APA Group

Submission to AEMC
Discussion Paper:

Review of the
Victorian Declared
Wholesale Gas Market

October 2015

Contents

1 Executive Summary

APA considers that a review of the DWGM must be considered in the context of the policy objectives that give rise to the review. In this case, the key policy objective is to develop a liquid wholesale gas market on the east coast of Australia.

However, APA is firmly of the view that any recommended course of action must have regard to the National Gas Objective (NGO). To the extent that an approach to promoting liquidity is not consistent with the NGO (for example other aspects like investment) then, in APA's view, the AEMC should not proceed. This means that the best option for promoting liquidity in the market may not be the option that best satisfies the NGO as a whole.

Of the five options in the AEMC discussion paper:

- Option A makes minor changes to the DWGM that may marginally improve its performance;
- Options B, C and D propose reforms which do not make significant differences to the current operation of the DWGM, but impose higher complexity;
- Option E represents a more sweeping reform to the DWGM, implementing contract carriage, and allowing for capacity rights to be obtained on major pipelines within the network.

Option A does not break down the barriers to a liquid east coast gas market that exist in the DWGM today, notably the inability to gain firm transmission access rights to support the trade in gas.

Option E, with firm transmission rights, would better promote free and liquid trade in gas on the entire east coast of Australia.

At first glance, a choice between these two packages appears to hinge on a decision on which is more important: competition in the east coast gas market, or competition in the Victorian gas market.

APA considers that it is possible to have the best of both worlds, as discussed below.

1.1 Recommendation

APA considers that it is not necessary to land on an "either/or" solution.

As discussed in section 7.5, APA considers that it would be possible to move the high capacity "spoke" pipelines connecting Longford, Culcairn and Iona through Wollert to contract carriage, and sell a proportion of the firm capacity to AEMO to operate the DWGM in much the same way as it does today.

APA could then provide firm "through" capacity to transport gas into or out of Victoria, and could augment those pipelines as required by the market to accommodate shippers' demands for firm capacity and any growth in demand in the DWGM.

1.2 Structure of this submission

Following the approach in the AEMC discussion paper, this submission discusses the key issues to be addressed in making an assessment of the DWGM and any potential reforms to it:

- Risk management;
- Signals for investment;
- Regulatory framework;
- Market-led investment; and
- Export related issues.

It then discusses each of the proposed packages A through E in the context of those key issues.

Finally, it develops a recommended approach to reforms of the DWGM that will, in APA's view, better achieve the Energy Council's policy objective for a liquid wholesale gas market on the east coast of Australia.

2 Issues to be addressed

This section summarises the issues identified in the front section of the discussion paper, identifying any priorities and addressing the magnitude of the issues or any barriers to reform.

2.1 Risk Management

2.1.1 Imbalances and ex-ante price risk

Currently, the primary tool for market participants to manage their risk in the DWGM is to remain in balance. This removes their exposure to the price ultimately determined by the DWGM.

As the AEMC noted in its Stage 1 report, the majority of gas supply is bid at zero to ensure dispatch. AMDQ is important to these shippers to ensure that their (zero-bid) gas is dispatched (within the context of the limited tie-breaker rights that AMDQ imparts). Also, the majority of controllable withdrawals are bid at the market maximum to ensure delivery.

As the AEMC noted in its Stage 1 paper, only a relatively small proportion of the gas traded in the DWGM is traded between arm's length parties. This bidding behaviour significantly curtails market breadth and draws into question the relevance of the market settlement price.

Considering the consequences of over- vs under- supply, it is possible that risk-averse shippers would systemically over-inject to reflect a preference to being exposed to a (low) price for selling over-injection gas rather than risk paying a (high) price for under-injections. That is, the risk-averse participant would prefer to err on the side of being long, rather than short, in the market. [1] It is possible that this risk-aversion would tend to result in an artificially depressed DWGM gas price.

APA considers, all other things equal, that systematically over-injecting would tend to shield shippers from congestion uplift charges within the shipper's AMDQ.[2] However this comes at the expense of foregone revenues, as the gas is sold at an artificially low market price. It is not possible to ascertain the cost of this risk management tool. This approach to risk management results in a transfer of wealth from the over-injector to under-injecting (or non-injecting) market participants.

2.1.2 Exposure to Ancillary Charges

The AEMC discussion paper notes that exposure to unhedgeable uplift charges is a key feature limiting the development of financial risk management products to allow liquid trading in gas.

APA considers that AMDQ and bidding strategies can assist in avoiding imbalance market exposure and congestion uplift charges. However, Victoria's significant temperature-sensitive load, and exposure to unexpected cold weather patterns, means that these strategies cannot help avoid surprise uplift charges. Storage of gas in the Dandenong LNG facility, and bidding it into the market to have it dispatched, is the risk management tool to address this eventuality.

There is no risk management tool through which a shipper can avoid common uplift charges. However, these charges tend to be minimal, owing to them being spread across the entire market.

Noting the small quantum of uplift charges in the range of $9,000 to $15,000 per year,[3] APA questions whether the costs associated with establishing a market mechanism to establish tools and products to hedge these risks is efficient. It may be more cost-effective to require market participants to bear these risks as part of the costs of participating in the market.

2.2 Signals for investment

APA considers that it is important to distinguish "signals for investment" and "incentives for investment". The current DWGM, through uplift charges, provides

[1] The maximum exposure for the "long" bidder occurs when it injects gas it has purchased at a pre-determined price, and the market settles at zero. In contrast, the maximum exposure of the "short" injector occurs when it is required to supply, at a pre-determined price, gas that it has been forced to buy at the $800 market maximum.

[2] APA agrees with the AEMC as discussed on p19 that congestion uplifts should not arise unless there is genuine congestion. The concept of a contract carriage overrun charges may be more appropriate.

[3] AEMC discussion paper p15.

some signals for investment, but they are often blurred and not location specific (for example, common uplift).

AMDQ cc as a signal for investment

The AEMC discussion paper (s4.4) discusses the AMDQ cc allocation process. APA notes that its process for pipeline expansions is to conduct an “open season”, in which the level of interest in a pipeline expansion is ascertained. In this way, APA can aggregate demand to construct the optimally sized expansion, to the benefit of all shippers.

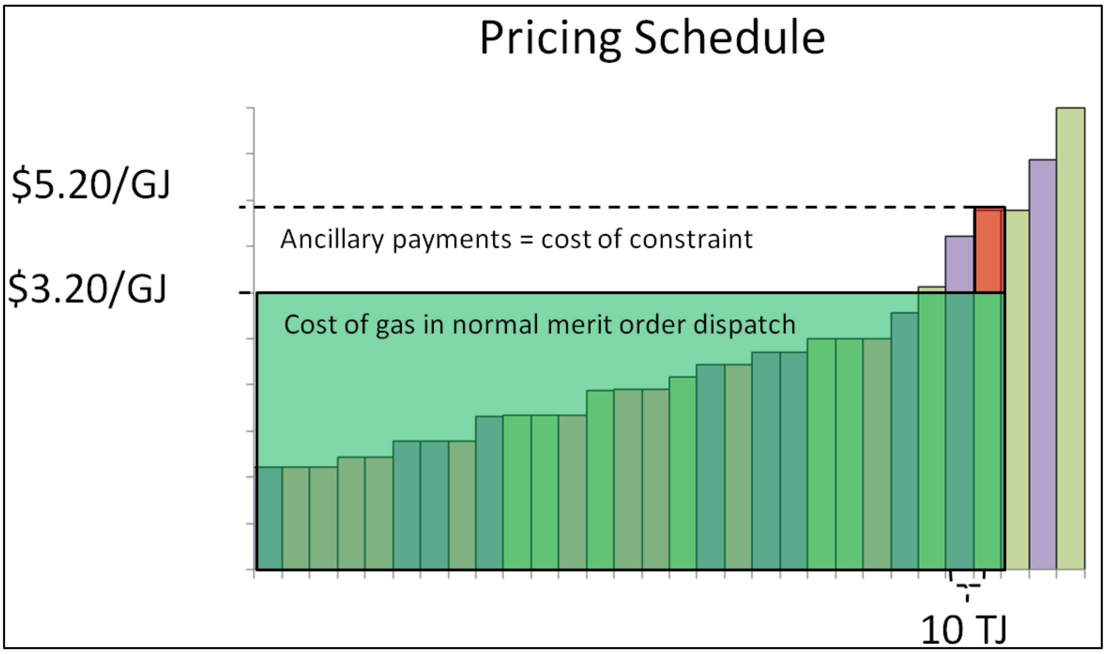
In the DWGM, this “open season” is conducted through a tender process for new AMDQ cc that would be created by the expansion. If the tender results demonstrate sufficient interest and pre-commitment to obtaining AMDQ cc to support an expansion, then the investment can proceed. Importantly, this auction of AMDQ cc occurs before the investment is undertaken – the auction process informs, rather than follows, the investment process.

In this respect, the discussion in s4.4 of the AEMC discussion paper is incorrect – the auction for AMDQ cc does indeed act as a lead indicator of demand (in terms of both need and value) for new investment in additional injection capacity.

2.2.1 Uplift charges

As noted in the discussion paper, the presence of congestion uplift charges delivers a signal for investment. That is, it identifies an opportunity for investment to relieve the congestion. However, APA questions the usefulness of uplift charges as an incentive.

Drawing on the example in the AEMC's 4.1:



One of the first notable features of the AEMC's example is that the total value of the ancillary payments (the "cost" of the constraint) is small relative to the total value of gas traded through the market. This is consistent with the AEMC's finding that ancillary payments in most years have been very small, certainly relative to the value of gas traded through the market over the course of a year.

