APA Group

Submission to AEMC
Discussion Paper:

Review of the
Victorian Declared
Wholesale Gas Market

March 2016

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1 Executive Summary

1.1 Context

APA considers that it is useful to refer to the Terms of Reference for this review to ensure that the proposed outcomes are responsive to those Terms of Reference:[1]

1. **Effective risk management in the DWGM:** the ability of market participants to manage price and volume risk in the DWGM and options to increase the effectiveness of risk management activities;
2. **Signals and incentives for efficient investment in and use of pipeline capacity:** whether market signals and incentives are providing for efficient use of, and efficient and timely investment in, pipeline capacity on the DTS;
3. **Trading between the DTS and interconnected pipelines:** producers and shippers should be able to effectively operate across the different gas trading hubs on the east coast without incurring substantial transaction costs;
4. **Promoting competition in upstream and downstream markets:** whether the DWGM arrangements continue to facilitate market entry and promote competition in upstream and downstream markets;

If the AEMC proposes recommendations for market reform, it should clearly demonstrate to the Victorian Government and the Council of Australian Government's (COAG) Energy Council how the recommendations address the issues identified, that they continue to safeguard the security of gas supplies to Victorian customers, are proportionate to the problem being addressed and that they will promote the national gas objective.

1.2 Focus on efficiency and incentives

One of the key themes in the Terms of Reference is the focus on efficiency (an economic term) and incentives, both in investment in pipeline capacity, and in the utilisation of existing pipeline capacity.

APA VTS is concerned that the AEMC appears to have ignored the separation of the owner / system operator from the market operator, a key aspect of the entry-exit system that is prevalent across the European model. Drawing on the European model, APA VTS submits that it is critical to align the system owner and system operator roles, and separate the system operator and market operator roles, in order for the entry-exit model to operate effectively.

APA's primary concern with the AEMC Discussion Paper recommendations concerns the ability of the regulatory framework to effectively provide incentives for

[1] Government of Victoria, Department of Economic Development, Jobs, Transport & Resources, Review of the Victorian Declared Wholesale Gas Market Terms of Reference, 4 March 2015.

investment in, and utilisation of, pipeline capacity, where the operator is a not-for-profit entity.

APA VTS submits that the profit motive is a very strong tool to be accessed by governments to achieve policy objectives. Where this motivation is not present, the achievement of government's objectives will be slow, minimalist, and lacklustre at best.

In contrast, the profit motive and the scope for outperformance available outside the Victorian system has delivered significant investment in pipeline capacity and considerable innovation in the range of services offered to the market. In the DWGM, investment is driven almost entirely by regulatory oversight processes, and there is a single, "vanilla" gas transportation service provided.

APA VTS is concerned that this profit motive cannot be used as a tool where it is not present. In particular, as the AEMC has identified, it is unlikely that AEMO, as a not-for-profit system operator, would have the motivation to achieve Government's objectives through pursuit of higher profitability. This tool can only be utilised where there is a private operator whose motivations can be aligned, through an incentive mechanism, with Government's objectives.

The same argument applies in terms of efficiency. AEMO currently recovers its considerable costs through a levy imposed on shippers, to which there is a largely opaque governance process. There is considerably less motivation placed on AEMO to contain costs than is the case in a profit-making entity.

1.3 Key points

As developed more fully through this submission, APA VTS' primary concern is that the separation of asset ownership and operation is the key feature of the AEMC's recommendations that causes the loss of the important incentive tool for government to be able to achieve its objectives.

APA VTS sees considerable opportunity for the system, and its users, to benefit if the implementation of the entry-exit model follows the European model in aligning the system owner and system operator function. With aligned incentives, APA VTS considers that it can operate the system to more efficiently utilise capacity than is observed under the current not-for-profit operator model.

As currently proposed, APA VTS sees a considerable imbalance in incentives, with penalties for underperformance, but no scope for additional revenues for outperformance. In APA VTS' view, this imbalance would be expected to have a significant impact on the behaviour observed under the framework, and endangers the achievement of government's policy objectives.

As currently proposed, the entry-exit model, featuring a one-sided incentive framework and a revenue cap form of regulation, fundamentally changes the risk/reward relationship associated with the Victorian Transmission System. This highlights a heightened degree of sovereign risk that will make it more difficult to attract low cost capital to meet Australia's infrastructure development needs.

On balance, having reviewed the next level of detail associated with the entry-exit model as outlined in the discussion paper, APA VTS remains unconvinced that the move to an entry-exit model delivers market-wide benefits, relative to the current DWGM, to justify the considerable costs and upheaval associated with the transition.

2 Managing capacity at the Southern Hub

On the inception of the DWGM, a unique structure was created in which allocation of pipeline capacity was based on successful dispatch of the commodity, using an auction-based market engine. As the supply of the commodity and the allocation of pipeline capacity was intricately linked, an allocation of roles which combined the market operator and system operator functions was reasonable in that context.

However, a change to an entry exit model, in which pipeline capacity and commodity transactions are separate, does not rely on the combination of the market operator and system operator roles – indeed it sits quite uncomfortably.

APA VTS considers that a change to an entry-exit model presents an opportunity to review these roles, with an aim to allocating these roles to those parties that can perform them best to achieve government's policy objectives in the long term interests of customers.

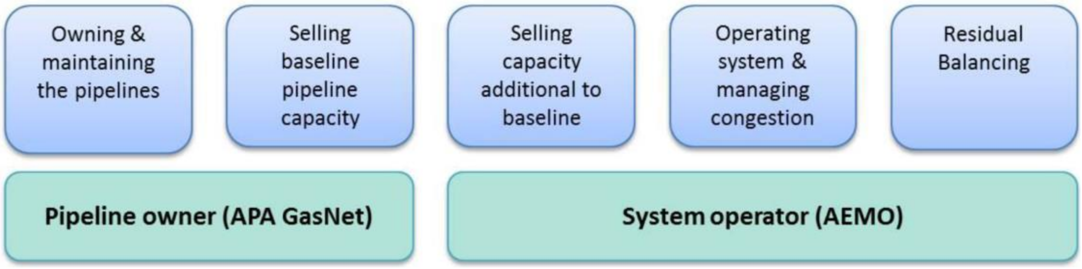
APA VTS notes that a feature of the AEMC discussion paper is a presumption that AEMO would continue to function in both the market operator and system operator roles. APA VTS urges the AEMC to forensically investigate this assumption.

2.1 Allocation of roles and functions

Given existing allocation of roles between pipeline owner and system operator in the DTS and DWGM, whether the proposed allocation of system operation functions at the Southern Hub is appropriate and likely to achieve the optimal balance between efficient use and efficient operation of the system.

APA considers that this question includes an invalid premise - that the existing allocation of roles and functions should be presumed to be same after market reform as in place today. That is, the discussion paper *presumes* that AEMO should continue to both operate the market and operate the pipeline system:

Figure 2.1 – AEMC proposed allocation of functions



The alignment of the system operator and market operator roles in the DWGM is a unique construct owing directly to the distinctive design of the DWGM. In particular, where access to pipeline capacity is allocated on the basis of the outcomes of commodity market operation, it makes sense for the market operator to have considerable control over the operation of the system.

