangements required in the NERL to accommodate the extension to covered gases? If so, explain what they are and why they are required.	

Feedback on proposed changes to the National Gas Law (see Attachment A and Chapter 4)

Section of Draft Bill	Feedback
	Please see APGA's Written Feedback.

[insert extra rows if necessary]

Feedback on proposed changes to the National Gas Regulations

Section of Draft Variation Regulations	Feedback
	Please see APGA's Written Feedback.

Section of Draft Variation Regulations	Feedback

[insert extra rows if necessary]

Feedback on proposed changes to National Energy Retail Law (see Attachment A and Chapter 5)

Section of Draft Bill	Feedback
	Please see APGA's Written Feedback.

[insert extra rows if necessary]

Feedback on proposed changes to the National Energy Retail Regulations

Section of Draft Variation Regulations	Feedback
	Please see APGA's Written Feedback.

[insert extra rows if necessary]