The alignment of any incentive features is also an issue. It is important to note that the value from the uplift payment goes to participants that have an interest in retaining the congestion that caused the uplift revenue to accrue to them. That is, unconstrained (out of merit order) bidders have no incentive to support congestion-relieving investment,[4] due to receipt of higher prices for their out-of-merit injections.

Moreover, the uplift payment/ancillary charge mechanism means that the receipt of the value from out-of-merit dispatch is concentrated on the dispatched supplier, whereas the costs are dispersed among all market participants.

No individual shipper can invest in reducing the constraint with an expectation that the benefits would accrue to it – any benefits from reduction in ancillary charges would be socialised across the system.[5] Neither the value of the uplift payment, nor the benefit of any reductions to ancillary charges, accrue to the system owner. The

[4] For example, by objecting to the investment through submissions to the regulatory process.

[5] It is possible to envision a case where an injection pipeline served a single in-merit supplier who was constrained from injecting. However the benefit of constraint reduction to that supplier would be in the form of being able to get its gas to market – the benefit from the reduction in uplift payments would still accrue entirely to other participants.

network owner has no incentive to invest until it can be assured a return on that investment through the next access arrangement review. That is, the price signals produced by the DWGM do no more than signal congestion. Congestion, on a day or over an extended period, is not sufficient to justify investment in long lived pipeline assets.

However, as the AEMC notes, the AER-approved access arrangement under the market carriage model does not accommodate unplanned intra-period investment – investment only tends to occur following AER approval in the 5-yearly access arrangement review process. In this respect, it is important to note that recent (out-of-cycle) investment in "export" capacity has been supported by contract carriage arrangements on pipelines outside of Victoria. It is the firm commitment to capacity on the adjoining contract carriage pipelines that has provided the certainty to allow this investment in the VTS to proceed.

APA considers that the value of uplift charges avoided by market participants should be considered in the economic analysis envisioned in Rule 79(2)(a).[6] To this end, it would be useful for the service provider to be able to align the reduction in ancillary charges against proposed capital expenditure projects to relieve congestion and reduce future ancillary charges.

APA supports the AEMO "cost to cause" allocation of ancillary payments[7] and recommends that AEMO should publish uplift reports. This will better enable the potential for reductions in ancillary payments to be considered by the AER in assessing the prudence of proposed capital expenditure under Rule 79(2)(a).

2.2.2 Observed market prices

APA agrees with the AEMC's assessment that, during a constraint, the observed DWGM market price may be lower as risk-averse shippers bid their gas into the market at zero to ensure dispatch, to remain in balance, and to avoid exposure to the market price (which they might assume would be high because of the constraint). As discussed above, the risk-averse participant may prefer to be marginally long in gas to avoid anticipated high market charges for shortfalls. APA concurs with the AEMC's assessment that the market price, therefore, would tend to be artificially low during times of constraint, and would not serve as a reliable signal for investment.

In terms of incentives, it is not clear how observed DWGM market prices incentivise the network owner to augment the network; as it does not benefit from changes in the cost of gas it transports, the service provider would not benefit from the reductions in gas costs resulting from the augmentation.

However, in a contract carriage model, a shipper could enter into a contract that would support an augmentation, would have rights to use that capacity, and be able to inject sufficient supply to avoid high market prices.

[6] "(2) Capital expenditure is justifiable if: (a) the overall economic value of the expenditure is positive;"

[7] Acknowledging this is an imprecise science.

2.2.3 DTS Planning standards

APA considers that it would be useful to have clarity over how the DTS planning standards are determined and how they are applied. APA is concerned that the conservative nature of the standard mean that capacity is built into the system to meet these standards that may not be required if an alternative, more risk-based standard were adopted

One contrast between the DTS and contract carriage pipelines is the risk-based approach to meeting those planning standards. For example, in a contract carriage framework, a service provider may enter into strategic commercial curtailment arrangements with some users to curtail their non-essential loads at peak times. This allows peak demands to be met with less system investment, and improves the overall utilisation of the system. This risk-based approach is not available in the context of the DTS planning standards.

2.3 Regulatory framework

The AEMC discussion paper notes (p36) that intraperiod investment does not generally happen in the VTS because there is no mechanism to earn revenue on the investment until the next regulatory review. APA agrees with this assessment and noted that, in contrast, contract carriage pipelines can secure revenue through contract from the time of investment.

APA has also previously noted a number of features of the gas access regime that sit uncomfortably with the market carriage framework. For example, it is not clear how a surcharge could work under the DTS where the system operator cannot promise access to capacity the surcharge is meant to fund. The service provider may not have access to the data to allow the supposed beneficiary to be charged other than via a direct fixed contribution.

For example, if a new user, served from a distribution network, requires the transmission system to be augmented, but there is no mechanism to dedicate the expanded capacity (or the surcharge) to that end user. The cost of the expansion is socialised across the system, and the new user “free rides” on the investment funded by other users.

Even if the system owner were able to levy a surcharge, it is not clear on whom that surcharge would be levied. At best the system owner could only charge a fixed amount as it has no access to the usage for any individual customer serviced from the distribution system. The problem with guaranteeing access to that capacity remains.

The speculative capital expenditure provisions also sit uncomfortably within the market carriage system. In particular, it is not clear how the system owner would be able to sell the capacity provided by the speculative investment outside the DWGM, since the capacity (speculative though it is) would be subject to AEMO control.

Regarding the redundant capital provisions, APA is concerned that the redundant capital provisions could require an asset to be removed from the asset base "economically", but this action does not remove the asset physically. This is an issue caused by the separation of system ownership and system operation - AEMO would still be able to avail itself of the service capability of the asset but not be required to compensate the owner for it. In contrast, under a contract carriage model in which the asset owner is also the operator, the owner/operator would have some ability (and incentive) to utilise the capacity.

2.4 Market-led investment

As noted by the AEMC in its discussion paper (p45), shippers' main reluctance to invest is driven by free-rider issues: competitors can freely access the foundation shipper's funded capacity at the regulated tariff. The foundation shipper therefore receives no benefit whatsoever from its contribution or commitment.

The problem is not access at a low tariff *per se*, but rather access itself. Foundation shippers would expect any access to their capacity to result in some benefit to them. But in the DWGM, free riders can displace the foundation shipper unless it uses AMDQ and bids appropriately. This acts as a significant deterrent to market-led investment.

2.5 Export related issues

The AEMC discussion paper addresses the impact of the existing regulatory investment process on market-led investment – there has been a reluctance to invest because of the free rider issues inherent in the DWGM. This applies equally to "export" related investment.

In the context of the market-led investment that has occurred to accommodate flows to Culcairn, it should be noted that the Victorian market does not bear any risks of over-investment to accommodate these flows. The cost allocation methodology applied in the tariff determination process assigns costs to the portions of the network that benefit. For example, all non-fuel compression opex in the "gas to Culcairn" project are assigned to the areas downstream of the compression. In this way, there is alignment of costs to cause - local Victorian customers benefit from the broader base over which fixed costs are assigned. Moreover, the investment must be NPV-positive to proceed (Rule 79) and can be made redundant if demand declines.

The AEMC discussion paper (p47) suggests that "export" problems are unique to Culcairn, but indeed these "export" problems apply to all "export" points – these issues are simply more prevalent at Culcairn because this is where the majority of "export" flows have occurred to date:

- Limited physical capacity applies to both Culcairn and Iona;
- DWGM interface issues apply at VicHub and Iona;
- Concerns regarding AEMO giving priority to Victorian customers apply at Iona and VicHub;
- Ability to physically support “exports” applies equally to Iona at times of high Iona demand;
- Price and uplift payment risks apply to Iona and VicHub;
- Lack of firm transportation rights in the DWGM applies equally to Iona and VicHub.

As the east Australian gas market matures, these issues could be expected to surface more frequently.

As discussed above, APA notes that the AEMO curtailment provisions do not feature voluntary contractual curtailment for non-essential load. APA considers that this is an essential low-cost tool that should be applied before mandatory curtailment provisions are applied.

However APA is most concerned with the scope for the curtailment arrangements to curtail “exports via interconnections subject to alternative gas supplies being available to export gas customers.” As regards “exports” to Culcairn, this provision essentially confiscates (without compensation) the capacity of the Moomba Sydney pipeline linepack to maintain service to contract carriage customers whose shipments were curtailed in Victoria. The MSP thereby subsidises the VTS.

APA does not suggest that residential or small commercial customers should be curtailed sooner than interstate shippers. However, APA is concerned that AEMO’s application of its curtailment arrangements, and the resulting confiscation of others’ property rights, is an issue associated with the interface between the market carriage and contract carriage models.

The AEMC discussion paper (p52) discusses the scope for organic growth within the Victorian “domestic” market to erode capacity at exit points. However, the AEMC only discusses this issue with respect to Culcairn. APA considers that load growth in Anglesea and Torquay will lead to similar implications for withdrawals for Iona storage injections and shipments to MAPS from Port Campbell.

APA would like to correct a misconception in the AEMC discussion paper (p53) to the effect that the market incurs costs to support export flows through Culcairn. As discussed above, all compressor operating costs required to support flows to Culcairn are allocated directly to the Culcairn tariff – other Victorian customers are not impacted by these costs. Moreover, these costs are allocated to the Demand class (there are no “Volume” customers at the Culcairn offtake point). As system fixed costs are allocated over all volumes, Victorian customers receive benefits associated with increased “through” transport.