However, where the operation of the commodity market is separated from the mechanism to allocate pipeline capacity, there should no longer be a presumption that the market operator and system operator functions should reside in the same body.

The AEMC Discussion Paper has glossed over this issue, and simply presumed that AEMO would continue in the role of system operator. APA considers that, where the operation of the commodity market no longer drives the allocation of pipeline capacity, the system operator and market operation functions should be separate.

This separation, APA VTS submits, provides for the continued independence of the market operator while allowing for operational efficiencies to be achieved by the pipeline system owner/operator.

This is also inconsistent with the findings on the DWGM draft report, in which the market operations would be transitioned to a residual balancing role. It is not at all clear that the residual balancing market operator needs to be able to control the pipeline system in order to perform its functions.

It is also noteworthy that the entry-exit system, drawing on the European model as the AEMC proposes, features the separation of system operation and market operation roles. APA VTS submits that, if the AEMC proposes to depart from the European model in this critical respect, it should be prepared to give clear and compelling reasoning for this departure, demonstrating why its proposed approach will deliver greater benefits than the European model.[2]

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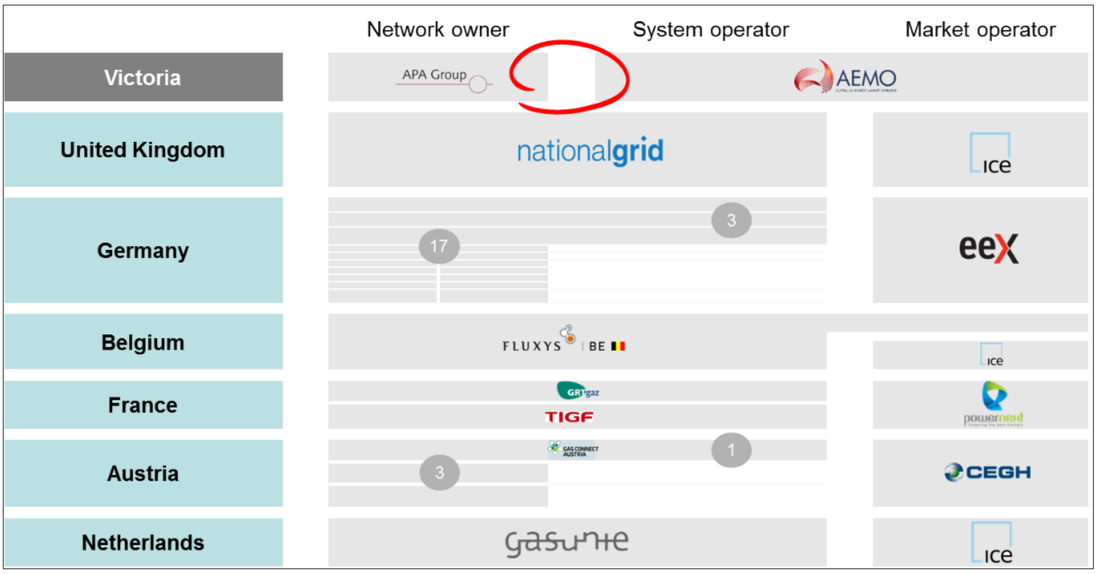
[2] In terms of costs and benefits, APA VTS notes that the AEMC discussion paper (p69) comments that the AEMO DWGM systems are at the end of their life, with investment in new systems required to be upgraded – as the systems require upgrade anyway, this is an ideal time for a change in market system. APA VTS agrees, and notes that this is therefore also the ideal time to assign the system operation role to the owner.

As noted in its submission to the draft report, the proposed alignment of the market operator and system operator roles in a Victorian entry-exit system would contrast to virtually all entry-exit systems in place in Europe, which has been used as the model for this proposal.

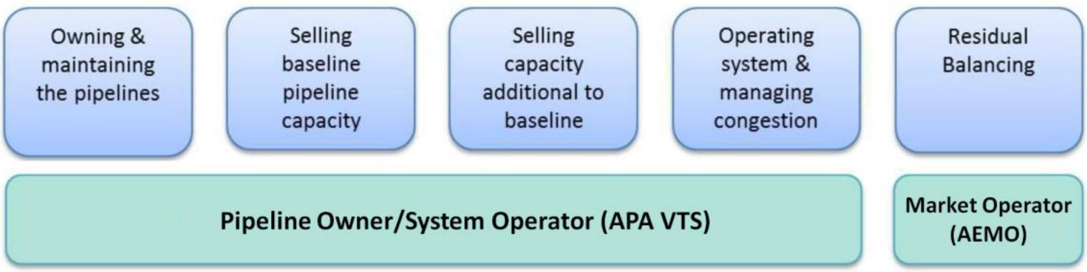
Figure 2.2 – Allocation of functions – Victoria vs Europe



The AEMC should, in APA VTS' view, investigate why all entry-exit jurisdictions have the asset owner as the system operator, and separate the market operator and system operator role, and what is unique in the post-DWGM Victorian market that mandates that these roles should be combined.

Using the Discussion Paper framework, APA VTS considers that, if an entry-exit system is to be implemented, the allocation of roles and functions should be aligned to those in successful entry-exit systems overseas:

Figure 2.3 – APA VTS proposed allocation of functions



2.2 Security of supply and system management

Security of supply and system management represents a tradeoff between risk of non-delivery of gas, and efficient system utilisation. In the current "independent operator" model, we observe the system being operated in a conservative manner. While this gives certainty for security of supply, the effect has been poor system utilisation (refer ToR 2 re efficient use of pipeline capacity).

APA VTS considers that it is critical that the entity that is subject to financial penalties for failure to provide contracted capacity (the pipeline owner) should have the tools to ensure that pipeline capacity can be provided.

Aligning the pipeline ownership and operation of the pipeline allows more commercial tools to be brought to bear in pipeline capacity management.

For example, APA VTS, as operator, could enter into voluntary load reduction agreements with key shippers, allowing them to reduce demand at peak times in exchange for a cash payment. Given that the peak capacity of the system is used infrequently, this type of payment comes at considerably lower cost than the cost of building additional capacity to meet all peak loads every day (the more conservative model currently applied by the independent system operator).

Similarly, the independent system operator currently requires the system to be planned to provide sufficient capacity to meet the 1-in-20 year peak day (that is, sufficient capacity to meet the peak demand of one day in 7,305 days). The commercial owner-operator is in a much better position to apply commercial load management tools to manage the peak demand to defer or avoid investment in capacity which is seldom required.

2.3 Efficient utilisation of capacity

2.3.1 Incentives for efficient use of capacity

The Discussion paper notes that "it is important that the entity chooses the instrument that is most efficient in managing the constraints or balancing costs."[3] It is not obvious to APA VTS that the current independent system operator has effective incentives to choose the most efficient instruments to manage constraints and balancing costs. A commercial owner-operator has a clear incentive to balance risk and profit to achieve the government's "efficient utilisation" objective.