3 Package A: Targeted measures

The AEMC discussion paper states (p55):

> The key objectives of this package would be to provide increased opportunities for market participants to better manage short term risk exposure, address the free-rider problem for new investments and strengthen existing market signals for investment by reducing uncertainty around the allocation process for AMDQ cc.

3.1 Key features of this package

The key features of this package are targeted transmission rights and a revised process for allocating AMDQ.

3.1.1 Targeted transmission rights:

The AEMC's targeted transmission rights proposal appears to provide a mechanism whereby a market participant can invest directly in additional capacity within the DWGM through a contractual arrangement with the pipeline service provider, and then gain a rebate from other users of that asset.

One of the key features of the DWGM is that shippers can use any part of the system, and that use is not in their control. Further, from a pipeline operator perspective, it is not always possible to track users of a part of a system, particularly if that involves key flow paths. For this reason, it would appear difficult for a rebate mechanism of the kind described in the Discussion paper to work on many parts of the system; indeed it may only be workable on injection pipelines, and perhaps 'export' points on the system. In this respect, it is similar to the operation of AMDQcc.

APA considers that the key feature of this proposal is the allocation of AMDQ cc to "foundation shippers". However, AMDQ cc are only generated by the addition of capacity on injection pipelines - this proposal could only be applicable to injection pipelines. Where a constraint occurs in another part of the system (ie a non-injection pipeline), new capacity funded by a market participant would not generate the assignment of AMDQ cc.

In order to be effective, the AMDQ cc rights would have to be allocated to a complete flow path in preference to existing shippers. It may be possible to identify usage of an "expanded asset" for charging purposes. However, there would be significant work required on APA's systems to identify and assign the new charges to "foundation" and "non-foundation" shippers.

Allocation rules for targeted transmission rights

The AEMC discussion paper outlines a mechanism under which a foundation shipper could fund an expansion of capacity, and receive payments from other shippers (through an “enhanced capacity charge”) to the extent they used that capacity.

Even for an expansion of an injection pipeline, allocation rules would be pivotal. This raises significant questions about the basis of the allocation of the original vs expanded capacity. As there are no contracts, it is not clear what basis would apply.

For example, assume 4 shippers currently fully use the capacity of the SWP, assumed to be 400 TJ/day, each shipping 100 TJ/day. Further assume that shipper 1 (the foundation shipper) has secured a new gas user as a customer, and therefore funds a capacity expansion of 50 TJ/day (the smallest technically feasible increment), receiving 50TJ of AMDQ cc on completion. If, after the expansion, it ships 120 TJ, how will that be allocated between the existing and new capacity?

Options are:

- to assume that the foundation shipper always uses its own capacity first.

  In this case, shipper 1 would always use all of the new capacity first, and would then receive an allocation of the existing capacity, in equal right to other shippers, once it fully utilised its contributed capacity. In this example, shipper 1 would require an allocation of existing capacity of only 70 TJ/day, and there would be sufficient capacity to meet all shippers’ demands.

  While there would be no “expanded capacity” charges to the other shippers for rebate to shipper 1, they may see greater access to the existing capacity in the near term, as lesser demands are placed upon it by shipper 1.

  A “free rider” effect emerges in that shipper 1 has invested in additional capacity, which has the perverse effect of making more of the existing capacity available to its competitors.

  It is also possible that the marginal cost of adding the new capacity is greater than the average costs associated with the common use of the depreciated existing asset, in which case this allocation methodology would disadvantage the foundation shipper relative to its competitors.

- to first allocate the original capacity amongst all the shippers.

  This approach would indicate whether any shipper was presumed to be utilising the new (foundation shipper’s) capacity, for which a payment would presumably be required.

  In this example, a pro-rata allocation of the original 400 TJ/day of existing capacity would be allocated 115 TJ/day to shipper 1, and 95 each to shippers 2, 3 and 4. In order to ship their normal 100 TJ/day, each of shippers 2, 3 and 4 would be required to “buy” (through the “expanded asset charge”) 5 TJ/day of capacity from shipper 1. The foundation shipper would use an additional 5TJ/day of its foundation capacity to meet its demand, but it would receive some return on its funded capacity to the extent of the rebates.

Administrative complexity aside, this approach could result in existing shippers being required to pay more for their required capacity, even though their demand had not changed.

- to allocate all capacity equally amongst all the shippers.

  Under this approach, the entire 450 TJ/day of capacity would be assigned pro-rata to all shippers, and the costs shared accordingly. Shipper 1 would be allocated 28.6% of the total cost (120/420), while each of the other shippers would be allocated 23.8% (100/420). It is not obvious whether a rebate mechanism could apply in this framework.

  From the perspective of Shippers 2, 3 and 4, this option most closely aligns with the socialisation of costs in the current model. This is a suboptimal outcome from the perspective of shipper 1, who has funded a capacity expansion but does not receive any preferential treatment in exchange for its contribution.

When the capacity later becomes constrained, an allocation across AMDQ cc rights may be reasonably simple in practice, but would be highly contentious with the other shippers - especially any short of AMDQ.

Importantly, because capacity can be impacted by the behaviour of others on other parts of the system, it is not clear what right the foundation shipper receives in exchange for its contribution to the network.

3.1.2 AMDQ allocation and trading

It should be noted in the context of this package that AMDQ cc are tradeable today, notwithstanding the Portfolio Rights Trading rule change proposal. However, APA's understanding is that trading is sparse. Moreover, one might expect that spare AMDQ cc would be available for sale when gas demand is low and the system is not constrained (and hence demand for AMDQ cc is low), but would not be made available for sale when the system is constrained.

While APA supports a voluntary AMDQ trading mechanism (ie, for both Authorised MDQ and AMDQ cc), it considers that the system changes required to accommodate trading in Authorised MDQ and AMDQ cc would be complex and significant, and suggests that development of such a system be deferred until AEMO's next market settlement and dispatch engine upgrade.

The AEMC's discussion of a mandatory AMDQ cc re-allocation mechanism does not recognise the current scheme of access regulation applying to the allocation of AMDQcc, and the extent of that scheme.

As set out in APA's submission in response to the AEMC's draft rule determination, the allocation of spare AMDQcc is now a reference service, and the AER has determined a reference tariff for that service. As part of the scheme of access regulation, an access arrangement queuing policy is the appropriate mechanism for determining the allocation methodology, whether that be first-come-first-served, a tender process or an auction. APA does not believe that this is an area where the

AEMC needs to create new rules – the rules under the access regime already address this issue to the extent that the allocation of spare AMDQ cc is a reference service.

As discussion above in section 2.2, the fact that AMDQ cc is created after an investment is completed does not pose a material barrier to investment in new capacity. APA works with AEMO throughout the process of developing an expansion proposal to agree the amount of AMDQ cc that will be created by a particular investment. On this basis, APA is able to enter into agreements prior to investment. This makes the actual creation of AMDQ cc a largely procedural matter as part of the commissioning and handover (to AEMO as the system operator) process, which coincides with the inclusion of the new capacity in the Service Envelope Agreement capacity, and creates the obligation on APA to provide that capacity to the market.

In terms of transmission rights, AMDQ cc are only helpful if the expansion is on an injection pipeline – as no AMDQ cc are created when investment is undertaken to relieve intra-system constraints, it is difficult to see how the AEMC's proposal would create any new transmission rights unless the expansion is on an injection pipeline.

The AEMC recommends a number of ways to improve transparency around the AMDQ cc allocation process. APA notes that it undertakes considerable pre-consultation and market testing before undertaking an AMDQ cc tender proces (see section 2.2), and makes the allocation process very clear through this process and at the time of conducting the auction. However, APA appreciates the drive for transparency in this process, and would be pleased to discuss ways that this process could be made clearer to all participants.

3.2 Signals for investment

As discussed in section 2.2 above, APA is of the view that AEMO should publish its reports on the causes for ancillary payments caused by constraints.

4 Package B: Simplified DWGM pricing mechanism and transmission rights

The AEMC discussion paper (p62) states:

> Package B involves adopting a simplified pricing mechanism for the DWGM that moves away from having separate pricing and operating schedules. Specifically, this package involves having a single schedule that optimises bids and offers subject to all transmission pipeline constraints (for example, similar to the current operating schedule), and adopts the highest priced injection or withdrawal that is scheduled as the market clearing price for the entire DWGM. The intention of

this mechanism is to simplify and increase the transparency of market prices, and internalise the current ancillary payments in the market price.

4.1 Key features of this package

This package includes two key features: a simplified NEM-like pricing structure, and a mechanism aimed at providing firm transmission rights.