APA VTS questions whether these incentives can be relied upon with a non-profit operator. It is clear that the AEMC questions this as well:[4]

> In EU gas markets, the entities that build and allocate capacity, manage congestion and undertake balancing, tend to be integrated, for-profit private or

[3] AEMC Discussion Paper p17.

[4] AEMC Discussion paper p21, footnote 34.

state-owned organisations. Many operate under an incentive regime aimed at co-optimising capacity release and system operation. In Victoria, the ability to achieve a similar outcome is restricted by AEMO's not-for-profit status, which prevents the use of financial incentives, and the separation of APA as the pipeline owner and AEMO as the system operator.

APA VTS believes that the AEMC has hit upon the crux of the problem: it is not possible to achieve government's policy objectives by applying incentives to an agency that does not respond to them, and is also subject at the same time to other conflicting incentives which it has strong reason to respond to.

This is, in APA VTS' view, the primary reason that system ownership and system operation are aligned in the European entry-exit system. Aside from the important separation of the market operator and the system operator, the profit-motivated system operator is in a much better position to respond to incentives to maximise the efficient utilisation of system capacity, consistent with government's objectives.

2.4 Baseline and additional capacity

The discussion paper identifies two types of entry and exit capacity:

1) the "baseline" capacity that the system is required to provide, and
2) "additional capacity" that may be able to be provided on a given day, dependent on system utilisation.

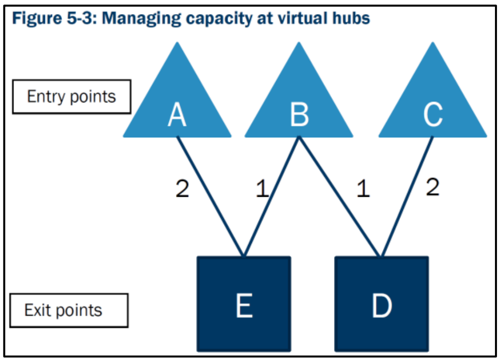
2.4.1 Defining baseline and additional capacity

As a preliminary matter, APA VTS considers that it is important to understand just what this means in an entry-exit context.

The AEMC commissioned a report by FTI Consulting[5] which addresses this issue:

> 5.70 In Figure 5-3 we present a simple diagram of a virtual hub. It shows a network, with entry points A, B and C and exit points D and E. We assume that pipelines A-E and C-D can each transport 2 units and pipelines B-E and B-D can each transport 1 unit. When moving to a virtual hub pipelines operators need to agree on the volume of entry capacity to sell at each entry point and [the volume of exit capacity to sell] at each exit point.

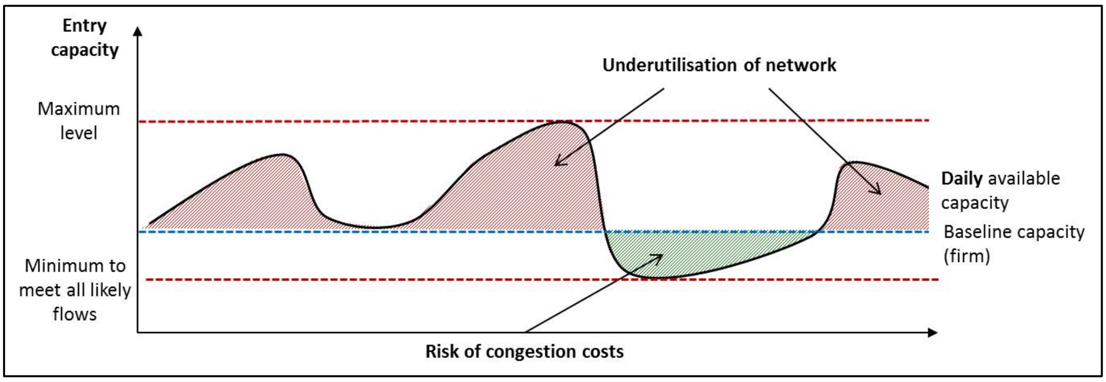
Figure 5-3: Managing capacity at virtual hubs



[5] FTI Consulting, Conceptual design for a virtual gas hub(s) for the east coast of Australia, December 2015, p47.

5.71 In order to maximise capacity, pipeline operators may wish to sell 2 units of entry capacity at each point A, B and C and 3 units at the exit points D and E. However, given that shippers buying entry capacity do not have to specify the exit point for the gas, there is a risk that a shipper buying the 2 units of entry capacity at B will wish to flow both units to either point D or E. However, there is insufficient capacity on pipelines B-E and B-D to flow more than 1 unit of gas. Therefore, the system operator may offer less capacity at entry point [B], i.e. 1 unit of capacity.

The AEMC discussion paper provides a diagram outlining the relationship between Minimum, Maximum, and Baseline capacity:[6]



The "minimum capacity" in this diagram is the capacity that the pipeliner can sell at an entry point and be able to deliver to any nominated exit point at any time and in any conditions.

The "maximum capacity" is the total physical capacity of the equipment at the subject injection point (based on given assumptions of inlet pressure), having no regard to the range of possible exit points, available flow paths, or the capability of the broader network to evacuate gas from that entry point.[7]

The "baseline capacity" represents the level of capacity that can be sold at an entry point, based on a knowledge of historical flow patterns (including injections at other points), perhaps taking a probabilistic approach to calculating the baseline capacity.

In the context of the FTI example above:

- the "minimum capacity" at Entry Point B would be 1 unit;
- the "maximum capacity" at Entry Point B would be 2 units; and

[6] AEMC discussion paper, Figure 3.2, p19. Based on discussions with Commission staff, this diagram relates to entry capacity at a single entry point, rather than in aggregate across the system.

[7] This highlights a key hurdle to the success of the entry-exit model. A circumstance may well arise that there is sufficient entry capacity at a given entry point to accommodate all desired injections, but there is insufficient pipeline capacity downstream from the injection point to deliver the gas to the desired exit points. The entry-exit system is acknowledged to be weak in incentivising investment within the network.

- the “baseline capacity” at Entry Point B might reflect that historically, shippers have tended to inject 1.3 units at Injection Point B and withdraw 0.7 units at Exit Point D and 0.6 units at Exit Point E. In this case, the “baseline capacity” at Entry Point B might be set at 1.3 units. This level would recognise that congestion would occur if either shipper at exit points D or E chose to nominate exit flows in excess of 1 unit.

It would be reasonable to expect that the levels of minimum, maximum and baseline capacity would fluctuate over the course of the year, for example as equipment is taken off line for routine maintenance. It would be reasonable for the level of baseline capacity at each entry point to be published on the Gas Market Bulletin Board. The reference tariff for injection point capacity would need to reflect an average level of utilisation over the course of the year in order for the pipeliner to be able to recover its revenue requirement. With this construct, it would not be necessary to publish a separate summer and winter baseline capacity, so long as the reserve price was set at the reference tariff.

Presumably a similar process would also be undertaken at each exit point in order to set any relevant exit tariff.

2.4.2 Calculating and selling baseline capacity

APA VTS accepts that the AER should have a role to play in assessing the amount of baseline capacity proposed by APA VTS. However, APA VTS notes that there are two stages to this regulatory process:

1. Reviewing and determining the capacity at the entry and exit points. This is largely a technical question, and will depend largely on system flow modelling to determine the amount of capacity available under a range of injection location, withdrawal location, and flow path assumptions; and
2. The forecast levels of average and peak demand at each of those entry and exit points under the reasonable range of weather-impacted injection, withdrawal and flow path assumptions. This information will be important in determining the level of the baseline capacity and the reference tariff applicable to the entry and exit services.

This second process is not dissimilar to the role the AER plays in reviewing and approving load and demand forecasts in any access arrangement review.

However, consistent with the delineation of roles and responsibilities outlined above, APA VTS does not agree that the market operator should have a formal role to play in this process. As a transitional measure on the move to an entry-exit model, APA VTS accepts that the current system operator could have a role to play in determining the level of existing entry and exit capacity, but its expertise in this area will rapidly diminish once it no longer performs the operator function. The level of available entry-exit capacity may well change with a different approach to system operation.

2.4.3 Calculating and selling additional capacity above the baseline

APA VTS agrees with the AEMC that the system operator is in the best position to ascertain whether additional capacity, above the baseline, can be served on any given day (and whether that capacity can be served on a firm or interruptible basis).

The system operator is also in the best position to be able to maintain the flexibility to accommodate unanticipated demands for additional capacity. For example, in the event of an LNG plant trip, the system operator may be able to defer a discretionary outage to accommodate the increased demand for southbound (storage injection) flows. The system owner/operator should be incentivised to manage its program or maintenance works to ensure this flexibility is provided to the maximum extent possible.

Consistent with the theme of this submission, APA VTS is of the view that the incentives inherent in the framework must be aligned to the behaviour to be elicited. Where there is a financial incentive to providing that flexibility (additional revenue to be earned where additional capacity can be provided), then it would be reasonable to expect that the system operator will manage the system in such a way as to provide that capacity to the maximum extent commercially possible. Where the (not-for-profit) system operator has no such incentive, it would be unreasonable to expect that such flexibility would be made available.

2.4.4 Financial incentives surrounding the calculation of additional capacity

The AEMC discussion paper notes:[8]

> In most European entry-exit systems, this trade-off [in determining the level of baseline capacity] is made as part of a regulator-led process. Pipeline owners are, in almost all instances, funded through a regulated revenue allowance. Although they receive revenue from the sale of baseline capacity, the amount of revenue that can be recovered is fixed and hence there is no financial incentive for pipeline owners to want to maximise the release of baseline capacity to the market. On the other hand, pipeline owners are exposed to a financial penalty in the event of non-delivery of the baseline level of capacity. The incentive is therefore to ensure that baseline capacity is set as conservatively as possible.
>
> In the absence of financial incentives on pipeline owners to maximise the release of baseline capacity, regulators are best placed to make the trade-off between maximising the utilisation of the system and minimising the risk of congestion costs. The aim is to set baseline capacity at the level where the benefits of releasing an additional unit of firm capacity to the market are greater than the costs to network users from the system operator having to take action to manage the resulting constraints.

This passage presumes that the system should operate under a revenue cap approach to regulation. In APA VTS' view, revenue cap forms of regulation have a

[8] AEMC discussion paper, Box 3.1, p19.

role to play in the face of declining demand (as in the UK and European systems), but perform poorly in terms of applying incentives to network owner/operators to manage the network in such a way as to achieve more efficient use of pipeline capacity.

Where the government policy objectives include increasing the efficient utilisation of the network, a revenue cap form of regulation will be an unsuitable tool towards promoting this outcome.

As discussed more fully in section 4.2, APA VTS proposes that a price cap form of regulation should be applied to encourage the pipeline system owner/operator to maximise the throughput on the existing system, and therefore its efficient utilisation.

2.4.5 Symmetrical penalties and incentives

The AEMC discussion paper notes that APA VTS (in the system owner role) would be "exposed to a financial incentive for the non-delivery of pipeline capacity".[9] APA VTS accepts that it will have an obligation to provide the agreed level of entry and exit capacity at the various entry and exit points, and accepts that "financial incentives" (i.e. penalties) may apply for failure to do so.

However, the discussion paper's section on selling additional capacity provides no counterbalancing incentive.

Importantly, the ability of APA VTS to provide a given level of baseline capacity on a given day may be influenced by system operational parameters. In this regard, it is critical that APA VTS has operational control of the system for it to be able to provide the agreed level of baseline capacity on a given day. Separating the owner and operator roles, as proposed in the discussion paper, puts APA VTS at risk of incurring a penalty as a result of another entity's actions.

APA VTS considers that any incentive regulatory framework which features penalties for underperformance must equally feature incentives for outperformance. However, the separation of roles as envisioned in the discussion paper, and the implementation of a revenue cap form of regulation, denies the opportunity of APA VTS to earn any additional revenues for outperformance.

The discussion paper envisions that AEMO, as the proposed system operator, as opposed to the system owner, should retain any additional revenue earned from providing additional capacity. APA VTS agrees with the AEMC's concern, as discussed in footnote 34, that AEMO's not-for-profit status restricts its incentive to maximise efficient system utilisation under this model.

APA VTS agrees, as discussed above, that the system operator is in the best position to determine if any additional capacity can be provided. However, APA VTS considers that the opportunity to earn additional revenue from the sale of additional services is the countervailing measure to balance the penalty for

[9] AEMC discussion paper, Box 3.2 p19.

underperformance.[10] This aligns with the APA VTS recommendation regarding the allocation of roles and functions as discussed in section 2.1 above.

Alignment of the network operation and the incentive for outperformance also encourages the maximum efficient utilisation of the system. As discussed above, APA VTS may negotiate commercial agreements with some shippers to voluntarily reduce their load during periods of high system demand, allowing for higher average utilisation of the network. This is an economically efficient outcome that AEMO, as the current system operator, appears unable to execute.

3 Capacity allocation mechanisms

3.1 Allocating existing capacity

As developed more fully in this section, APA VTS considers that integrated auctions can send relevant price signals for the allocation of existing capacity, and some indication of the need for additional baseline capacity to be developed, at points where shippers can control both their injections and withdrawals – that is, at the supply, storage and interconnection points at Longford, Port Campbell/Iona, and Culcairn.

It is not obvious that integrated auctions can send meaningful price signals where shippers are unable to control injections or (particularly) withdrawals.

3.1.1 Auctions for points where shippers can control both injections and withdrawals

> Whether integrated auctions are the most appropriate mechanism to allocate existing (and trigger new) baseline capacity at production entry points, interconnection entry/exit points and storage entry/exit points. What are the likely challenges in developing and applying an auction mechanism in this context?

The AEMC discussion paper proposes auctions for points where shippers can control both injections and withdrawals (4 production entry points, 4 interconnection entry/exit points, and 2 storage entry/exit points).

APA VTS largely accepts the integrated auction process as a common feature of the entry-exit model. However, APA VTS considers that it does not necessarily provide firm capacity on the network – it only provides firm capacity if the shipper wins the relevant auction (whether the capacity auctioned is firm for 1 year, 3 months, etc).