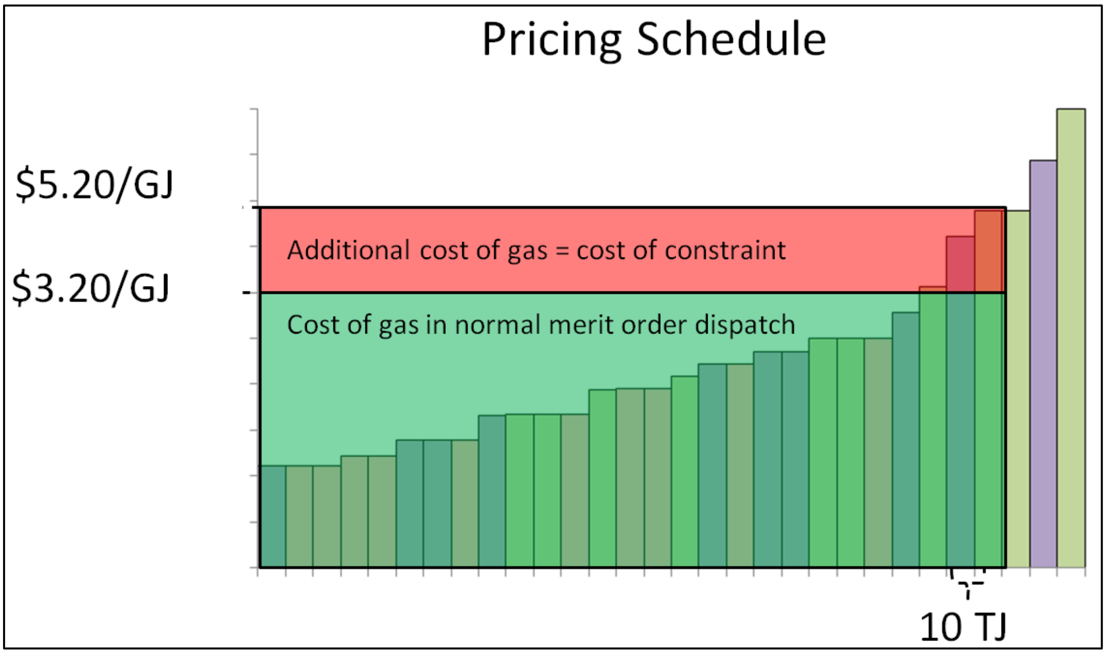
4.1.1 Simplified Pricing Mechanism

The DWGM currently settles using a pricing schedule that assumes a constraint-free transmission network. Constraints are then incorporated through dispatch, using the operating schedule. Where there are no constraints on the network, both schedules would deliver the same dispatch orders, and there would be no difference in the market price determined under either methodology.

However, where system constraints bind, the operating schedule will act to dispatch sufficient supply to meet demand, even if that supply would be out of merit order relative to the pricing schedule. It is this difference that gives rise to uplift charges and ancillary payments.

Under the simplified pricing mechanism, the market price would be set through the merit order under the operating schedule. This would have the effect of 'removing from view' of the market where lower priced gas was available to the market but constrain off due to a system constraint.

Pricing based on the operating schedule would not only integrate ancillary payments into the market price, but would apply those costs as price increases across the entire market (drawing again on AEMO Figure 4.1):



In this case the whole market would effectively settle at the (high) market price, potentially the LNG injection price. However, as discussed above, the additional cost of gas would not be visible to the market.

This contrasts to the current system in which the market only bears the cost of out-of-merit-order dispatch for the amount of gas dispatched out of merit order. The simplified pricing mechanism would impose a much larger cost impact on the market than the smearing of ancillary payment costs.

APA considers that this model would not reduce prices to gas users (as the market would settle correctly if only in-merit-order gas is dispatched) but would increase gas prices to all users during time of constraint. These price increases could be significant. In contrast, APA notes that uplift changes have been very low in recent years, owing in part to the fact that only the incremental cost of the out-of-merit-order gas is smeared across the market.

However, as outlined in the AEMC Discussion Paper, the amount of gas “traded” through the Victorian DWGM is quite small; only a small proportion of gas would be subject to this market price. As discussed in section 2.1.2, it is not obvious that it would be efficient to implement a complex mechanism to deal with the cost impact of out-of-merit-order dispatch for such a small quantity of gas traded.

As discussed above, the pipeline owner’s revenues are not impacted by the price of gas it ships. A higher market price for gas therefore does not provide a signal or incentive for congestion-reducing capital expenditure. It is difficult to see, then, how this approach would be in the long term interest of users, as it removes any signal from the market on the cost of a constraint.

One benefit of this approach is that, like the market settlement process applicable to the electricity market, the resulting price is “clean” and is not subject to unpredictable uplift charges. Importantly, this “clean” price could be hedged, and financial products could potentially be developed as risk management tools. In this regard, this model may assist in promoting more liquid markets across the east coast of Australia.

However, as the market would presumably still settle using five trading periods per day the scope to hedge the market price would be imperfect until financial markets develop products to match the relevant trading intervals. As identified in the AEMC discussion paper (p14) the ASX derivative products developed in 2009 addressed only the 6:00am ex ante price.

This approach would also remove the “cost to cause” link and arguably further reduces locational signals for investment to remove constraints.

This approach may also remove an important signal for investment in the market by making the market blind to the cost of a constraint that was impacting the merit order of gas. It would be far more difficult to identify this market impact than to use a market-wide reduction in ancillary charges to support investment. As discussed above, APA considers that a reduction in ancillary charges is an important component of the economic analysis supporting the prudence of capital expenditure under Rule 79(2)(a). The larger the cost of constraints to the market, the easier it will be for new investment to clear the Rule 79(2)(a) “positive economic value” hurdle. However, APA would not be able to ascertain the counterfactual cost of gas had all merit order gas been able to be dispatched.

On balance, APA considers that this initiative delivers higher costs of gas to consumers, and provides poorer signals for investment. It is difficult to see how this result would be in the long term interests of consumers.

4.1.2 Transmission rights on the DTS

APA finds it difficult to understand the proposed approach to capacity rights under this package. APA notes that the AEMC discussion paper draws on the VENCorp Pricing and Balancing Review (Stage 1) which noted the extensive detail on how to accomplish assignment of transmission rights.

The VENCorp Pricing and Balancing Review output was seen as impractical when submitted to more detailed consideration, as it would have required a major change to the whole market. Biddable capacity rights were seen as the final step in a long process which was considered to be unworkable long before this stage would be reached. Stage 2 of the Pricing and Balancing Review was not undertaken, as the complexity associated with this initiative became overwhelming.

As discussed above in the context of Package A, it is very difficult to provide transmission rights within the context of the DWGM.

4.2 Signals for investment

As discussed in the context of Package A, this pricing change may provide signals for investment, but does not provide incentives. This might be useful if the additional costs of the uplift in market settlement prices can be acted upon by market participants who would directly benefit from their actions. For example, if a particular shipper could invest in constraint-reducing capex and obtain the benefit of it to reduce its gas costs, then any reduction in gas costs would be shared with the entire market.

4.3 Conclusion

On balance, APA sees this package as delivering higher gas prices to the entire market in times of constraint, but not necessarily providing clearer signals or incentives to invest in congestion-reducing capital expenditure.

5 Package C: Zone-based pricing and capacity rights

The AEMC discussion paper comments:

> Package C involves establishing a number of different pricing zones across the DTS. In the Pricing and Balancing Review, VENCorp recommended an option including four or five zones. For the purposes of illustrating the option, this paper assumes that four zones would be established: the Northern zone; the Melbourne zone; the Gippsland zone; and the Geelong zone. These four zones are illustrated in figure 8.2.
>
> The intention of establishing multiple pricing zones is to generate prices across the DTS that better signal where constraints occur than under either the current arrangements or the arrangements included in Package B. When combined with the introduction of capacity rights between the zones, this would provide a market determined price for usage of the system by users without such rights, and therefore a signal for investment.

5.1 Key features of this package

This package divides the gas market into a number of zones, with an aim to better provide locational signals for constraints. This would be coupled with a form of financial transmission right for trading across zone boundaries to better signal the need for congestion-reducing investment at those zone boundaries.

5.1.1 Zone-based pricing

APA notes the concept of zonal based pricing, and is concerned about the implications of this approach in terms of developing a liquid market for gas.

APA notes the AEMC's comments that defining the boundaries between zones would be important, but considers that any disaggregation of the market will create small sub-markets with very low volumes, and in some cases very few market participants, and therefore low liquidity. This would make it more difficult to develop a liquid market in gas.

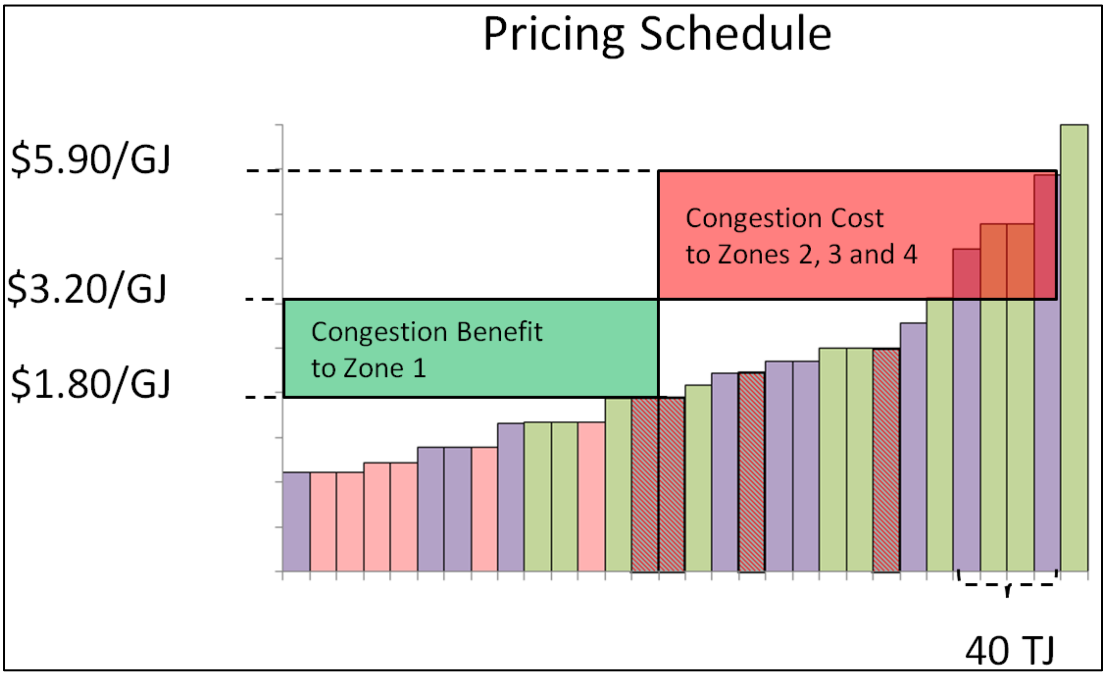
In the current DWGM, the Melbourne zone accounts for approximately 85% of the gas consumed in Victoria. In the context of the indicative boundaries in AEMC figure 8.2, the Melbourne zone would account for about 50% of the load and the Geelong zone would account for about 35% of the load.[8] The Northern and Gippsland zones together account for the remaining 15%.