[10] As part of the AEMC-proposed package, APA VTS considers that it would be important to limit the liability associated with failure to provide the baseline capacity, consistent with the current System Envelope Agreement).

One of the goals of moving to an entry-exit model was to overcome the barrier that it is not possible to book firm gas transmission capacity under the DWGM structure. APA VTS considers that the chosen capacity allocation mechanism should feature a mechanism under which shippers can reserve long term firm capacity. While an integrated auction may go part way to meeting this requirement, it may be necessary to set aside a certain amount of entry and exit capacity that can be reserved through longer term contract.

APA VTS notes that, in order for APA VTS to recover its allowed revenue requirement, the reserve price in this auction will need to be set at the regulated tariff, and that the regulated tariff will need to be developed to reflect the variability in system utilisation (and therefore the amount of capacity likely to be bid at auction on any given day) over the course of the year.

In determining the reference tariff, APA VTS would expect shippers to be more active in sculpting their loads through the auction process, such that they may well pay a premium for capacity on cold (peak demand) days, but may choose to buy a smaller proportion of firm capacity for the balance of the year, relying on interruptible capacity that is unlikely to be interrupted. This behavioural pattern will need to be reflected in the reference tariff/reserve price in order for APA VTS to be able to recover its allowed revenue requirement.

3.1.2 Automatic allocation for distribution system exit points

Whether automatic allocation of capacity, combined with a bilateral planning process between APA and distributors/retailers, is the most appropriate mechanism to allocate existing (and trigger new) baseline capacity for distribution exit points. What are the likely challenges in developing and applying these mechanisms?

The AEMC discussion paper recommends automatic allocation for 111 distribution system exit points (for retailers to residential and small commercial customers). Exit "zones" may be retained.

APA VTS accepts this as a reasonable allocation for the multiple delivery points where domestic customer load drives the use of capacity. However, it is not clear that anything will have been accomplished relative to the DWGM. [11]

Importantly, distribution system loads are generally considered to be "uncontrollable" loads, in that they generally are not able to respond to price signals. Moreover, considering the small proportion of the total gas bill made up of transmission charges, it is unlikely that any transmission price signal could or would influence

[11] Under the DWGM, retailers have their gas consumed, and pipeline utilisation, allocated after the event by AEMO, which uses a complex algorithm based on the bimonthly readings of all of the domestic meters. APA VTS considers that this process could continue to be performed by the market operator.

customer behaviour. In this regard, it is not obvious that the price signals developed through the integrated auction are useful to these offtake points.

Some form of joint planning process will therefore be required when these offtake points become constrained, and this is likely to be conducted through the regulatory price review process, in a similar manner as additional investment in the distribution network.

While "zones" are applied under the DWGM in response to the AER's objective that tariffs are to be cost reflective to the extent possible, APA VTS understands that gas retailers generally impute a postage stamp transmission tariff in developing retail prices. Any cost reflective price signal is effectively lost.

Since the process of allocating capacity to zonal offtake points cannot develop useful price signals to either influence behaviour or signal a need for new investment, APA VTS considers that a move to a (inject anywhere, withdraw anywhere) entry-exit system presents an opportunity to simplify the tariff structure by investigating the scope for postage stamp tariffs to apply to distribution system connection points.

3.1.3 Auctions for large direct-connect customers' exit points

> Whether an auction mechanism, combined with a bilateral planning process between APA and directly connected customers, is the most appropriate mechanism to allocate existing (and trigger new) baseline capacity for exit points relating to large customers directly connected to the DTS. What are the likely challenges in developing and applying these mechanisms?

The AEMC discussion paper proposes that:[12]

> an auction platform can also be used to allocate baseline capacity for exit points relating to customers directly connected to the transmission network.
>
> We note that these points will not have the competitive tension of production entry points, interconnection entry/exit points and storage entry/exit points as there is typically only one party per exit point. The auction will therefore be expected to clear at its reserve price.

It is not clear what is to be gained by imposing a pipeline capacity auction process on the 12 exit points relating to large direct-connect customers.

Unless the customer has implemented a process by which retailers bid to supply its gas each day, the customer will either have a longer term relationship with a retailer, or with a gas supplier, to which it will nominate its requirements each day.

Moreover, when the large customer is not using all the capacity available at that connection point, there are no other customers that can take advantage of the unused exit capacity. As the exit point is dedicated to a single shipper, it could

[12] AEMC discussion paper p39.

simply bid the reserve price for its required exit capacity, safe in the knowledge that there would be no other customers competing for it.[13]

It is not clear that anything useful will have been accomplished through the auction process.

The costs of providing the customer's dedicated exit point equipment will be largely fixed, and sized in relation to the customer's peak demand.

For direct-connect large customers, APA VTS recommends a fixed annual charge to recover the dedicated equipment costs and a contribution to the overall system.

Expansion of dedicated connection points for direct-connect customers is best undertaken through direct negotiation between the pipeline owner/operator and the direct-connect customer.

3.2 Mechanisms for triggering new baseline capacity

APA VTS agrees with the AEMC discussion paper that it also strongly prefers a market based mechanism for signalling new capacity over an administrative central planning approach.[14]

APA VTS also agrees with the AEMC Discussion paper that consistent observation of auction settlement at prices above the (regulated) baseline tariff may be a sign that there is demand for additional baseline capacity at that entry point.

But where the system owner/operator can manage the demand through increased utilisation of the system, redirection of other gas, operational use of storage or other tools, it should be able to retain that premium as an incentive to defer investment (and costs) on the system.

That is, the system owner/operator should not be pushed into a "build" response where more efficient utilisation of the system can meet the needs of the market at lower cost.

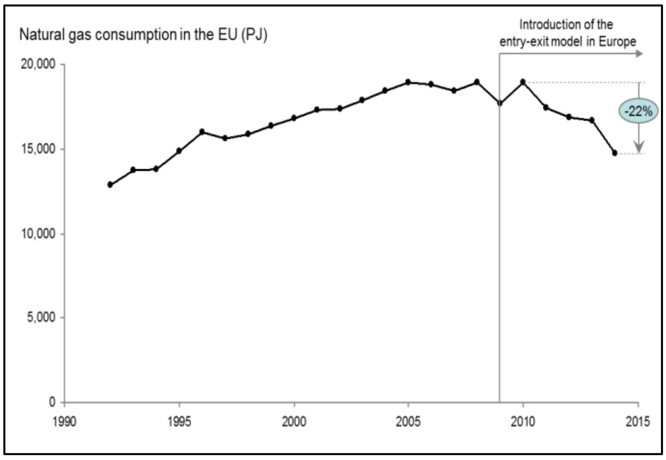
From an incentive perspective, if the system owner/operator is not able to retain the benefits associated with its operational risk and demand management, it will have no incentive to defer investment and increase the efficient utilisation of the system. A similar result would eventuate should the system owner and operator functions be segregated, as discussed above.