APA is concerned that the small Northern and Gippsland zones would not be large enough to attract sufficient interest from suppliers to develop a competitive market.

5.1.2 Zone-based pricing with simplified pricing schedule

This package presents similar issues associated with market wide price increases for ancillary payments as discussed in section 4.1.1, but this pricing model introduces winners and losers on either side of the constraint as shown below, using the AEMC's example (diagram based on AEMO Figure 8.3):

[8] However, defining zones similar to those suggested would be extremely difficult due to the meshed nature of the distribution system within the current Metro Zones. APA would suggest that the current split (Metro NW & Metro SE) would be the only viable split that would generate more than one zone with significant demand.



For example, an unexpected change in weather could cause LNG to be dispatched at Dandenong, which would cause price increases in Melbourne and the Northern zone but (in the AEMC's example) would cause price reductions in the Gippsland zone. This would certainly be a meaningless signal.

In net terms, unconstrained suppliers (ie upstream from the constraint) lose through lower prices being paid for their gas supply; unconstrained customers receive this benefit. Constrained suppliers (downstream of the constraint) benefit to the extent they supply higher cost (out-of-merit-order) gas to the market; this cost is borne by constrained users.

This model produces a perverse outcome in that shippers in unconstrained zones see a reduction in the market price they are paid for their gas during times of system constraint. There is also a vested interest in suppliers in the constrained zones for the constraint to persist, which would result in a wealth transfer to them at the expense of shippers in the unconstrained zones.

To the extent the signals are effective and encourage investment to relieve the inter-zonal constraint, it is not clear how investment would be encouraged to relieve the next binding constraint (presumably this would be an intra-zonal constraint). It may be necessary to redefine the zone boundaries to align with the constraints to preserve the investment signal.

The example used in the AEMC Discussion Paper is quite close to actual experience on the DTS except that the constraint was on the SWP (Geelong Zone). APA applied to the AER in the 2002 reset and later before the 2007 reset to address the constraint but the AER would not approve the investment until there was a system wide injection shortfall, i.e., the AER would not approve investment to address a local constraint that would have given rise to diverging zonal prices had this model been in operation.

So while this model may provide signals for investment at the zonal boundaries, it is not necessarily the case that such investment would be supported by the associated regulatory framework.

5.1.3 Capacity rights and network investment

APA considers that the capacity rights in Package C are along the same lines as those in Package B, albeit at a more granular level to accommodate inter-zone transport. To the extent that this concept draws on the VENCorp Pricing and Balancing Review, the comments above in relation to Package B equally apply.

5.2 Summary and Conclusion

APA considers that this package further fragments the market, which would serve to reduce liquidity. Moreover, it introduces inequity in the pricing; some customers receive congestion benefits and others receive congestion penalties. However, the incentives for investment to relieve intra-system congestion are not improved from the packages A or B.

6 Package D: Entry-exit model

AEMC Discussion Paper notes (p69):

> Package D involves converting the existing market carriage arrangements applying to the DTS to an entry-exit model.
>
> The DWGM would therefore need to be redesigned to solely involve the trading of gas, that is, to remove the implicit allocation of DTS capacity.

6.1 Key features of this package

This option is fundamentally the same as the current DWGM without an ancillary payments mechanism. Tariffs are currently structured as injection and withdrawal tariffs, just as they would be under an entry-exit model.

However, the current DWGM simultaneously dispatches gas supply and transport capacity. Package D would require the separate operation of commodity and transportation markets. This would introduce the risk that a shipper could obtain gas supply, but not be able to transport it, or vice-versa. This risk would be greatest in a European style model in which access to entry and exit capacity, and to gas supply, were both obtained through a day-ahead auction. In this case, the participant would have to be successful at both auctions in order to obtain gas supply.

While it is clear that this package is at least as complex as the DWGM (and arguably more complex with the duplication of market structures), it is not clear that this package adds anything to the development of a liquid market for gas.

6.1.1 Entry-exit as a contract carriage model

As a preliminary matter, APA notes that entry-exit is a contract carriage model in the context of the National Gas Rules. As discussed in s8.4.1 of the AEMC discussion paper, this creates scope for hoarding of entry-exit capacity in the same way that the AEMC is concerned that capacity can be hoarded on other pipelines.

In the UK and European entry-exit models, capacity is sold via auction, but one of the auction cycles offers a tranche of longer term capacity rights – it is possible to buy entry and/or exit capacity with a term of up to 15 years.

The European and UK system designers have felt it necessary to institute a number of capacity management measures to address the risk of hoarding, ranging from the voluntary surrender of capacity to the draconian long term Use-It-Or-Lose-It (UIOLI) provisions. Fortunately for the European and UK system operators, owing to the general decline in gas demand, pipeline capacity has been widely available in short term (day ahead) tranches, and it may be that the capacity management provisions have not had to be tested in earnest.

APA approach to capacity management

At the highest level, it should be noted that APA makes all capacity on all its assets available to the market every day.

On its contractually congested pipelines, APA applies a day-ahead Use-It-Or-Lose-It mechanism to provide day-ahead firm capacity to the market. Once contracted firm shippers have nominated their loads, the rest of the pipeline physical capacity is made available to the market as “day-ahead firm” capacity. Once scheduled, this “day-ahead firm” service ranks as a firm service. Importantly, firm shippers do not have contractual rights to increase their nominations on the day at the expense of scheduled “day-ahead firm” shipper.

6.1.2 Entry-exit model for DTS capacity

As outlined in the AEMC discussion paper, a key feature of an entry-exit model is that entry and exit capacities are booked separately. Tariffs are posted for entry to the system at each entry point, and for exit from the system at each exit point. Entry points include processing facilities and interconnections with other pipelines or storage facilities. Exit points include all points from which gas exits the transmission network: pipeline and storage interconnections, distribution networks and local "direct connect" end users.

APA notes that this approach is virtually identical to the way tariffs are posted on the VTS today.[9] It is not clear, then, what would be accomplished by a move to an entry-exit model for the VTS.

Importantly, under the entry-exit model, the shipper need not concern itself with any flow path requirements to move the gas from the entry to the exit point – this responsibility, and the associated risks, are placed on the system owner/operator. However, the design of an entry-exit model would need to recognise the physical limitations on the pipeline system and the coping mechanisms that have been put in place to accommodate those limitations, as discussed below.

6.1.3 Physical limitations of the VTS

APA also notes a key difference between the application of this model in the UK scenario compared to Victoria: the growth in network throughput. In contrast, APA understands that the UK pipeline network has witnessed a decline in demand since the entry-exit model was implemented. In this regard, APA questions whether the entry-exit model has been adequately tested under pressure to determine whether it will indeed operate effectively to encourage investment in circumstances in which demand is increasing.

Recent years have also seen significant growth in gas demand travelling through Victoria, driven by the startup of the Gladstone LNG facilities. Moreover, key pipelines on the VTS have witnessed changes in flow direction as ramp-up gas has been present in the market. Going forward, the Victorian system could expect to see infrequent large surges in southbound gas in the event of an LNG plant interruption at Gladstone. An effective entry-exit model would need to be able to accommodate these short-term (daily or within-day) surges in supply. This is particularly relevant considering the limited scope for the VTS to accommodate large swings in line pack.

The limited ability to cope with swings in line pack is evidenced by two key features of the existing market: the four-hourly balancing requirement, and the presence of LNG storage local to the Melbourne demand centre. Both these features are designed to cope with surges in demand that cannot be accommodated by changes in line pack.

The purpose of the LNG facility in particular is to enable the system to meet gas demand in cases of unexpected surges in demand, generally caused by an unexpected cold weather front. In this circumstance, it is not physically possible to transport gas across the system from Longford in time to meet the demand[10] – local injection is required from the Dandenong LNG facility. In entry-exit parlance, this represents a constraint immediately downstream from the Longford injection point.

[9] See http://www.apa.com.au/media/230870/2015%20vts%20tariffs.xlsx.

[10] Remembering that gas moves at approximately 30 km/hour.

An entry-exit system to be applied to the VTS would need to be able to accommodate the four-hourly balancing requirements and the need to inject LNG to maintain system integrity. The combination of the entry-exit model and the virtual hub may have unintended cost consequences for the network operator, as discussed below.

6.1.4 Virtual hub covering the DTS

A feature of both the entry-exit model and the virtual hub is the key assumption that the pipeline system is unconstrained. As discussed above, this is not the case.

APA can envision a scenario under this model in which the market could balance financially but not physically, with scope to impart costs on the system operator. For example, market participants could bid sufficient supply into the gas market to meet expected demand, purchase sufficient exit capacity at the various withdrawal points to meet user demand, and purchase sufficient injection capacity at Longford to inject sufficient gas to balance the market.