[13] As discussed above, the reference tariff/reserve price for this capacity will need to be derived to reflect the scope for the shipper to sculpt its use of the transmission system to align to its particular load profile.

[14] AEMC discussion paper p30. APA VTS notes that under the recently approved AMDQcc Allocation Rule, this market investment signal has been removed.

APA VTS is concerned that the presumption that the entry-exit model will signal investment at the entry and exit points is based largely on supposition from the operation of the European market. APA VTS is concerned that this supposition has never been tested in earnest – as gas demand has fallen in Europe,[15] the need for new investment has been low.[16] APA VTS is concerned that these signals have not been tested in a growing market.

Figure 3.1 – Declining gas demand in Europe since entry-exit introduction



3.3 'Market test' for system investment

The AEMC discussion paper presents some conflicting messages on investment in additional capacity.

First, there is already a market test for system investment in Rule 79 of the National Gas Rules. Importantly, a key feature of this test is that, where the asset is not strictly required for safety or system security, the present value of the revenue stream must exceed the cost of the addition. Satisfaction of this test requires some certainty about the length of time the shipper will be using the network and contributing a revenue stream to support the expansion.

This has been a barrier to investment in the current DWGM framework, because shippers are not required to commit to capacity (and therefore a revenue stream) in a term consistent with an investment horizon.[17] As a result, it has been difficult, in the context of the DWGM, to promote investment in the VTS. Depending on the proportion of entry and exit point capacity sold under the proposed auction methodology, and the length of time for which that capacity is sold, this issue may not be dealt with under the entry-exit regime.

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[15] EIA, 2014 International Energy Statistics. Figures include the 28 countries currently in the EU. Values for Bulgaria, Latvia, Lithuania, Romania and Croatia imputed as 2014 figures were not available at the time of writing.

[16] APA VTS understands, anecdotally, that the only private investment has been in interconnector pipelines, which have been exempt from the entry-exit model. Some government-sponsored interconnector investment has occurred, largely to provide an alternative to Russian gas supply.

[17] This commitment was previously achieved through the sale of AMDQ credit certificates. Under the recently approved AMDQcc Allocation Rule, this market investment signal has been removed.

In Box 4.1 of the discussion paper, the concept of a "market test" is floated. One of the features of this test is that the pipeline owner/operator cannot rely on the revenue stream associated with long term use of the network in assessing the economic viability of an extension or expansion,[18] noting that "the experience in Europe has been that network users are not willing to make financial commitment to buy incremental capacity for the entire length of the assumed asset lives of gas transmission assets. For example, shippers may only be willing to make commitments to buy incremental capacity for between 5 and 15 years from the commissioning date, which can be shorter than the typical depreciation period used for regulated gas transmission assets". The market test is to be conducted "taking into account, amongst other things, the time horizon network users are likely to enter into such commitments."

This test appears to provide only short term regulatory revenue certainty for long term assets. Prima facie, it is unlikely that a pipeliner would be able to commercially support investment in long-lived capacity when it can only support that investment with a relatively short term revenue stream. Such a proposal would likely fail the "positive economic value" test in Rule 79.

However, APA also understands that, in Europe, once the asset has been approved for inclusion in the regulatory capital base, there is no mechanism to take it out. This is inconsistent with the redundant capital provisions in Rule 85 of the NGR. The redundant capital provisions have long been a problem because, under the DWGM, shippers do not need to commit to using a particular piece of pipeline infrastructure in the long term, and it is possible that an investment could become underutilised and then removed from the capital base on redundancy grounds. As above, depending on the form of the proposed auction, the pipeline owner/operator may not be able to place sufficient long term reliance on a proposed revenue stream to support an investment in additional capacity. This will particularly be the case where the predominant auctioned contract terms are for one year or less.

Where the pipeline owner/operator is at risk of investing in pipeline capacity, only to have its return curtailed by it being removed from the capital base at some point in the future, the pipeline owner/operator will see a significant disincentive for investment, and it will be very difficult indeed to attract capital to pipeline expansion projects.

APA VTS considers that, in the proposed form of the entry-exit framework, system investment will only occur after regulatory approval, similar to the pattern noted by the AEMC in its draft decision.

18 AEMC discussion paper, pp25-26.

3.4 Transitioning AMDQ and AMDQcc

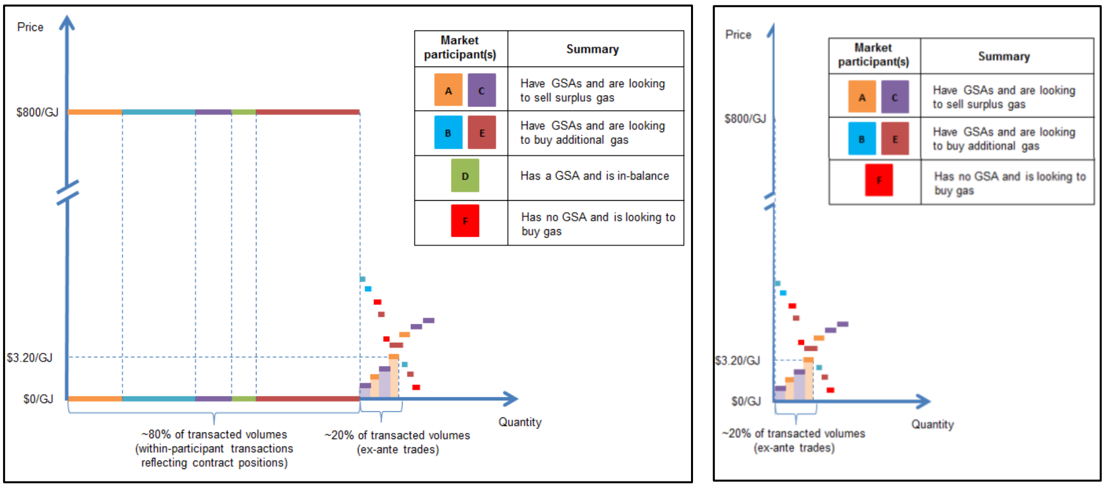
> Having regard to the Commission's preliminary view on options for allocating capacity, how the matter of transitioning the existing, albeit limited, benefits afforded to market participants holding AMDQ and AMDQ cc could be addressed under the proposed Southern Hub.

APA VTS considers that the question of transitioning AMDQ and AMDQcc rights needs to be considered in the context of what value these rights provide, and whether those rights would still be valuable, or whether the function of AMDQ would be necessary, in an entry-exit system.

The primary purpose of AMDQ and AMDQcc is to provide a tie-breaking dispatch right – that is, when two competing injection bids are made at the same price, the bid with AMDQ attached will be dispatched in preference to bids without AMDQ attached.

At first blush, it may seem unusual to consider that injection bids could be tied such that the tie-breaking right would be valuable. However, as the AEMC has identified, under the mandatory market featuring in the current DWGM, the preponderance of gas is bid into the market at zero, and bid out of the market at VOLL:

Figure 3.2 - Comparison of size of mandatory[19] vs voluntary markets



In the context of an entry-exit system with a voluntary balancing market, it is much less likely that competing bids would occur at the same price, and much less likely that a tie-breaking right would be valuable.