But in the case of an unexpected cold front, it is not clear whether the LNG injections required to meet the system needs would be sourced through the market or, the market having balanced assuming in-merit-order injections were accepted, if the costs of this system security requirement would fall to the pipeline operator. It is unlikely that participants would buy entry capacity from Dandenong on days when LNG supply was not anticipated to be required. This may also require the network operator to trade in gas (LNG) to maintain system integrity. Ultimately these costs would have to be borne by the market.

In contrast, the current operation of the DWGM pricing schedule settles the gas market under a “no constraints” assumption, which is then modified by the application of the operating schedule. The operating schedule implicitly (and automatically) allocates the Dandenong entry capacity when it dispatches the out-of-merit-order LNG.

6.2 Summary and Conclusion

On balance, APA does not see that this approach accomplishes any of the policy objectives better than the current DWGM. In particular:

- the entry-exit model introduces scope for entry capacity hoarding, which may require a new suite of complex and intrusive capacity management mechanisms; and
- the combined “no constraints” assumptions in both the entry-exit network pricing and virtual gas market presents risks to the system operator in terms of a potential need to purchase LNG to maintain system security. These costs would ultimately need to be borne by the market.

7 Package E: Hub and spoke model

The AEMC Discussion paper notes: (p73):

> Package E involves the following:
>
> - a balancing hub at Melbourne (the 'hub'); and
> - converting all other sections of the DTS to contract carriage (the 'spokes').
>
> Package E also involves establishing GSHs at Longford and Iona where parties can trade wholesale gas.

The discussion below interprets this package as transferring the entire VTS to a contract carriage model, and replacing the DWGM with two gas supply hubs and a balancing hub. This would create a model not unlike Wallumbilla at Iona and Longford, with the balancing hub performing a function similar to MOS allocation at Melbourne. Importantly, these markets operate within a contract carriage environment.

Section 7.5 discusses a hybrid approach in which the high capacity “through” pipelines of the VTS are converted to contract carriage, but the DWGM continues to operate in Victoria.

7.1 Features of the contract carriage model

It should be noted that the Australian gas industry already has experience with all the features of this model. It would not be necessary to create any new trading mechanisms, capacity allocation methodologies, or pricing structures – these are all already in place in other parts of the gas transportation supply chain. These features could be readily applied to Victoria.

APA considers that the greatest barrier to implementing a contract carriage model in Victoria would be the necessary legislative amendment to allow the change, and managing transition of the current limited rights bestowed through Authorised MDQ and AMDQ cc.

7.1.1 Balancing hub at Melbourne

The balancing hub in Melbourne could be designed to adopt all the proposed improvements to the STTMs currently operating in Brisbane, Sydney and Adelaide. Consistency in operation across these balancing hubs would serve to remove barriers and reduce administrative costs for multi-jurisdictional participants.

7.1.2 MOS and Hub services

MOS and hub services are already offered at major market centres, including the Wallumbilla hub, and those established procedures could be readily transported to the Melbourne market.

Minor adjustment may be required to accommodate the more stringent balancing requirements of the Melbourne market, and to provide for LNG injection to accommodate unexpected weather patterns when required.

As the AEMC notes, these hub services will be relevant while gas must physically traverse the inner ring main between Culcairn and Iona.

7.2 Application of contract carriage to the DTS

APA considers that it is important to note that the framework to apply contract carriage to the VTS is already in place. This model is in effect on all other pipelines in the nation – no new systems would need to be created to apply contract carriage to the VTS.

In this case, the VTS could be envisioned to be not unlike a large distribution network. Many distribution networks are designed with a set of larger capacity "backbone" pipelines with progressively smaller pipelines branching from them. Various distribution networks have differing degrees of inter-connectivity.

In the context of the VTS, a distribution network offtake would be considered in much the same was as a distribution network considers a large customer. It would be the responsibility of the transmission system operator to ensure that sufficient capacity was available at the distribution network offtake point to accommodate all current load with a margin for forecast growth. Retailers would nominate their requirements for a particular offtake, and the system owner/operator would be responsible for ensuring that investment occurred as necessary to provide firm capacity at that offtake point.[11]

7.2.1 Definition of firm and non-firm capacity

As described in the context of the entry-exit model above, APA makes all capacity on all its assets available to the market every day.

APA would propose to apply this same procedure to the contract carriage VTS, such that contracted capacity would be scheduled first, and any unutilised contracted capacity would be made available on a "day-ahead firm" basis. Once scheduled, the "day-ahead firm" capacity would rank as firm, alongside the long term firm capacity.

[11] In the context of distribution network offtakes, retail churn does not drive a need for new capacity investment. Rather, the physical utilisation of gas, as driven by the appliance stock and organic load growth, is the relevant requirement for physical capacity.

It may be necessary, in the short term, to define an amount of capacity along particular flow paths, consistent with the VTS operational schedule. In the contract carriage model, demand for additional capacity along those flow paths would provide a signal for additional investment.

However, under a contract carriage model, the system operator would have more tools available to manage capacity. In particular, the system operator could contract for voluntary curtailment of non-essential loads as a means of providing firm capacity without additional capital investment.

Network users are in the best position to decide, based on their business needs for capacity on the system peak day, whether to contract for firm capacity. For example, a feature of the flexibility of the contract carriage model is that a shipper could choose to contract for firm capacity on 360 days per year, with a one-day notice period for up to five days of curtailment.

In terms of allocating property rights, APA considers that it should be possible, in the first instance, to transition all existing Authorised MDQ and AMDQ cc rights to firm capacity. In principle, APA considers this as a substitution with superior property rights, and therefore does not anticipate objection to this transition.

7.2.2 Imbalance tolerances and penalties

A key feature of the VTS is its limited line pack, and its susceptibility to unexpected cold weather patterns. The VTS is therefore less capable of tolerating imbalances than other pipelines in eastern Australia.

APA agrees with the AEMC's assessment that the VTS imbalance tolerances may need to be tighter than in other contract carriage pipelines. The nature of the VTS is such that wider imbalance tolerances could expose the pipeline operator to the costs of purchasing LNG from storage to maintain system integrity.

In the current DWGM, the four-hourly balancing period has been adopted as a coping mechanism, and it may be practical to continue to apply this feature in the Melbourne balancing hub mechanism.

7.2.3 Backhaul services

The AEMC discussion paper (p77) notes that Iona and Culcairn are specified as both injection and withdrawal points. APA concurs with the AEMC's comments on the importance of bidirectional flows.

However, the concept of "backhaul" implies a predominant direction of flow in the pipeline and no bi-directional capacity. This presumption of a predominant direction of flow may no longer be valid in the context of recent experience with reversing flow direction on pipelines.

In response to shipper demand for bidirectional services, APA has invested in its pipelines to provide bidirectional capacity. Bidirectional services require the ability to physically flow gas in both directions; this is quite distinct from backhaul, which requires gas to be assumed to flow in a direction opposite a predominant flow.

APA considers that the concept of “backhaul” is not relevant in a bidirectional world, and would propose to offer bidirectional services rather than backhaul services.

7.2.4 Secondary trading of capacity

APA concurs with the AEMC on the importance of the ability of shippers to trade capacity, and has established a capacity trading platform to facilitate secondary trade. APA is also committed to working to further remove perceived barriers to secondary trade of pipeline capacity.

The nature of the VTS means that it may be necessary to retain some restrictions on receipt and delivery points, and retain tighter control over balancing. However, APA considers that this will only be of concern where most capacity trading is likely to occur - on the main “through” routes (Longford – Wollert – Culcairn – Iona) of the network which connect the main trading hubs.

APA considers that the existing (and developing) capacity trading frameworks could be expanded to accommodate the contract carriage pipelines within the VTS.

APA notes that the AEMC is separately investigating the secondary trade of pipeline capacity.

7.2.5 Investment coordination

The AEMC discussion paper (p77) addresses the question of investment coordination, noting that the market carriage model allows explicit consideration of investment that would be to the benefit of all users on the pipeline,[12] but is acknowledged not to facilitate investment that would be to the benefit of a single user or group of users. As discussed above, APA applies an “open season” process to coordinate and aggregate the needs of users to ensure the most efficient expansion is undertaken.

The AEMC notes, and APA concurs, that it is not aware of any circumstance in which economically prudent investment that would be to the benefit of all users on the pipeline has not been undertaken on a contract carriage pipeline.

But one area in which the market carriage model has failed, and contract carriage has succeeded, is in coordination of investment across pipeline systems. This is particularly relevant with the interconnection of the VTS, and with gas travelling greater distances across the east coast of Australia.

Under a contract carriage east coast gas network, shippers would be able to reserve capacity from one end of the system through to the other, with confidence that their

[12] The mechanism for accomplishing this investment is the regulatory process, the end result of which is that all users pay for investment that benefits all users.

gas will be shipped as requested. It would not be necessary to win consecutive auctions, or risk having access to any link curtailed.

Shippers have been reluctant to invest in pipeline capacity to ship gas into or out of Victoria, as they have been unable to obtain certainty of the ability to transport gas through Victoria. Recent investments in VTS capacity beyond that forecast in the access arrangement has been undertaken on the strength of contract carriage agreements outside Victoria that provide some certainty of demand. In an east coast contract carriage model, shippers and pipeliners can invest with confidence, in the certainty that they will be able to transport their gas over the distances agreed.

7.3 Longford and Iona GSHs

The AEMC discussion paper (p78) notes: “A key question therefore exists as to whether there are likely to be sufficient potential market participants and volumes of gas to generate deep and liquid trading at Longford and/or Iona”.

APA considers that the answers to this question lie in the AEMC Gas Market Review and in the ACCC East Coast Gas Inquiry.

However, APA notes that contract carriage pipelines operate effectively throughout the east coast of Australia, with the same (small) number of large participants that currently operate in Victoria. In this regard, APA considers that contract carriage is not a barrier to developing a liquid gas market in Victoria.

7.4 Summary and Conclusion

In summary, APA considers that there are many benefits to be gained in moving the VTS to contract carriage, particularly in terms of coordinating the trade and movement of gas across the east coast of Australia.

Further, APA notes that the necessary systems and structures to accomplish this move are already in place in other jurisdictions, and would not require significant investment in new systems or procedures to apply them to Victoria.

7.5 A refinement to package E

As a refinement to Package E, APA considers that is may be possible to develop a hybrid approach the captures the certainty associated with the application of contract carriage on the east coast of Australia without losing the good points of the Victorian DWGM. This refinement is discussed in this section.

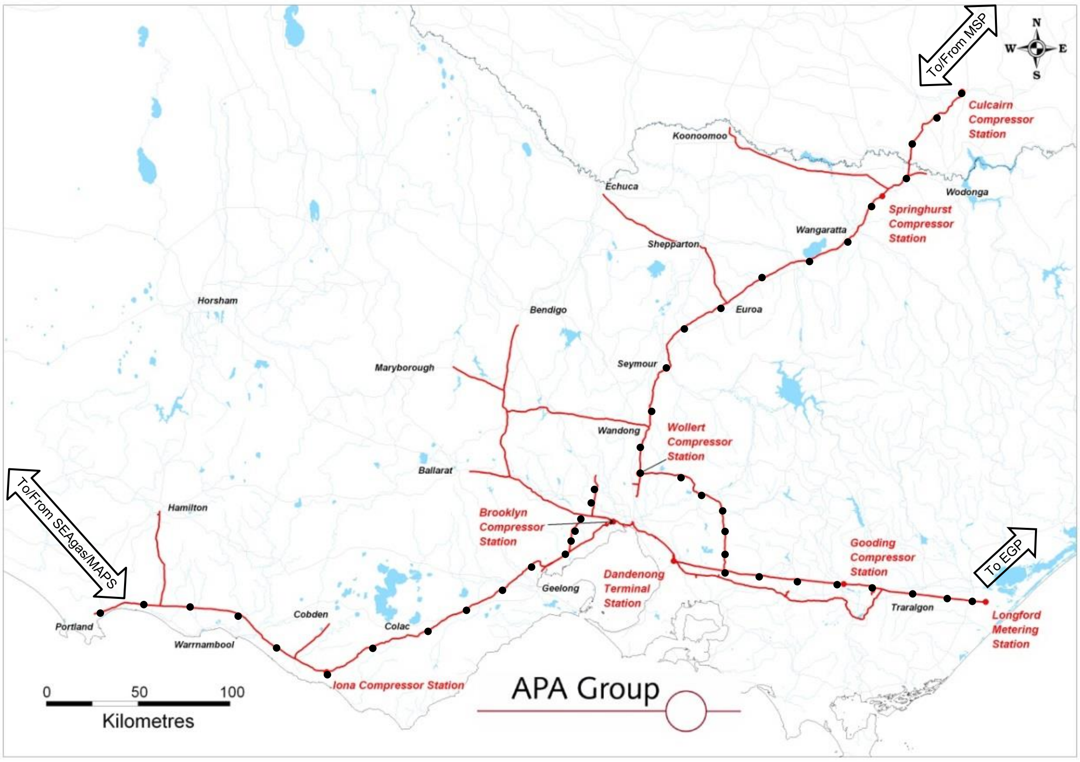
7.5.1 Features of this model

The "meshed network"

In assessing this package, APA considers that it is important to challenge an aspect of conventional wisdom - the "meshed network". While it is true that the Victorian Transmission System has more injection and offtake points than Australia's "bullet" pipelines, many demand locations still have a single point of transmission supply.

Rather, the system is more accurately characterised as a high capacity transmission system somewhat resembling the Greek letter lambda (λ) with a more interconnected network within the lower crutch of the system. These major pipelines of the system are shown with black dots in the map below:

Figure 7.1 – Major transmission pipelines in the Victorian Transmission System



APA considers that any reforms to the Victorian gas market need to be sufficiently durable as to accommodate future investment in the network.

In particular, this package should be considered in the context of a world in which there are high-capacity pipelines linking Port Campbell/Iona, Culcairn and Longford via Wollert.

The model discussed below envisions that only the high-capacity "spoke" pipelines would be converted to contract carriage; that the rest of the system would remain under a market carriage framework and subject to the DWGM. While this approach maintains some of the key benefits of the market carriage model (notably the ability of small retailers to enter the market) it also retains some of the disadvantages (notably signals for investment in the market carriage components of the system).

7.5.2 The DWGM within a hub and spoke model

APA considers that the DWGM could still operate in much the same way as it does today under a hub and spoke model in which the backbone pipelines operate under contract carriage.

In a contract carriage framework, the network owner would allocate a given amount of firm "spoke" capacity (that is, a defined amount of firm capacity) to the various offtake points for AEMO to allocate through the market. In this model, AEMO would simply be another firm shipper on the "spoke" pipelines, with the same expectations and rights for firm capacity as any other shipper.[13]

The amount of firm capacity to be made available by the contract carriage pipelines would be agreed through amendments to the Service Envelope Agreement. The cost for this firm transmission could then be allocated through the existing tariff model and recovered through tariffs.

Under this approach, it would be possible for AEMO to maintain control over the VTS planning standards. It would simply be incumbent on AEMO to contract for a sufficient level of firm capacity at each offtake point to be sure of meeting its defined requirements for peak demand.[14]

In order to provide firm capacity for AEMO to continue to operate the DWGM, physical operation of the system would likely need to rest with the contract carriage system owner, rather than a separate system operator.

7.5.3 Balancing hub at Melbourne

APA considers that the Melbourne DWGM balancing hub would continue to apply for the Victorian market. "Through" flows would be subject to a balancing regime consistent with the contract carriage model (that is, one featuring overrun charges).

Under this approach, the DWGM balancing market would operate in much the same way as it does today, except with lower volumes – "through" volumes would not trade through the DWGM.

The impact of this on the operation of the market is arguably very small. As the AEMC noted in its Stage 1 review, the majority of trades in the DWGM are within-

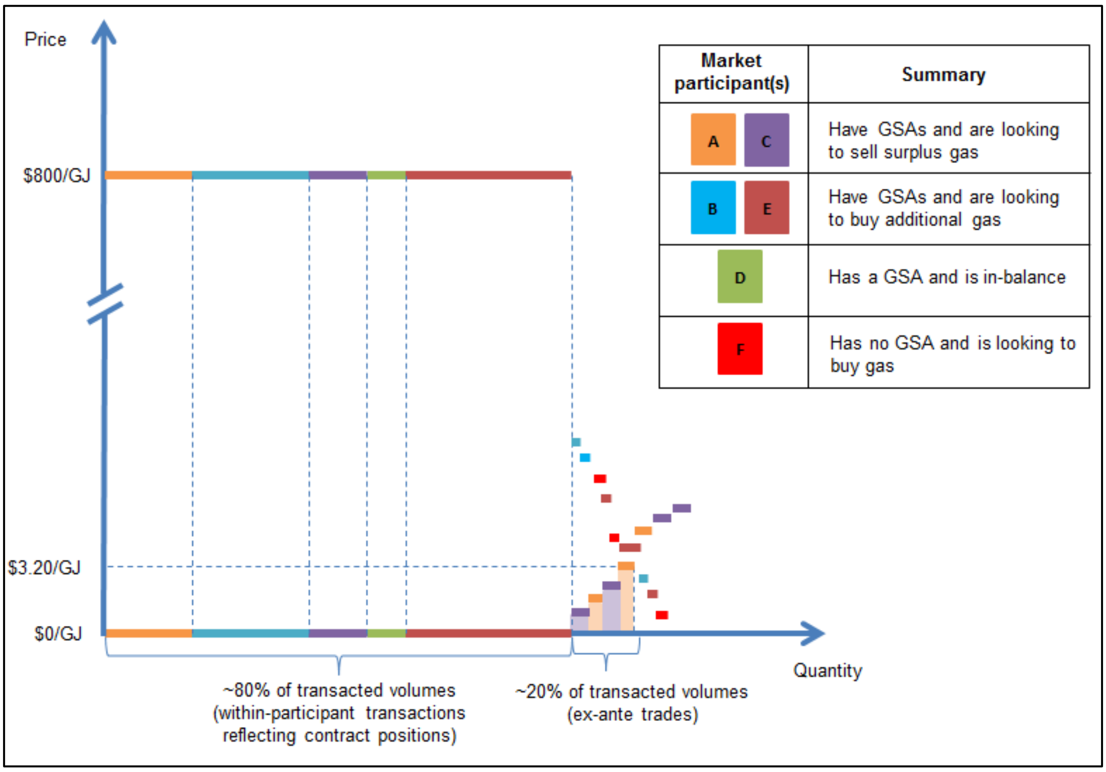
[13] Indeed AEMO could enter the secondary market to trade its reserved but unutilised capcity.

[14] The tariff structure under this model remains to be developed. It is possible that that an injection tariff would not be required under this model – all transport charges could be recovered through withdrawal tariffs.

participant trades – that is, shippers trading with themselves due to the compulsory nature of the market.