In this regard it is not clear to APA VTS that there would be a need to provide for some form of "right" under the entry-exit model to compensate for the loss of the AMDQ or AMDQcc right.

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[19] AEMC 2015 Stage 1 Final Report: East Coast Wholesale Gas Market and Pipeline Frameworks Review

However, it is still likely that shippers will bid for entry or exit capacity at the auction reserve price (the published reference tariff). To the extent there is insufficient capacity to meet all demand at that tariff, then some form of tie-breaking right could well be valuable. This would particularly be the case for gas exiting Victoria, where long term commitments may be present in other states.

In this case, the entry-exit model would rely on the auction process to signal the need for additional investment in capacity. As in any auction process, in order to ensure capacity, shippers would bid an amount above the reserve price to ensure access to the entry or exit point. The market would settle at the point where shippers who valued the capacity the most would be awarded the capacity through the auction process.

To provide some form of pre-emptive right through the application of AMDQ or AMDQcc would subvert the auction process, and send invalid signals regarding the market's value of investment in additional capacity. Again, it does not appear that there is a role for AMDQ or AMDQcc to play in the entry-exit system with a voluntary balancing hub market.

APA VTS notes that AMDQ was originally allocated to customers at zero cost on market start. It might appear, *prima facie*, that no compensation would be necessary to extinguish these rights. However, to the extent customers have come to rely on these rights as a feature of the market's operation, and have invested in plant and equipment on that basis, it may be reasonable to expect that some form of compensation would be sought. APA VTS is unable to comment on this aspect.

In contrast, AMDQcc were purchased by shippers seeking to have APA VTS upgrade the capacity of the pipeline system, and with those AMDQcc came a suite of contractual rights and obligations (primarily take-or-pay obligations), which would remain in force in the event of a move to an entry-exit system. The extent of these rights and obligations, and the costs required to extinguish them, would need to be investigated and considered in any cost-benefit analysis associated with a move to an entry-exit model.

4 Capacity pricing and revenue

Whether the pricing and revenue arrangements required by an entry-exit system can be accommodated within the existing framework for the regulation of gas pipelines, or whether changes to that framework need to be considered.

APA VTS considers that, in principle, the entry-exit model could be accommodated under the National Gas Access Regime and the National Gas Rules with relatively little modification.

In principle, an access arrangement would specify "System Entry" and "System Exit" as the Reference Services under Rule 48(1)(c) (pursuant to Rule 101) and the terms and conditions attached to those entry and exit services under Rule 48(1)(d)(ii). The entry-exit system would be classified as a contract carriage pipeline.

Once that has been accomplished, the calculation of total system costs, the allocation of those costs among Reference Services, the forecast of the levels of demand for those Reference Services, and the calculation of the Reference Tariff can be conducted in much the same way as is currently accomplished in a contract carriage access arrangement today.

However, in order to align with the European framework on which the AEMC's proposal is based, it would be necessary to disable the capital redundancy provisions in Rule 85 for entry-exit access arrangements.

Aside from the disabling of Rule 85, APA VTS sees no clear need for changes to the existing framework for the regulation of gas pipelines.

4.1 Setting tariffs at entry and exit points

Under the gas access regime, the determination of reference tariffs requires a three-step process:

- Determine the total revenue that the reference tariffs are to recover;
- Allocate that amount of revenue across the reference services (across the entry and exit points); and
- Divide each reference service's allocated revenue by the forecast level of those reference services to be provided.

APA VTS considers that this process is, in principle, the same as would be conducted in any access arrangement review process under the existing National Gas Rules.

As discussed in section 2.4.2, it will be necessary to determine not only the level of baseline capacity, but the anticipated level of utilisation of that capacity. This is similar to determining the load and demand forecast in any access arrangement process.

Where access to the pipeline is to be via auction, this reference tariff would set the reserve price for the auction. In this way, the pipeline owner/operator will have a reasonable certainty of being able to recover its efficient costs in accordance with section 24(2)(a) of the National Gas Law.

4.2 Price cap or revenue cap?

APA considers that the choice between price and revenue cap is directly related to the incentives to be put in place to reach government's objectives.

In situations where the government's objective might be to conserve energy or to encourage demand management activity, a revenue cap might be chosen to remove the incentive for networks to seek to sell more energy by discouraging demand management activity. Accordingly, such a framework is in place for electricity transmission and distribution networks.

However, where the government's objective relates to more efficient utilisation of existing infrastructure, a revenue cap is unsuitable.

To achieve the government's "more efficient utilisation" objective, the incentive must be aligned to encourage the infrastructure owner to transport more gas through the system (encourage utilisation) without additional network investment. As a business operating under a revenue cap is indifferent to the volume of service provided, a price cap approach is the more effective mechanism in this regard.

APA VTS notes that the system currently operates under a price cap regime, and that APA VTS responds to the incentives in that regime to the extent possible under the separate owner and operator framework.

As currently proposed, the entry-exit model, featuring a one-sided incentive framework and a revenue cap form of regulation, fundamentally changes the risk/reward relationship associated with the Victorian Transmission System. This highlights a heightened degree of sovereign risk that will make it more difficult to attract low cost capital to meet Australia's infrastructure development needs.

5 Balancing

Whether a continuous balancing period, similar to the Dutch system, could be implemented at the Southern Hub. Consideration should be given to the costs and likely benefits of this approach.
Whether the procurement of balancing gas could occur through the purchase of spot products on the Southern Hub exchange at market start, or whether a separate balancing platform is required.
In the instance a fixed balancing period was considered appropriate, what an appropriate timeframe would be.
Stakeholders views on the role of AEMO as residual balancer and how it should perform this function.

APA VTS notes that the VTS has limited line pack, and therefore relatively low tolerance to imbalances.

Within limits, APA VTS is relatively ambivalent towards the methodology used to maintain system balance, and the period over which balancing is conducted.

The proviso, of course, relates to the nature of the system in two respects:

- the observed scope for spikes in demand during unexpected cold weather events; and
- the 4-6 hour time required for gas injected at Longford or Port Campbell to reach the demand sink in metropolitan Melbourne.

5.1 Balancing period

5.1.1 Continuous market-based balancing

In the context of the system's limited ability to cope with imbalances, owing to its limited line pack, a continuous market-based balancing option appears to have merit.

However, the system costs associated with this model may be significant. In order to apply continuous balancing, shippers and users must have access to continuous information for balancing their portfolios, and be continuously active in managing their gas supply portfolios.

While many major demand points have interval metering capability, this information is not universally provided on a real-time basis. The cost of upgrading existing metering facilities and communications equipment would need to be considered in any cost-benefit analysis undertaken to assess this option.

APA VTS is not certain that information systems are in place to accommodate real time reporting and processing of metering data to allow participants to manage their gas supply portfolios (and remain in balance continuously) in real time.[20]

A key physical feature of the VTS that will need to be accommodated in any continuous balancing model is the physical time delay between injecting gas at Longford or Port Campbell and its arrival in the demand sink in Melbourne (approximately four hours and six hours respectively).