The AEMC Stage 1 Report noted that these shippers tended to bid supply at zero to ensure dispatch, and bid purchases at market maximum to ensure delivery. This is very much the behaviour that we would expect of shippers seeking to move gas through Victoria without participating in the market. This is depicted in the AEMC's Figure 6.2, reproduced below:

Figure 7.2 – AEMC Figure 6.2 - DWGM supply and demand – all participants



Under the proposed hybrid hub and spoke model, the observed size of the DWGM would shrink somewhat due to the removal of "through" gas from the market.[15] This is depicted graphically in the diagram below, which is a modification of AEMC's Figure 6.2 with the assumption that Shipper D is seeking to move the majority of their gas to points outside Victoria.[16] These supplies would be shipped on the contract carriage "spokes" of the network, and would therefore not enter the DWGM.

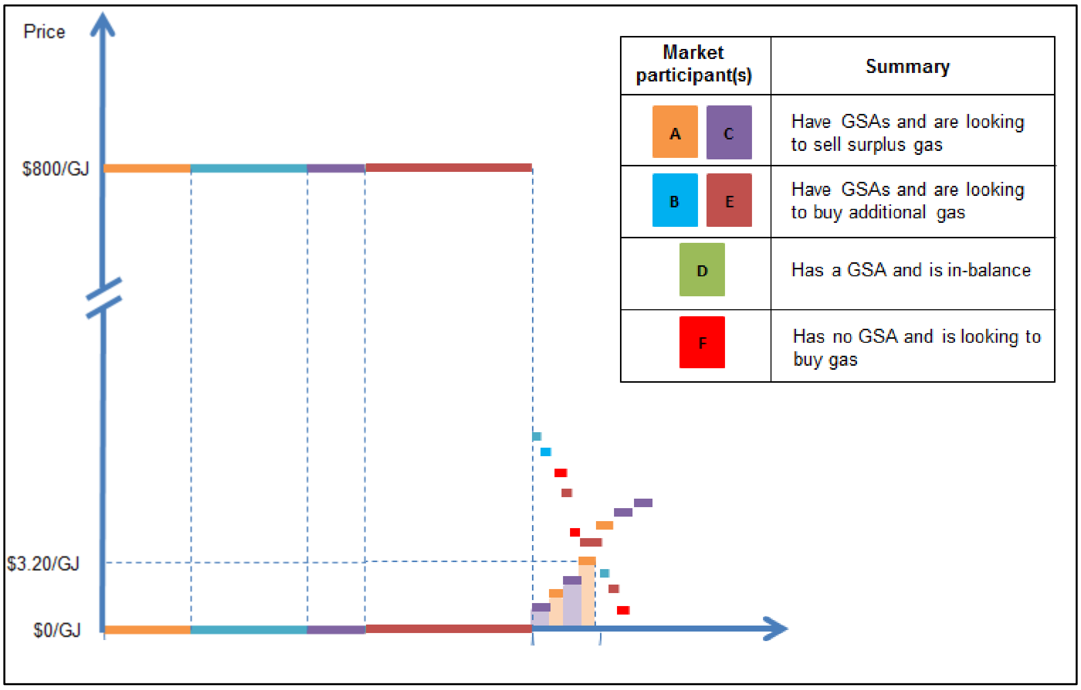
Acknowledging that this is a stylised example, APA considers that the volumes that would cease to be traded through the DWGM are not volumes that would determine the market price of gas. That is, the volumes that would cease trading through the

[15] Approximately 10-15% of the gas traded through the DWGM is destined for points outside Victoria.

[16] Or, alternatively, bringing gas into Victoria from other areas for injection into storage.

DWGM would be expected to be within-participant trades - gas bid in at zero and bid out at market maximum. In this example, Shipper D's volumes on the AEMC's graph would disappear, but the right side of the DWGM bid/offer graph is likely to be much the same, as shown below:

Figure 7.3 - DWGM supply and demand – market participants only



7.6 *Risk Management*

Under this contract carriage model, "through" shippers would not need to manage the current risks associated with injecting into the system. Each shipper would simply contract for a specified amount of capacity on the contract carriage pipelines and the pipeliner would be responsible to ensuring that capacity is available.

The pipeliner would then have the full gamut of risk management tools available to it, including bilaterally negotiated contractual curtailment of non-essential loads.

In the local Victorian market, once AEMO has reserved sufficient capacity on the contract carriage pipelines, access to the system would only be limited by the capacity of the various supply offtake points from the high capacity "spokes".

APA notes the AEMC's concern[17] that the amount of available firm capacity for the contract carriage pipelines would need to be conservatively defined while the system still requires gas to traverse the "meshed" parts of the network. Definition of the amount of firm capacity would be subject to an engineering assessment.

[17] Discussion paper pp74-75.

APA agrees that the amount of available interruptible service would depend on usage by the local market, consistent with the operation of other contract carriage pipelines in Australia.

7.7 *Signals for investment*

APA considers that, under a hybrid hub and spoke model, the signals for investment on the "meshed" parts of the network would be largely unchanged from the current situation. This is largely a function of the assumption that the DWGM would continue to operate as normal in this part of the network.

However, the hub and spoke model would allow the contractual signals for investment, including intra-period investment and contractual certainty on capacity, to encourage investment on the "through" pipelines.

7.8 *Regulatory framework*

APA considers that the regulatory framework may appear complex at first blush, but need not be.

APA considers that there could be two workable models from a regulatory perspective:

- a model in which the "spokes" were converted to contract carriage, and AEMO reserved sufficient capacity at each offtake point to manage the DWGM in much the same way as it does today.
- a model in which the entire VTS would transition to a contract carriage model with a major customer (AEMO) nominating flows on significant portions of the network. AEMO would then on-sell that capacity to the market (the DWGM) which it would continue to operate.[18]

Either of these models would require some degree of legislative change, and changes to the existing APA GasNet Access Arrangement.

APA considers that, in the context of the larger policy objective of achieving a liquid gas market in the east coast of Australia, these changes would be relatively minor.

7.9 *Market-led investment*

APA considers that a contract carriage "spoke" model would provide the contractual certainty to deliver the market-led investment that has been the contract carriage success story, which has been lacking in the VTS to date.

[18] This model would allow direct-connect customers on the "through" pipelines to negotiate their own gas supply contracts and contract for transport to their premises.

Should the DWGM be maintained in the "meshed" parts of the network, there would be no change to the market incentives for investment from that existing today.

7.10 Import and export related issues

The key benefit of a contract carriage "spoke" model is that "importing" or "exporting" shippers would be able to have contractual certainty that they can ship a given amount of gas on a given day.

This certainty would be expected to contribute significantly to the development of a free market for gas on the east coast of Australia.

While the AEMC discussion paper often discusses "exports" from Victoria, it is important to address the circumstance of "imports" to Victoria as well. In the event of an unscheduled outage in a Queensland LNG facility, it is likely that gas will flood into the market, travelling southbound from Queensland to Victoria.

In this circumstance, it will be important for shippers to be confident that they can ship gas into storage.

But it will also be important for these shippers to be able to sell their gas into the Victorian market. Again assuming that AEMO continued to operate the DWGM, these shippers could bid their gas into the market, presumably at low cost, which would then displace local (more flexible conventional) production. This would be a good outcome both for the gas market, and for Victorian consumers.

7.11 Summary and Conclusion

APA considers that a hybrid hub and spoke model in Victoria would contribute to the achievement of the Energy Council's policy objective of a liquid market in gas, by allowing free trade in all interstate gas. Gas trading hubs at Longford and Iona would allow for reference hub pricing and trade at those locations.

Importantly, shippers would be able to invest in capacity on the high-capacity "spokes" of the system, with the confidence that they will have firm rights to that capacity. This will be critical to enable shippers to get gas to and from the physical trading hubs.

APA acknowledges that Victorian "domestic" consumption would effectively be excised from the east coast market through the continued operation of the DWGM. But given the low cost of ancillary payments, it is possible that the Victorian balancing hub would settle at a price not materially different from the Longford or Iona GSH markets.

8 Conclusion – Preferred approach

On balance, APA considers that, of the options proposed in the AEMC Discussion paper:

- Option A makes minor changes to the DWGM that may marginally improve its performance. However, attempts to create firm capacity rights has proven to be complex and difficult;
- Options B, C and D propose reforms, some far-reaching, which do not make significant differences to the current operation of the DWGM, but impose higher complexity;
- Option E represents a more sweeping reform to the DWGM, implementing contract carriage, and allowing for capacity rights to be obtained on major pipelines within the network.

Option A does not break down the barriers to a liquid east coast gas market that exist today, notably the inability to gain firm transmission access rights to support the trade in gas.

Option E, with firm transmission rights, would better promote free and liquid trade in gas on the entire east coast of Australia.

At first glance, a choice between these two packages appears to hinge on a decision on which is more important: competition in the east coast gas market, or competition in the Victorian gas market.

APA considers that it is possible to have the best of both worlds, as discussed in section 7.5 to this submission.

8.1 Recommendation

APA considers that it is not necessary to land on an “either/or” solution.

As discussed in section 7.5, APA considers that it would be possible to move the high capacity “spoke” pipelines connecting Longford, Culcairn and Iona through Wollert to contract carriage, and allocate a proportion of the firm capacity to AEMO to operate the DWGM in much the same way as it does today.

APA could then provide firm “through” capacity to transport gas into or out of Victoria, and could augment those pipelines as required by the market to accommodate shippers’ demands for firm capacity.

APA would be pleased to workshop this proposal with the AEMC to flesh out more detail on its practical operation.