In the case of an unexpected cold weather front moving into Melbourne, this time delay has regularly seen it necessary to inject LNG from the Dandenong LNG facility to maintain system pressure. As LNG is dearer than Longford or Port Campbell injections, sufficiently robust imbalance information must be made available to shippers to cost-effectively manage their gas supply portfolios and any related imbalances.

Should a continuous balancing regime be adopted, APA VTS supports the AEMC vision that shipper should be incentivised to remain in balance, and should be able to buy gas readily from the Southern Hub balancing market.

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[20] Retailers have their gas consumed allocated after the event by AEMO, which uses a complex algorithm based on the bimonthly readings of all of the domestic meters. Shippers do not have the required information under the current system and could only use a mathematically calculated process if such a system was imposed.

APA VTS does not have information to indicate whether gas supply arrangements would be sufficiently flexible to allow within-day changes to gas supply nominations at the Longford or Port Campbell supply points (potentially on short notice). This may impact the viability of continuous balancing.

However, APA VTS notes that the Netherlands' balancing system relies on the massive volumes passing through the hub for shippers to be able to trade gas with sufficient ease to be able to remain in balance.[21] As shown in Figure 3.2, the size of the optional Southern Hub market may be only approximately 20 per cent of the size of the current mandatory DWGM. APA VTS questions whether the smaller market will be able to provide sufficient liquidity to accommodate a continuous balancing system.

5.1.2 Fixed period market based balancing

The same concerns regarding the time lag for injections from Longford and Port Campbell to reach the Melbourne demand sink apply equally to a fixed period balancing system. However, a fixed imbalance system would not allow shippers to actively monitor their imbalances and take action to reduce them. This leads to increased scope for injection of LNG by the system operator, and unexpected imbalances (a "surprise uplift").

However, APA VTS notes that the DWGM currently operates on a four-hourly balancing system, which provides opportunities for a shipper to correct its imbalances over the course of the day.

5.2 Financial incentives

A consistent theme in this submission is that market participants should be provided clear incentives to behave in a way that is beneficial to the overall market, and considers balancing in the same light.

One of the features of the Netherlands' continuous balancing system is that a shipper only bears imbalance costs to the extent it is out of balance in the same direction as the market as a whole.

This has particular incentive properties in the Victorian context, where the cost of negative imbalance gas (that is, LNG injection) is priced significantly higher than normal market clearing prices. This leads to a "lopsided" incentive, where the cost of being short (cost of LNG to make up injection shortfalls) is significantly higher than the cost of being long (foregone revenues from the sale of excess gas). APA VTS considers this is appropriate, as the consequence of the system being short (curtailment to maintain pressure) is greater than the system being over-supplied.

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[21] Continuous balancing requires 2 separate factors: 1) a physical response of supplying the gas from production; and 2) the market to price it and move it into the system. The Dutch example is able to integrate these 2 factors because of the size of the physical flows in that market.

5.2.1 Procurement of balancing gas

Whether the procurement of balancing gas could occur through the purchase of spot products on the Southern Hub exchange at market start, or whether a separate balancing platform is required.

Consistent with the policy objective of developing deep and liquid markets in gas, APA VTS considers that the more trades that occur through the Southern Hub market, the more deep and liquid the market will be, and the more reliable will be its price signals.

In this context, APA VTS considers that a separate balancing platform introduces scope to split the market into two components, potentially presenting two different prices to the market. In APA VTS' view, the Southern Hub should be given the opportunity to serve the balancing market before creation of an additional platform is contemplated.

5.2.2 The residual balancer

Stakeholders views on the role of [the system operator] ~~AEMO~~ as residual balancer and how it should perform this function.

As discussed above, APA VTS considers that the AEMC has simply assumed that AEMO would continue in its role as the system operator – as discussed in section 2.1, APA VTS challenges that assumption in terms of the effective functioning of the entry-exit system and the operation of the VTS as a whole.

APA VTS considers that it is ultimately the system operator's responsibility to keep the system in balance and maintain adequate delivery pressure. In this regard, APA VTS considers that it would reasonably be its responsibility, as system operator, to act as the residual balancer.

A mechanism will be required to ensure that APA VTS, as system operator, can recover its residual balancing costs from shippers.

Historically, AEMO, as system operator, has attempted to allocate balancing costs on a "cost to cause" basis, with varying degrees of accuracy. In this regard, APA VTS, as system operator, supports the Netherlands' approach of allocating residual balancing costs pro-rate among those shippers that are out of balance in the same direction as the system as a whole is out of balance. This, in APA VTS' view, provides a strong incentive to remain in balance and reduce the need for residual balancing activity.

5.3 Recommendation

On balance, APA VTS supports the Netherlands' continuous balancing approach, subject to a cost-benefit analysis to investigate the costs of installing additional metrology and communications infrastructure.

APA VTS also supports the use of the Southern Hub as the market to trade balancing gas in the first instance, before seeking to develop a separate balancing platform.

6 Summary and conclusion

In its submissions to the DWGM Review discussion paper and the December 2015 report, APA VTS took a neutral stance as to whether an entry-exit model would deliver benefits in excess of the costs of implementation. That view was necessarily couched in general terms, as insufficient detail relating to the proposed regime was provided in those AEMC documents.

The AEMC discussion paper provided the next level of detail on the AEMC's concept of an entry-exit model for the VTS. This has enabled a more considered view of the mechanics of the proposed regime and a better opportunity to estimate the associated costs and benefits.

It is reasonable to expect that all market participants will incur system and business process costs to develop interfaces with a new entry-exit model in order to ship their gas. These costs are inherently difficult to estimate, but are expected to be widespread across the market.

It is also clear that the system operator will incur costs in developing a new entry-exit system, although these costs are largely offset by costs that AEMO, as the current system operator, would be required to incur to update the current DWGM systems.

The benefits associated with a move to an entry-exit model are less clear. Those shippers seeking to move gas through Victoria to points beyond may save costs associated with trading their own gas through the mandatory DWGM market. There may be some additional certainty associated with obtaining firm access to the system, but this is moderated by uncertainty surrounding the auction process.

While the entry-exit system purports to present price signals for investment at entry and exit points, this presumption has not been tested in earnest in the European model. It is not clear that the proposed model will support investment within the system any better than the current DWGM.

As currently proposed, the entry-exit model, featuring a one-sided incentive framework and a revenue cap form of regulation, fundamentally changes the risk/reward relationship associated with the Victorian Transmission System. This highlights a heightened degree of sovereign risk that will make it more difficult to attract low cost capital to meet Australia's infrastructure development needs.

Having reviewed the next level of detail associated with the entry-exit model as outlined in the discussion paper, APA VTS remains unconvinced that the move to an entry-exit model delivers sufficient market-wide benefits, relative to the current DWGM, to justify the considerable costs and upheaval associated with the transition.

APA VTS does see considerable opportunity for the system, and its users, to benefit if the implementation of the entry-exit model follows the European model in aligning the system owner and system operator function. With aligned incentives, APA VTS considers that it can operate the system to more efficiently utilise capacity than is observed under the current not-for-profit operator model.